CHAPTER 10

Validating the Maurer House

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Introduction and Study Objectives

In 1973, Ronald LeClair carried out the precedent setting excvation of what he reported as an ancient house feature at the Maurer site (DhRk 8) near Agassiz, southwest British Columbia. This feature was located on a small terrace at the base of Hopyard Hill, a bedrock outcrop in the upper Fraser River valley floodplain near the confluence of Cheam Slough and the Fraser River, approximately 110 km upstream from the river's mouth[1] (Figures 10:1-3). LeClair (1973) produced a permit report containing his preliminary findings that was later expanded slightly and published after he had obtained several radiocarbon dates (LeClair 1976). He suggests in this preliminary report that this feature was the remains of an Eayem Phase house dating to circa 5500-3500 BP [cal 6300-3800], which made it the oldest known house on the Northwest Coast. As in most preliminary reports, little detailed evidence was presented in support of these conclusions.[1]

The many references to the Maurer house in Northwest Coast archaeological literature are an indication of its potential importance. The validity of the Maurer house feature has been questioned (Matson and Coupland 1995:117), and formal analysis and presentation of findings from the Maurer site have repeatedly been called for (Mason 1994:120-121; Pratt 1992:240-241).

In 1996 I was given the opportunity to analyze the field notes, photographs, and excavated materials from the site for a master's thesis (Schaepe 1998). The goal of my analysis was to test the reliability of the data from the 1973 excavations, to build on LeClair's groundwork by assessing the validity of his preliminary conclusions and to add whatever insights could be gleaned from a complete analysis of his data. The use of analytical techniques not available to LeClair in 1973 hinted at a new and better understanding of the Maurer data. The results of this study are the subject of this paper.

In Section I, I assess whether or not the excavated feature is a structure; compare original and reconstructed site plans and profiles; assess the original lithic typology; and assess artifact frequencies from a number of excavation units associated with extant profiles. In Section II, I assess the function of the feature; artifacts, lithic tools, and debris are isolated, described and functionally analyzed. In Section III I evaluate radiocarbon samples and dates associated with the Maurer feature, and evaluate their reliability The results of these analyses lead to an identification of the Maurer feature[2]

Archaeological Excavations at the Maurer Site – Defining and Assessing a Usable Data Set

In this section, I present a history of the archaeological investigation of the Maurer site in order to define a usable data set for the purposes of this study.

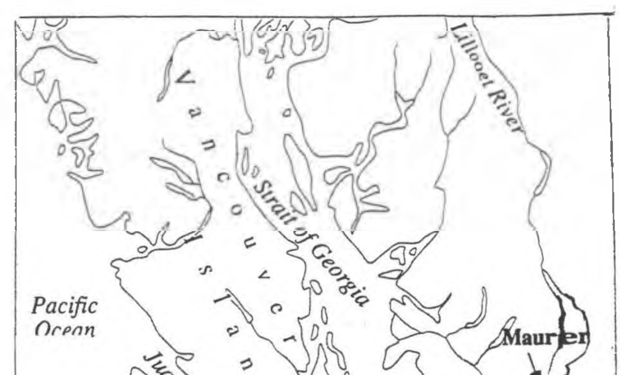


Figure 10:1. **Location of the Maurer site.**

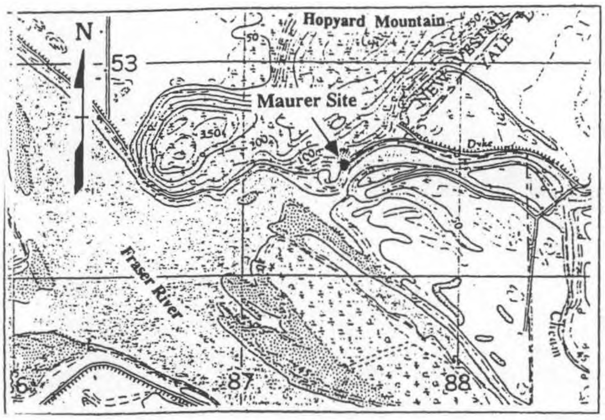


Figure 10:2. **The Location of the Maurer Site (DhRk 8) in the central Fraser River Valley.**

The 1971 and 1972 Excavations

The first archaeological investigation of the Maurer site was conducted in August, 1971, though it was confirmed that it did not impact the depression (R. Percy, pers. com. 1996).

In 1972, Thea DeVos sampled the site more intensively. Ten 2 m x 1 m test units were placed within a roughly WNW-ESE oriented grid over the depression (see Figure 10:4). These units were excavated to varying depths, a number of them penetrating what is later identified by LeClair as the house floor. Information from this excavation is not available as the location of the excavation material and notes is unknown. This excavation represents the greatest known impact to the Maurer site[3], and has adversely affected this attempt at analyzing the Maurer feature. The absence of usable data from the 1971 and 1972 excavations limits my analysis to that recovered by Ronald LeClair in 1973.

The 1973 Excavation

Le Clair undertook excavation of the Maurer site between May and September 1973. Util izing DeVos's apparently arbitrary NE-SW oriented site grid, LeClair established a roughly 14 m (NE-SW) by 18 m (NW-SE) excavation grid encompassing the depression feature. Within this area, he excavated a total of fifty-nine 2 m x 1 m units, two 2 m x 2 m units, and two 1 m x 1,m units -- totaling an excavated area of 128 square meters. These units generally ranged between 1.0 m and 1.5 m in depth. Unit provenience was indicated in meters south and west from an arbitrary site datum. The excavation accounted for 100% of the Maurer feature remains. Figure 10:5 depicts the combined 1972 and 1973 excavation plans. Excavators used trowels and shovels following amixed technique of excavating in arbitrary levels and stratigraphic layers. Examination of the excavation unit level notes indicated that the humus was removed as a singlenatural layer with no vertical subdivision. The layer identified as the house floor was also excavated as a discreet stratigraphic layer, separate from overlying sediments, and sub-divided into arbitrary 10 cm levels where the thickness of these deposits allowed. Excavating the observed floor as a discrete layer proved to be a crucial factor as it permitted the reconstruction in my study of

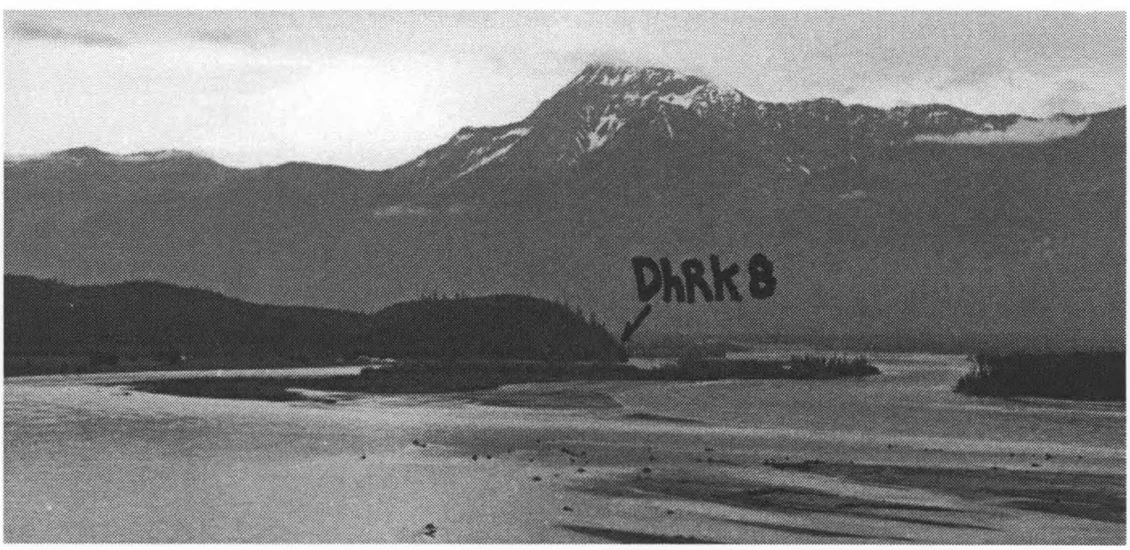


Figure 10:3. **Looking eastward over the Fraser River toward the Maurer site (Photo: LeClair).**

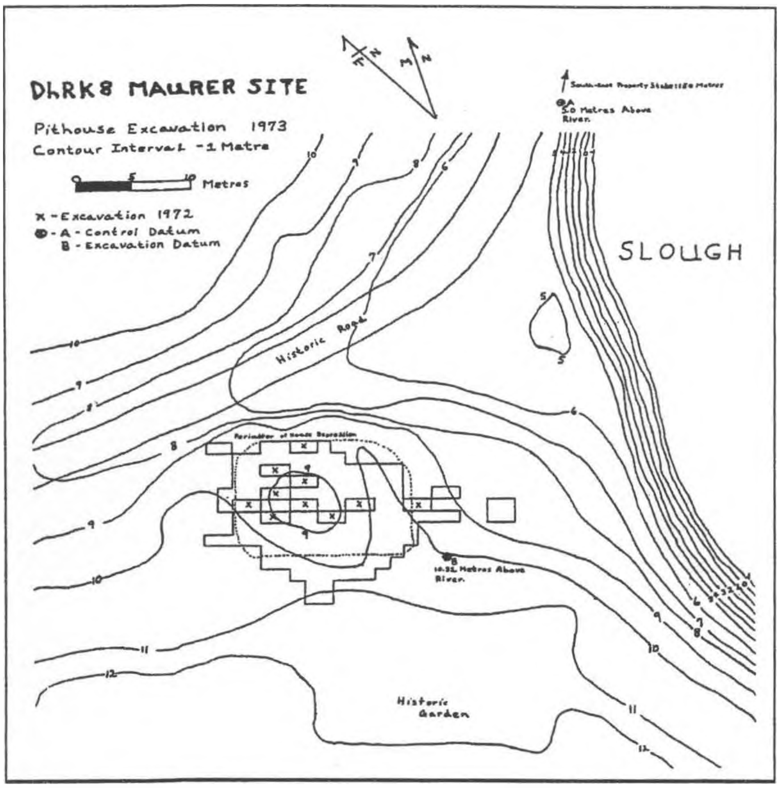


***Figure 10:4.* The 1973 site area contour map / excavation plan (per LeClair 1976:36).**

the associated artifact assemblage without mixing strata. Depth measurements were taken from both the ground surface and an arbitrary datum line strung above the depression. While this method was followed in most cases, notes for a number of units lacked reference to one or the other of those provenience points. Fortunately, notes were located which document the depths of the ground surface below datum for each excavation unit. This reference allowed missing depth measurements, either DBS or DBD, to be extrapolated with a high degree of certainty.

Level data recorded on level and feature forms provide basic information, including: the Borden Site Number; date; recorder; horizontal provenience (e.g., 31.2-32.2 m S, 18-20 m W); vertical provenience (e.g., 30-40 cm BS); and a brief description of soil color and cultural material. Usually, depth measurements and a plan drawing of the bottom of each excavated level are present, along with a directional indicator. Indications of the level or layer being excavated were generally lacking.

Stratigraphic profiling of the site was minimal. Only two provenienced profiles were located among the excavation documents, recording intersecting 13 m (roughly NE-SW oriented) and 16 m (roughly SE-NW oriented) cross-sections of the completely excavated feature (see Figure 10:5). Different versions of these profiles, in preliminary and finished states, were found in the project collection. The NE-SW profile -- what I call 'Profile B' -- is labeled with written and Munsell coded soil descriptions. Only written descriptions label the SE-NW profile -- what I call 'Profile A'. Also depicted in both profiles is the datum line from which depth measurements are referenced. These two profiles provide the basis for conducting stratigraphic analyses of the Maurer feature, a critical element of this investigation.

As mentioned above, plan drawings are depicted in the level notes for most excavation units. Scales are lacking in some of these drawings. In such cases, distance measurements are noted for significant provenience points. In addition, three scaled plan maps of the excavated structure are included in the site documentation. Comparison of these structural plans reveals some discrepancies that are discussed below.

LeClair's photographs, negatives and photo record forms provide additional documentation of the excavation. Photographs were taken of the site prior to, during and at the completion of the 1973 excavation. Of particular interest are oblique color and black and white photographs of the exposed Maurer feature at the completion of the project, and close-up photographs of a number of exposed associated sub-features. Two photographs show

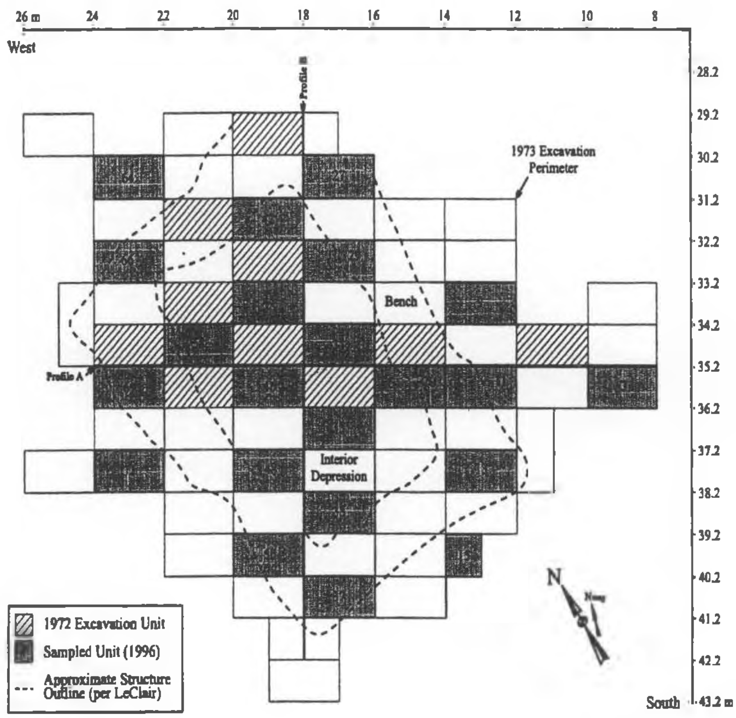


Figure 10:5. **Composite site plan showing 1972 and 1973 excavation units and units sampled for this study ('1996').**

the dark stain of what appears to be a floor or occupation surface of another structural feature exposed in a road cut-bank approximately 15 m from the excavated feature.

Much to his credit LeClair maintained field notebooks that include descriptive details of the excavation. Log entries provide routine information on the progress of the excavation, but become increasingly sparse throughout the course of the work. Importantly, however, the log includes detailed notes on the three-dimensional provenience, context and materials of all radiocarbon samples collected from the site. Site soil acidity values by depth below surface and a rough outline of project objectives were also recorded.

The entire DhRk 8 collection from 1973 consists of roughly 17,000 lithic artifacts, perhaps 2000 of which are tools[4]. Identified tool types consist mainly of unifaces, bifaces, drills, spall tools, cobble and pebble tools, hammerstones, and cores. No classification of the debitage was attempted. Artifacts were generally catalogued by the date of catalogue entry, artifact number, artifact type, artifact location, depth (cm BS and/or cm BD) and excavator(s).

Lithic artifacts from DhRk 8 received catalogue numbers 1-4,053. Only identified tools were assigned and labeled with individual artifact numbers. Debitage was assigned one number per unit/level. All artifacts were provenienced by unit and depth. A very small number of artifacts, primarily tools, received three-dimensional provenience. Lithic material type was generally not noted. No mention was made of layer association, except for the occasional important notation of 'floor association'.

The state of the collection organization at the beginning of the present study was such that all debitage remained in its original level bags, while tools had been removed to a series of cabinets. The tool assemblage was unsorted and required complete re-organization. Fortunately, the tools (with only a handful of exceptions) were labeled with artifact numbers. Thus, I was able to cross-reference numbered artifacts with the artifact catalogue as a means of re-establishing their provenience. Lastly, I located preliminary artifact frequency figures by cm BS among the collection documents.

Validity and Reliability of the Maurer Data

In this as in any collections study, the assessment of data reliability is critical to defining the scope of possible research. Unreliable data limit the scope of such research beyond, even, the restrictions imposed by the research strategy and methods employed in original data collection. Diminution of usable data detracts from the ability to examine the validity of conclusions based upon these data, and generally reduces resolution. Following Nance (1987:246) reliability refers to dependability and consistency. With reference to measurements:

> a measurement or observation is reliable if repeated attempts to make the measurement yield the same results. An observation is unreliable if it does not yield consistent data.... The reliability of a measurement is inversely related to the amount of random error present in that measurement.

Increasing random error decreases both replicability and reliability in a data set. Connected to but not dependent upon reliability is the concept of validity (Nance (1987:246):

> Validity refers to the degree to which observations yield satisfactory responses or data. Satisfactory data tell you what you want to know....an observation is valid if it measures what you think it measures. Thus an invalid observation is a biased observation, the degree of validity is inversely related to the amount of systematic error present in measurements.

Validity, then, is a measure of systematic error; that is, bias.

Two factors represent basic determinants of reliability and validity for the Maurer data. The first relates to the general inexperience of the crew[5]. The potential for random error in the collection of data was therefore high, and the resulting data reliability is questionable. A second factor possibly affecting data validity is LeClair's classification of the depression at the site was a house. This description represents a possible bias in the approach to the excavation and analysis of this feature. Thus, a critical approach to measuring the degrees of validity and reliability of the data will be applied in the following analysis.

Section I: Assessing the Validity and Reliability of the Maurer "House" - Is there a Structure at DhRk 8?

In this section, I examine the question of whether the remains of a structure (that is, a feature comprised of associated architectural elements) was excavated at DhRk 8. I develop archaeological expectations associated with this question. Taphonomic factors possibly affecting these expectations are proposed, methods applied in this study are described, and reliability of the 1973 data is assessed.

Expectations

Evaluating the 'structure question' includes developing expectations of what types of material remains may constitute structural remnants. This endeavor was hindered by three factors: (1) the type of expected structure is not known; (2) the associated time period is not definitely known; and (3) data from which to model expected structural remains in the central/upper Fraser River valley are somewhat limited. Circular and sub-rectangular semi-subterranean structures (Hanson 1973; von Krogh 1976; Mason 1994), platform structures (Matson 1994; Blake 1995; Morrison 1997) and elements of surface structures (Eldridge 1982) of various time periods have been excavated in the central and upper Fraser River valley. Descriptions of these features provide an interpretative basis for the Maurer remains, but do not assist in clarifying the type of structural remains to expect there.

LeClair's description of the Maurer structure contains three basic structural elements -- the *sub-structure*, *sub-structural features*, and the *super-structure*. – and represents the most specific set of data from which to devise testable expectations for this feature. Definitions of these structural elements and associated archaeological remains from Maurer are presented below:

Sub-structure *- that portion of the structure which is either set into or incorporates the associated ground surface, including*:

- a rectangular pit, measuring roughly 7.5 m by 5.5 m, excavated 30-40 cm into the associated ground surface and capped by a grayish brown floor deposit of unspecified thickness
- a roughly 1 m-wide bench which incorporates the associated ground surface surrounding the central depression

Sub-structural features *- features directly associated with the sub-structure, including:*

- a 3.0 m by 0.5 m hearth (of unspecified depth) associated with the floor in the south end of the central depression

Super-structure *- that portion of the structure which stood above the associated ground surface, including:*

- six upright post-holes around the outer edge of the central depression (at each corner and centered along the long axis walls)
- nineteen post-holes (apparently angled), surrounding the outer edge of the bench

• a roughly 3 cm-thick charcoal lens, representing the decayed remnants of a superstructure, capping the floor deposit

From this description, expectations of how these structural elements should appear in the archaeological record may be developed.

One of the principle tests by which this structure may be evaluated lies in its ability to be defined stratigraphically. Each of the three structural elements described by LeClair (1976) may be defined in profile and plan drawings. Thus, a number of expectations can be developed with regards to observing sub-structure, sub-structural features and super-structure remains in the plans and profiles:

Sub-structure

• the sub-structural floor and bench features should constitute a distinct stratum with clear vertical and horizontal limits which are distinguishable from and bounded by the natural stratigraphy (see Table 10:1)
• in profile, the floor -- and possibly the bench -- should be definable as an organic stratum distinct from its surrounding matrix
• the remnant super-structure should provide an association between the floor and the bench
• both floor and bench, as interior structural elements, should be consistently overlain by carbonized super-structural remains, unless these were deliberately removed prior to collapse.
• the floor/bench stratum should have a stepped configuration due to the elevation difference between the floor and surrounding bench, assuming that the same kind of organic deposition occurred in both areas and depending upon the degree of post-abandonment slumping.

Sub-structural features

• sub-structural features should be identifiable as pits in the floor surface, intruding into the sub-floor stratum.

Super-structure

• in plan view, two sets of post-hole patterns should be identifiable:

one set of large post-holes is expected to define the outer edge of the central depression

a flanking series of smaller post-holes should define the outer edge of the bench

• these two sets of post-holes should define the horizontal limits of the structure
• in profile, the tops of the post-holes surrounding the central depression should have similar depths below datum, indicating that they were set into a common ground surface

In sum, verifying this structure, as detailed by LeClair, requires identifying each of these three defined structural elements at DhRk 8. As a single structural unit, direct association between these elements must be demonstrated. Identifying these elements and their associations is the aim of this section.

The vertical distribution of artifacts may also provide important insights useful in analyzing this structure. However, far less artifact data were reported than for the structural remains themselves. While LeClair notes artifacts were associated with the structure, their frequencies and proveniences are not described. As a result, no valid expectations may be developed concerning the relationship of the structure to the artifact assemblage. Nevertheless I examine the horizontal and vertical distributions of artifacts in an attempt to reveal meaningful patterns within the feature area.

Taphonomy

Analysis of this structure requires evaluation of possible taphonomic and post-depositional factors which might have affected the configuration of its remains and the archaeological expectations discussed above. However, aside from the 1972 test excavations, taphonomic factors affecting the site are not known. Furthermore, lack of comparative data hampers the definition of taphonomic factors which might have affected this structure. However, site formation processes identified from the investigation of semi-subterranean structures in other regions may be applied to the Maurer feature.

Both Fladmark (1982) and Spafford (1991) present a number of taphonomic processes which tend to interfere with the interpretation of semi-subterranean structures. Though derived from Fraser Plateau and Canyon pithouse excavations, a number of these processes are doubtless applicable to the expected situation at Maurer. As adopted from Fladmark (1982:123), taphonomic processes possibly affecting the purported Maurer structure include[6]:

• excavation of housepits into older cultural horizons
• mixing of housepit and older cultural component materials by trampling on the house floor
• house abandonment and -
  - slumping of roof materials into pit
  - slow size-sorted filtering of materials through roof back onto the floor
  - slow collapse of the roof accompanied by

natural aeolian or fluvial deposition
- burning of the structure and collapse of the charred roof into the pit

• slumping of pit walls, and the accumulation of intrusive cultural materials onto the house floor
• re-occupation and partial or complete re-excavation of the housepit, and the repetition of the entire cycle
• final abandonment and in-filling of the depression which might result from later, transitory non-pit-house occupations, and/or deliberate filling with cultural refuse, coupled with natural sedimentary and disturbance processes

All the factors listed above affect the way structural and artifact distribution patterns appear in the archaeological record. Some, all, or none of these factors may affect the expected pattern of structural remains presented above, potentially obscuring their archaeological visibility. Determining the occupational history of the site in relation to the construction, use, abandonment and decay of the structure is essential in assessing the effect(s) of taphonomic agents.

Identification of taphonomic agents affecting the integrity of the proposed Maurer structure may be approached in a number of ways. Stratigraphic analysis may be used to identify superimposed structures or occupation surfaces, the re-use and re-occupation of the structure, the extent of post-abandonment infilling, and evidence of bioturbation. In conjunction with stratigraphic analysis, analysis of artifact vertical distributions may be helpful in determining the number of cultural occupations at the site. The effects of natural vertical size-sorting on artifact distributions can also be assessed through size-dependent distribution analyses of this sort. I apply such analyses in the following portion of this section. Identification of active taphonomic processes is important as it serves to establish interpretive limits based upon accurate assessments of feature integrity and artifact assemblage integrity.

Table 10:1. Maurer Site Vicinity Soil Horizon Profile.

Depth Below Surface (cm)	Soil Horizon	Description
0-5	Ah	very dark grayish brown to dark brown silt loam
5-18	Bf1	dark reddish brown silt loam
18-43	Bf2	reddish brown to dark brown or yellow brown silt loam
43-56	BC	dark brown or light yellowish brown loam
56-127	Cgj1	dark grayish brown to dark brown loam
127-204	Cgj2	dark brown to brown loam or very fine sandy loam, overlying bedrock

The Reliability and Validity of the Profiles and Plans

Stratigraphic profiles and plan drawings are essential analytic tools critical to conducting this investigation. As discussed in the previous section, the reliability of the original plan and profile descriptions is, however, questionable. Testing the reconstructibility of profiles and plans from the 1973 excavation provides insight into the accuracy of these data. 'Reconstructibility', as I use it, refers to the ability of original data such as plans and profiles to be re-created from (primarily) the excavation unit notes. Non-reconstructible data must be viewed as being prone to error and lacking reliability. The objective of the reconstruction test, then, is to identify a primary set of reliable data with which to proceed in analyzing the Maurer feature.

Artifact frequencies in this and following section(s) are the result of my complete reclassification of the DhRk 8 assemblage. Explicit definitions and descriptions of artifact classes in this study are in Appendix I of Schaepe (1998).

Methods

The data I use in this analysis are, again, limited to those collected by LeClair in 1973. Initially, LeClair's excavation plan was reconstructed using unit proveniences (meters south and west of the site datum) recorded in excavation unit level notes. In this way, LeClair's reported site plan, which outlines the excavated area, was filled in with unit-specific locations (see Figure 10:5). I compared this reconstruction to photographs and preliminary plans to verify its accuracy, and then numbered all the DhRk 8 excavation units, including those from DeVos's 1972 project. I identified the location of the two provenienced stratigraphic profiles within the excavation plan (labeled Profile A and B -- see Figure 10:5), to provide an intersecting cross-sectioned view of the depression feature.

For this study, I sampled fifteen 2 m x 1 m units adjoining Profiles A and B. Assemblages of art-ifacts from these units were completely re-analyzed. I developed individual, reconstructed profiles for each of these sampled units. Such reconstruction was permitted from data contained in the excavation unit level notes. Individual profile reconstructions were linked together to create replicas matching LeClair's Profiles A and B. As a means of comparing consistency (that is, reliability), I overlaid the original and reconstructed versions of the profiles. What I determined to be reliable profiles were then compared to the recorded natural stratigraphy of the site vicinity and used for analysis of the structural remains, site taphonomy and occupational history. In addition, I developed vertical frequency distribution profiles of artifacts for the sampled units that could be overlain on the stratigraphic profiles as part of this analysis.

In addition to the above, four 2 m x 1 m excavation units and one 1 m x 1 m unit, not along Profiles A and B, were selected due to their locations beyond the structure boundary indicated by LeClair. I reconstructed profiles along the center line of each of these units (long axis for the 2 m x 1 m units, N-S for the 1 m x 1 m unit). Artifact assemblages and their vertical artifact frequencies were also reanalyzed from each unit. This strategy allowed for the analysis of stratigraphy and the vertical frequency of artifacts between locations both within and beyond the feature area.

Two additional 2 m x 1 m units, also not associated with Profiles A and B, were sampled from portions of the structure LeClair indicated as comprising the bench. Again, I reconstructed these unit profiles along their center line (long axis) and re-analyzed their artifact assemblages and vertical artifact frequencies. This sampling strategy allowed for assessment of the bench feature, as a distinct structural element.

For the purposes of this study, I classified lithic artifacts broadly as either tools or debitage. I sub-classified debitage by variables derived from Ahler's Mass Analysis method (Ahler 1989) and Sullivan and Rozen's Flake Completeness method as modified by Prentiss (Sullivan and Rozen 1985, Prentiss and Romanski 1989). Debitage was separated by size using 1", 1/2" and 1/4" square wire-mesh screens, equivalent to Ahler's G1, G2 and G3 size gradations, respectively. Because 1/8" screening was not employed by the 1973 excavation, no representative G4 sample exists and the insignificant amount of debitage smaller than 1/4" screen mesh is neither recorded nor used in this thesis[7]. The absence of a G4 size grade sample negates the possibility of properly implementing Mass Analysis which requires a complete set of debitage size grades for assessment of size-relative debitage pro-portions, as defined by Ahler (Ahler 1989). The absence of a G4 debitage class may be compensated for by experimentally replicating a comparative sample of G1-G3 size classes, thus developing relative proportions of these three size classes. Unfortunately, comparative relative proportions of G1, G2 and G3 debitage (as a specific set) are currently unavailable and replication of this debitage set is beyond the scope of this study. Despite lacking the 1/8" sample, the Maurer data are available otherwise for pursuit of Mass Analysis by interested archaeologists. I compared the cumulative relative proportions of G1, G2 and G3 debitage vertically across the sampled units adjoining Profiles A and B. Thus, for this study, size sorting allowed the analysis of possible natural sorting factors at the site.

As with the profiles, I used excavation unit level descriptions and plans to reconstruct plan drawings of specific areas at specific depths. Again, the reconstructed plans represent comparative data against which I could evaluate the reliability of LeClair's original plan drawings. I used replicable plan elements, as reliable data for evaluating the horizontal extent of the structure and proposed structural elements not identified in the profiles.

In addition to profiles, plans, and artifact frequencies, photographs are an additional source of comparative data. Photographic evidence for a number of structural elements is available. With the exception of subject selection, focusing, etc., photographs are free from the effects of human random error. Due to their comparable objectivity, photos are considered reliable, though contextually dependent, sources of data.

Natural Profile of the Site Vicinity

The natural profile of the Maurer site locality provided a context within which I assessed C) with six subdivisions (Ah, Bfl, Bf2, BC, Cgjl, Cgj2, underlying DhRk 8 Profiles A and B. Table 10:1 provides the Maurer site locality soil horizon profile adapted from an Agassiz area soil survey description (Luttmerding and Sprout 1967:65). According to this soil survey, upland, Ryder series orthic acid brown wooded soil predominates in the vicinity of Hopyard Mountain, including the location of DhRk 8. Parent material for this soil series is "silty aeolian deposits over glacial till or bedrock. Generally the depth of the aeolian overlay is three or more feet". This series is comprised of three major soil horizons (A, B and bedrock).

Horizon transitions are generally gradual or diffuse, with abrupt boundaries existing only between the Ah and Bfl horizons, and the Cgj2 horizon and bedrock. Ryder series soils are slightly acid with noted pH values ranging from 6.0 at Ah to 6.7 at Cgj2. Local variations of this profile are expected to exist.

Profile Interpretation - Cultural Stratigraphy

Original profiles from the 1973 excavation are presented in Figures 10:6a and 10:8a. Profile A (Figure 10:6a) is oriented roughly E-W. Profile B (Figure 10:8a) is oriented roughly N-S. The two profiles intersect at 35.2 m South (mS) and 18 m West (mW). These profiles generally match the natural stratigraphy[8] of the area as described above, with the exception that the C horizon appears to be somewhat grayer than expected. While there is a good deal of accordance between the cultural and natural stratigraphic profiles, one difference is obvious. A stepped, narrow layer of orange and black mottled sediment is shown at the base of both Profiles A and B, at what would naturally be the depth of the C horizon grayish brown sediment. While this black layer is continuous across Profile B, it is seemingly of limited horizontal extent in Profile A. Three associated pit features, one in Profile A and two in Profile B, appear to intrude into the C horizon substrate below the black layer. This black layer and associated pits stand out as anomalies in the natural soil horizon profile. Not only is the natural soil profile interrupted at this level, but the transition between sediments is unexpectedly abrupt. The stratigraphic anomalies, as well as artifacts located throughout the sediments in these profiles, provide definite evidence of cultural activity. Additionally, the stratigraphic anomalies match elements of LeClair's structural description - an excavated, level-floored structure with a surrounding raised bench, a hearth, and post-hole features. Initially, evidence from these profiles appears to substantiate portions of LeClair's conclusion that this feature represents a structure.

Reliability - Profile A

Assessment of the reliability of LeClair's Profiles A and B is required before any sound stratigraphic interpretations may be made. LeClair's Profiles A and B were compared to the versions reconstructed for this study. The original and reconstructed versions of Profile A are presented in Figure 10:6. Several similarities and differences between these two profiles are immediately noticeable. Differences, comprised of irreproducible elements of the original profile (that is, absent from the reconstructed profile), are summarized as follows:

Colour Codes	Sediment Description	
BG	Brownish Gray	Humus
C or ■	Charcoal	Stump
CB or ■	Mottled Charcoal & Black Staining	Post
CO or ■	Mottled Charcoal Flakes & Orange	Fire-Cracked Rock
DB	Dark Brown (Silt)	Pebble
DO	Dark Orange (Silt)	Slump
DOT	Dark Orange Tan (Silt)	Unexcavated
DYB	Dark Yellowish Brown (Silt)	
G	Gray (Sandy Silt)	
LB	Light Brown (Sandy Silt)	
LGB	Light Gray Brown (Sandy Silt)	
LYB	Light Yellowish Brown (Sandy Silt)	
O	Orange (Silt)	
OLB	Olive Brown (Silt)	
OT	Orange Tan (Silt)	
YB	Yellowish Brown (Sandy Silt)	
YBG	Yellowish Brown Gray (Silt)	
YG	Yellowish Gray (Silt)	
VDGB	Very Dark Grayish Brown (Sandy Silt)	

Table 10:2. Profiles A and B legend.

- the majority of the B horizon composition (that is, the majority of the orange yellow brown ranging sediments between the humus and the black layer)

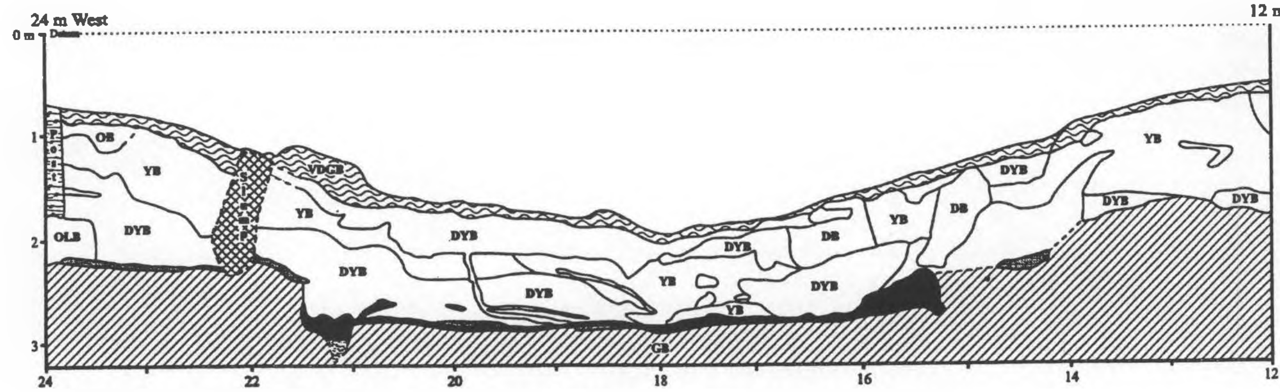


Figure 10:6a. **Original Profile A.**

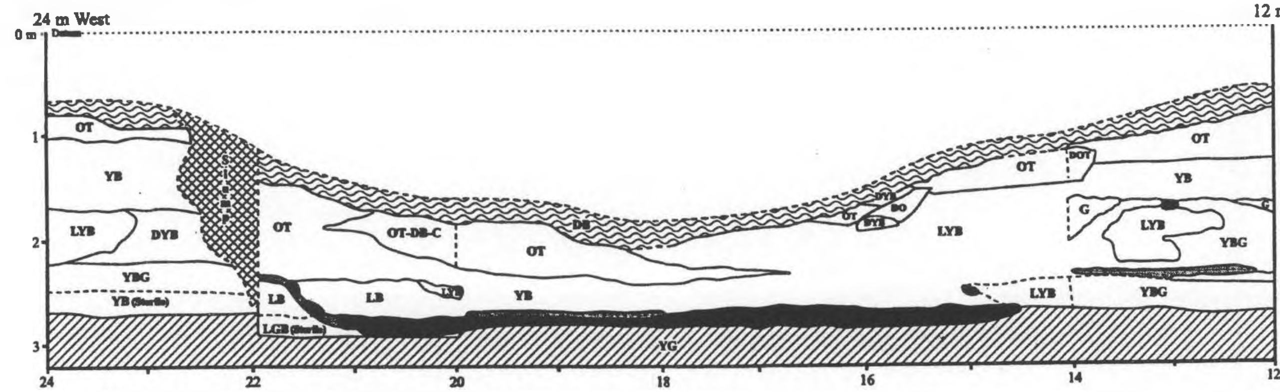


Figure 10:6b. **Reconstructed Profile A.**

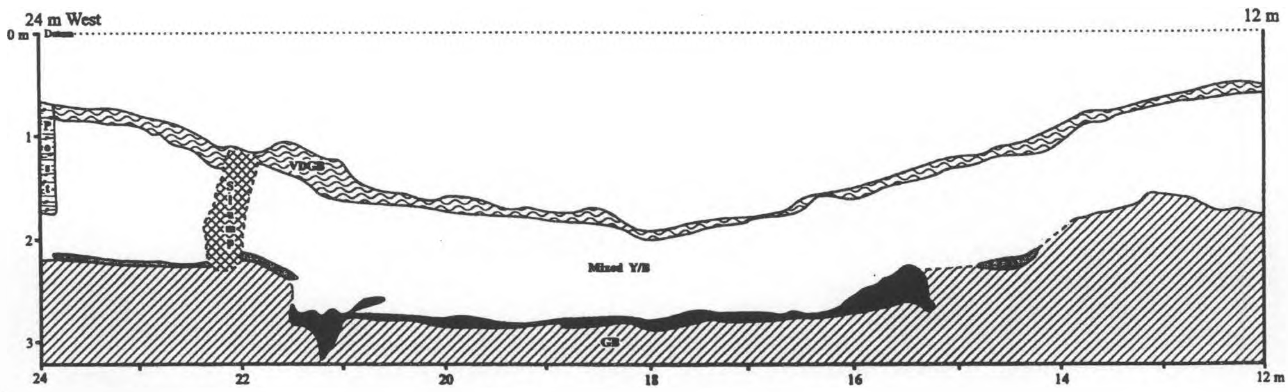


Figure 10:7a. **Original Profile A with Consolidated B Horizon.**

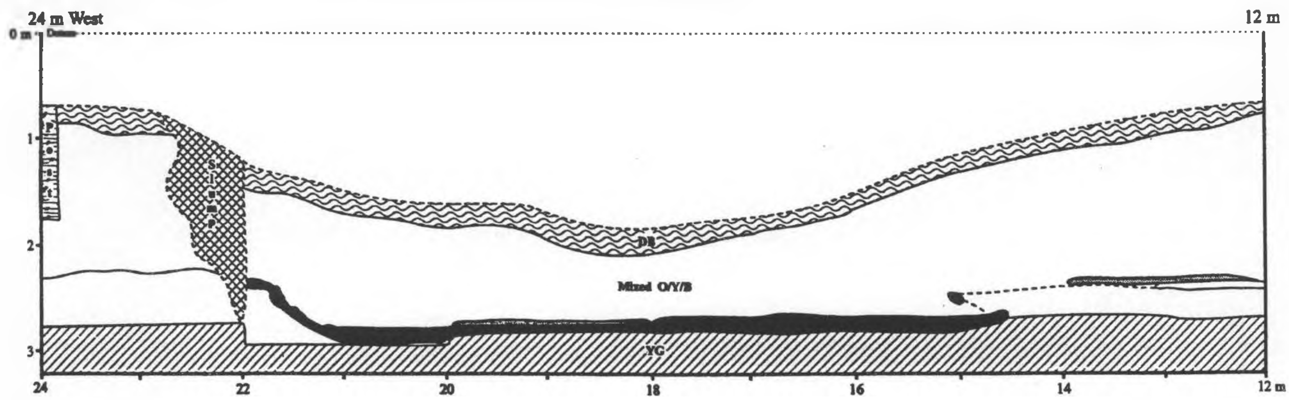


Figure 10:7b. **Reconstructed Profile A with Consolidated B Horizon.**

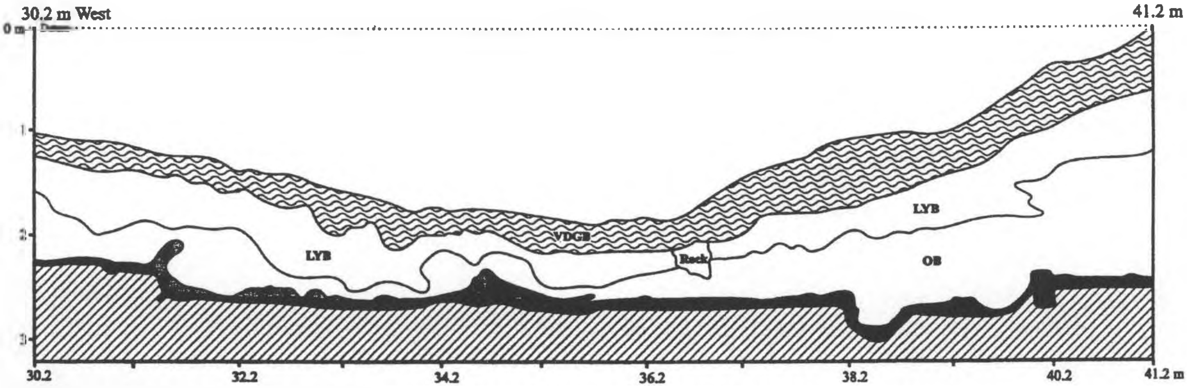


Figure 10:8a. **Original Profile B.**

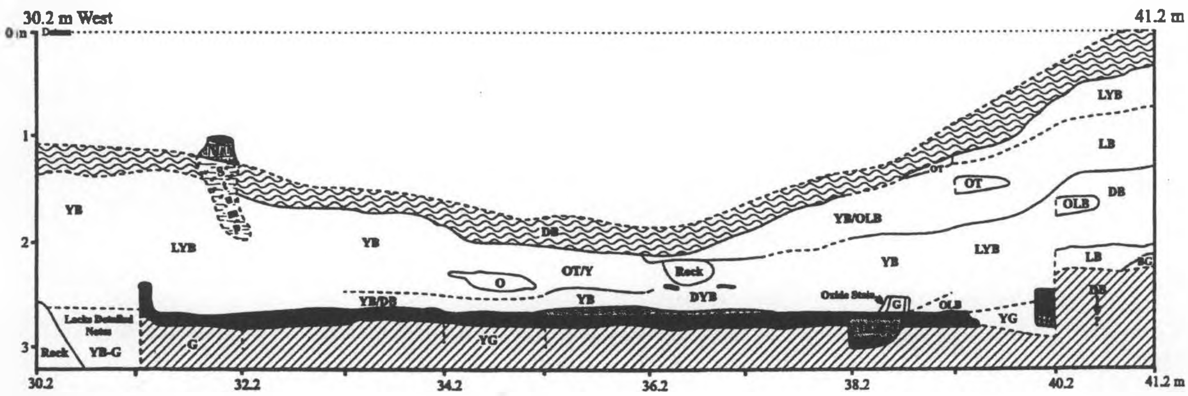


Figure 10:8b. **Reconstructed Profile B.**

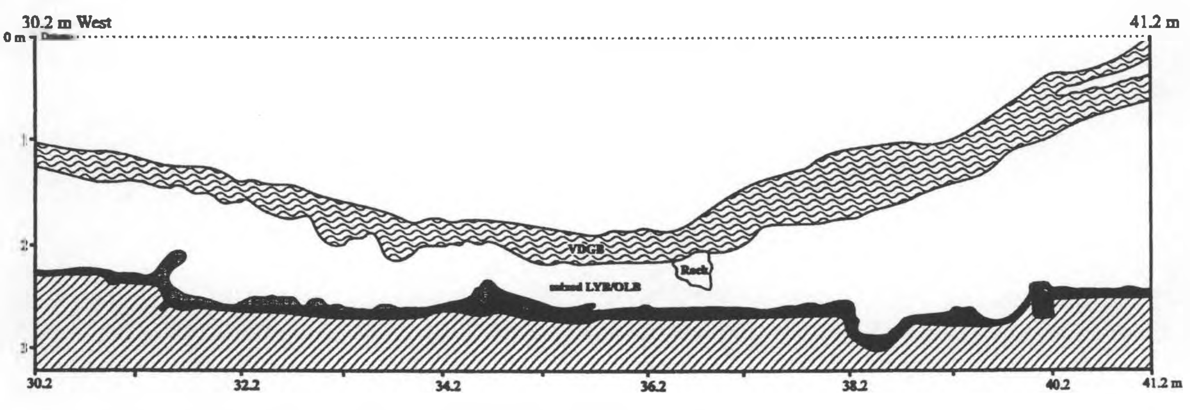


Figure 10:9a. **Original Profile B with Consolidated B Horizon.**

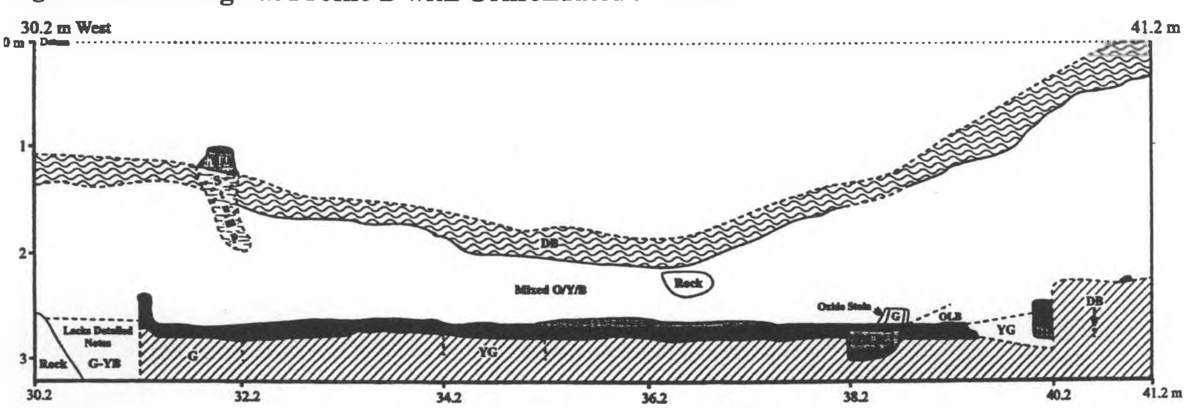


Figure 10:9b. **Reconstructed Profile B with Consolidated B Horizon.**

• a charcoal and ash lens indicating the raised bench at roughly 225 centimeters below datum (cm BD) between 24 m - 21.5 m W

• a pit feature at roughly 275-310 cmBD, 21 mW and a post feature at 24 m

Similarities, comprised of reproducible elements of the original profile (that is, present in both profiles), are summarized as follows:

• the A horizon (that is, the humus layer noted as DB and VDGB) and the general vertical extent of the B horizon

• a slumped part of the profile at 22 mW

• a black layer at the base of the profile, roughly from 22 m W to 14 m W, 275 cm BD

Additionally, the reconstructed profile provides information for areas not shown in LeClair's original profile -- particularly at the horizontal extremes of the black layer, below 225 cm BD. In order to maximize agreement between the two versions of Profile A, the B horizon in each profile was consolidated to form a single zone of undifferentiated sediments, as depicted in Figure 10:7. The degree of agreement between the two profiles is increased at the expense of stratigraphic resolution. However, considering the ap- parent lack of 'real' stratigraphy in the B horizon, and apparent degree of unreliability, its homogenization is not considered to significantly affect the amount of usable data.

With the exception of the bench and floor pit, the profiles in Figure 10:7 represent data with maximum reliability. The post feature is added in Figure 10:7b as it is documented in photographs of the site. Importantly, the black layer is, with only slight variation, one of the reproduci ble elements of Profile A. This layer represents consistent, reliable data and may be further investigated as such. Because it was adapted from referenced sources of information, using known and reproducible methods, the reconstruction is considered the more reliable of the two profiles. Further reference to Profile A will be in regard to the reconstructed profile in Figure 10:7b.

Reliability - Profile B

Repeating the above procedure, original and reconstructed versions of Profile B are presented in Figure 10:8. For unknown reasons, LeClair's version of Profile B is considerably less detailed than his version of Profile A. A number of similarities and differences are again immediately noticeable between the original and recon structed versions of Profile B. Differences, comprised of irreproducible elements of the original profile (that is, absent from the reconstructed profile), are summarized as follows:

• the composition of Horizon B, within an area lying roughly between the humus and the Black layer, from rock at 36.5 mS to 30.2 mS

A stump at 32.2 mS

• thick black bench lenses at either end of the central black layer (40.2 mS-41.2 mS and 30.2 mS-31.2 mS, at 230-240 cm BD)

• a thin black concave lens (39.5 mS-40.2 mS, at 250 cm BD) immediately adjacent to a small pit feature

Similarities, comprised of reproducible elements of the original profile (that is, present in both profiles), are summarized as follows:

• the A horizon (humus)

• a rock in Unit 33

• the composition of the B horizon south of the rock (36.5 mS - 41.2 mS)

• a pit feature at roughly 40.2 mS, 260-275 cm BD

• a second pit feature, at roughly 38.4 mS, 275-305 cm BD

• a black layer at the base of the profile, roughly 31.2 to 39.2 mS, at 275 cm BD

As in the Profile A, the reconstructed Profile B contains some information not included in the original, such as in Unit 27 below 230 cm BD.

As above, portions of the original and reconstructed versions of Profile B were consolidated to maximize the level of agreement between the two. Figure 10:9 is the tailored versions of Profile B, excluding all but reproducible profile elements. Detail is lost as a result of identifying and deleting unreliable, error-prone data and keeping reproducible and reliable data. Further reference to Profile B will be solely to the reconstructed profile depicted in Figure 10:9b.

Two interesting results arise from the comparison of Profiles A and B. First, the black layer is identifiable in both cases, indicating reliability. Second, the organic layer expected of the bench feature cannot be identified in either case, calling this architectural feature into question. This analysis provides useful primary information from which to expand this investigation.

Profile Interpretation - Reliable Cultural Stratigraphy

Profiles A and B suggest the presence of four *strata*[9]. Bedrock, incontrovertibly establishing the base of the site, was exposed at the northern end of Profile B. Overlaying bedrock is the basal stratum (C horizon) comprised of grayish to yellowish brown sandy sediments. Capping a portion of the basal stratum is a 10-15 cm thick layer of compact, black to orange and black mottled sediment with distinct horizontal limits (ranging between 7-8 m in length) and a consistent depth (ranging between 260-280 cm BD). At least one pit feature is directly associated and a second pit feature indirectly associated with the black stratum. A narrow, vertically oriented, 5-10 cm wide, black band defines the lateral extremes of the black layer, separating it from the surrounding grayish sediment. The black band is particularly apparent in Profile A and the north end of Profile B, where it extends 30-40 cm upward from the black stratum to the approximate beginning of the grayish stratum. Level notes describe the dark band as composed of 'burned organic matter.' While this linear feature may be composed of organic matter, some doubt exists as to its carbonized nature. Long-term pedogenic processes as well as rapid combustion can result in the carbonization of organic material. This issue will be discussed later in this section. Directly overlying both the gray and black layers is a roughly 50-150 cm thick accumulation of loose to moderately compacted orange, yellow and brown silts (the contemporary B horizon), with sparse charcoal and ash lenses. This layer is concave in profile, as though overlying an existing depression. Directly overlying the B horizon is the humus (A horizon), a moderate to loosely compacted dark brown, silty loam varying from 5-30 cm thick. This basic stratigraphy is consistent between Profiles A and B.

For organizational purposes, the above described sequence of sediments was divided into six discrete strata. Stratum 1, the A horizon (humus), was excavated as a discrete horizon. Stratum 2, the B horizon, is divided into three pedologically based sub-divisions -- 2.1, 2.2 and 2.3. Stratum 2.1 represents the Bf1 horizon - a dark reddish brown sediment. Stratum 2.2 represents mixed reddish brown, dark brown and yellow brown sediments. Stratum 2.3 is a grayish yellow to grayish brown sediment bearing cultural material, and represents transitional B and C horizons. Within Stratum 2, artifacts were given specific 2.1 or 2.3 provenience whenever possible. Artifacts lacking a definite provenience within Stratum 2 were otherwise classified as general Stratum 2.2. Stratum 3, in reality a portion of the B horizon, was defined as an arbitrary level comprising the approximately 10 cm thick deposit of yellowish brown to brown sediment capping the black layer. Stratum 4 represents the top 10 cm (or portion thereof) of the organic, blackish and orange and black mottled sediment. The orange and black mottled sediment appears mainly on the surface margins of Stratum 4. Stratum 5 represents the subsequent 10 cm (or portion thereof) of the blackish sediment. Importantly, the black sediment comprising Strata 4 and 5, the only layer in this profile, was isolated and excavated separately from the surrounding horizon sediments. This layer was sub-divided into arbitrary 10 cm levels where its thickness allowed. This excavation method allowed cultural material within the black sediment to be consistently and accurately associated with either Stratum 4 or 5. Stratum 6 is the basal C horizon -- a sterile, grayish sediment. A number of initial interpretations can be based on this stratigraphic analysis.

First, Strata 4 and 5, the black layer, has the characteristics of an occupation surface or floor:

- it is level in cross-section
- it is distinctly confined both vertically (10-15 cm thick) and horizontally (6-8 m in profile) by sediment of a different nature (color, texture, composition, compaction)
- its horizontal limits are outlined by a dark, linear band of either carbonized or decayed organic material
- at least one feature, a fire-cracked and thermally altered rock-filled pit indicative of a hearth, is associated with its surface

Second, these strata are inset, as though excavated, into Stratum 6 -- the grayish sandy sub-strate. The linear black band which outlines Stratum 4 establishes the association between the surface of Stratum 4 and the approximate surface of the surrounding gray sediments, 30-40 cm higher. Inward slumping of the stepped outline appears to have occurred at the east edge of Stratum 4 as is seen in Profile A, Unit 20.

Third, the black layer (Strata 4 and 5) is capped and further defined by a patchy lens of oxidized, orange-red sediment and charcoal. The composition of this lens resembles the ef fects of burning of this surface, but is also typical of ferro-humic podzols which predominate in the site vicinity. The dark band surrounding this layer appears to represent wood which either burned or decayed and blackened through natural pedogenic processes. There is insufficient usable data to determine conclusively the formation process(es), either pedogenic or combustive, of the oxidation and blackening of the lens capping-

Stratum 4 and the dark-stained band.

Fourth, the black layer is overlain by sediments which lack other identifiable unconformities. Analyzing vertical artifact distributions within this stratigraphic sequence adds insight to these four initial interpretations.

Artifact Distribution - Cumulative

Below, I present the results of the analyses of cumulative frequencies of artifacts from excavation units associated with Profiles A and B. Artifact frequencies in the cumulative analysis are presented by separate tool and debitage classes. Tool and debitage frequencies are presented both by layer and depth below datum. Depth below datum, though an arbitrary measurement, is initially used as a means of analyzing the correlation of artifact frequencies to potential floor or occupation layers, focusing primarily on Strata 4 and 5.

Distributions of debitage and tool frequencies by layer are presented in Figures 10:10 and 10:11, respectively. This analysis shows a pronounced bimodal distribution pattern which is identical in both graphs. Extremely distinct peaks in artifact frequencies are associated with Stratum 2.2 and Stratum 4. Debitage frequencies (per stratum) peak in Stratum 2.2 (n=1225) and Stratum 4 (n=740), respectively. In contrast, Stratum 3 -- with the next highest frequency -- contains only 224 pieces of debitage. The marked difference between peak (Strata 2.2 and 4) and non-peak (Strata 1, 2.1, 2.3, 3, 5 and 6) frequencies is readily apparent. Likewise, tool frequencies (per stratum) also peak in Stratum 2.2 (n=217) and Stratum 4 (n=191). A marked difference again separates tool peak (Strata 2.2 and 4) and non peak (Strata 1, 2.1, 2.3, 3, 5 and 6) frequencies, with the next highest tool frequency -- in Stratum 2.1 -- being only 52.

Superficial analysis of the bimodal pattern in these graphs suggests two major cultural occupations of the site, associated with Stratum 2.2 and Stratum 4 -- the consolidated B horizon and the primary portion of the black layer, respectively. This pattern raises questions about vertical distributions of both artifacts and strata. Over what vertical range are the peaks associated with Strata 2.2 and 4 spread? Are the artifacts within these layers vertically clustered? Are these peaks the result of genuine vertical artifact clustering or simply differential numbers of excavation levels per layer?

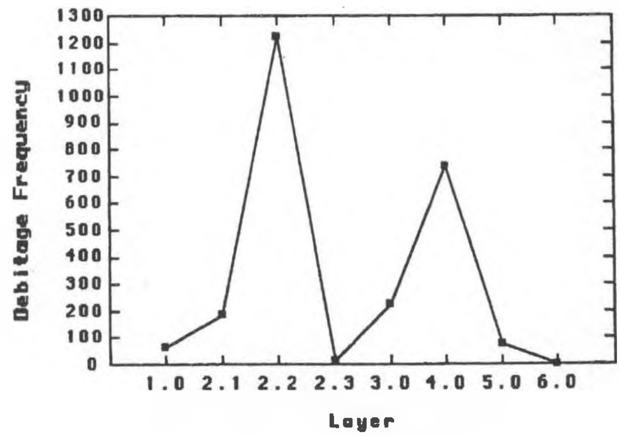


Figure 10:10. **Frequency of Debitage from Profile Units by Layer.**

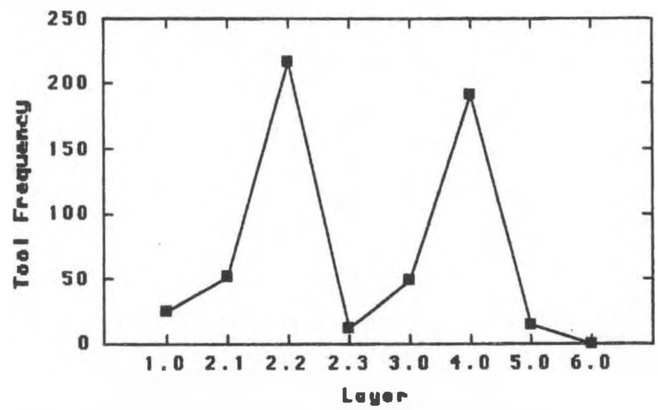


Figure 10:11. **Frequency of Tools from Profile Units by Layer.**

Graphs of cumulative artifact frequencies and relative proportions of associated layers by depth below datum (in centimeters) are presented in Figures 10:12 a, b (debitage frequency/layer proportions) and Figures 10:13 a, b (tool frequency/layer proportions). Artifact frequencies are plotted at 10 cm intervals for central proveniences starting at 5 cm BD. Patterns similar to those identified above are apparent in these two sets of graphs.

Considering the graphs of tool and debitage frequencies by cm BD (Figures 10:12a and 10:13a), the previously identified bimodal pattern is smoothed out to form a single prominent peak, with a weaker secondary peak

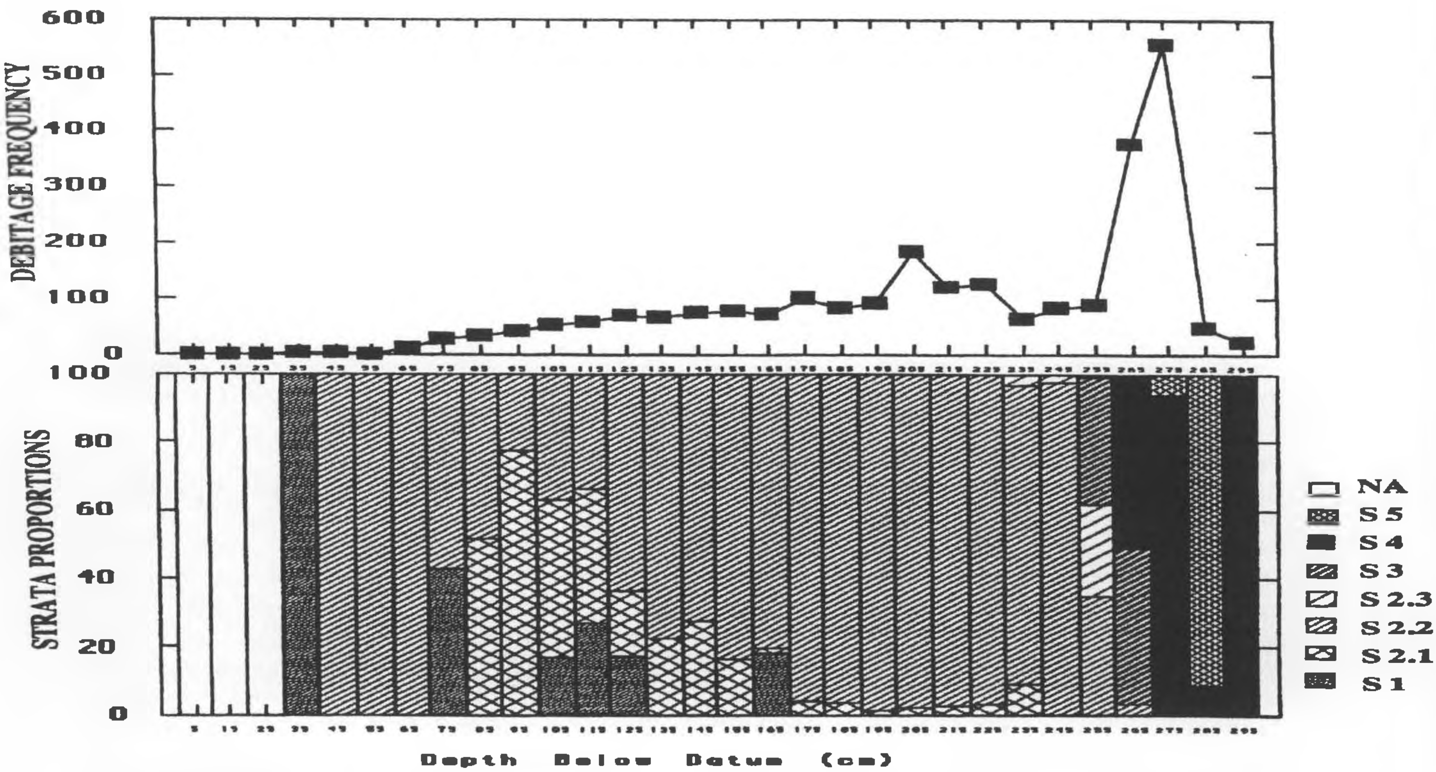


Figure 10:12 a, (upper), **Frequency of Debitage from Profile Units by Depth below Datum (cm).** ***b, (lower),*** **Strata Proportions by Depth below Datum (cm) as extrapolated from Profile Unit Debitage Frequencies.**

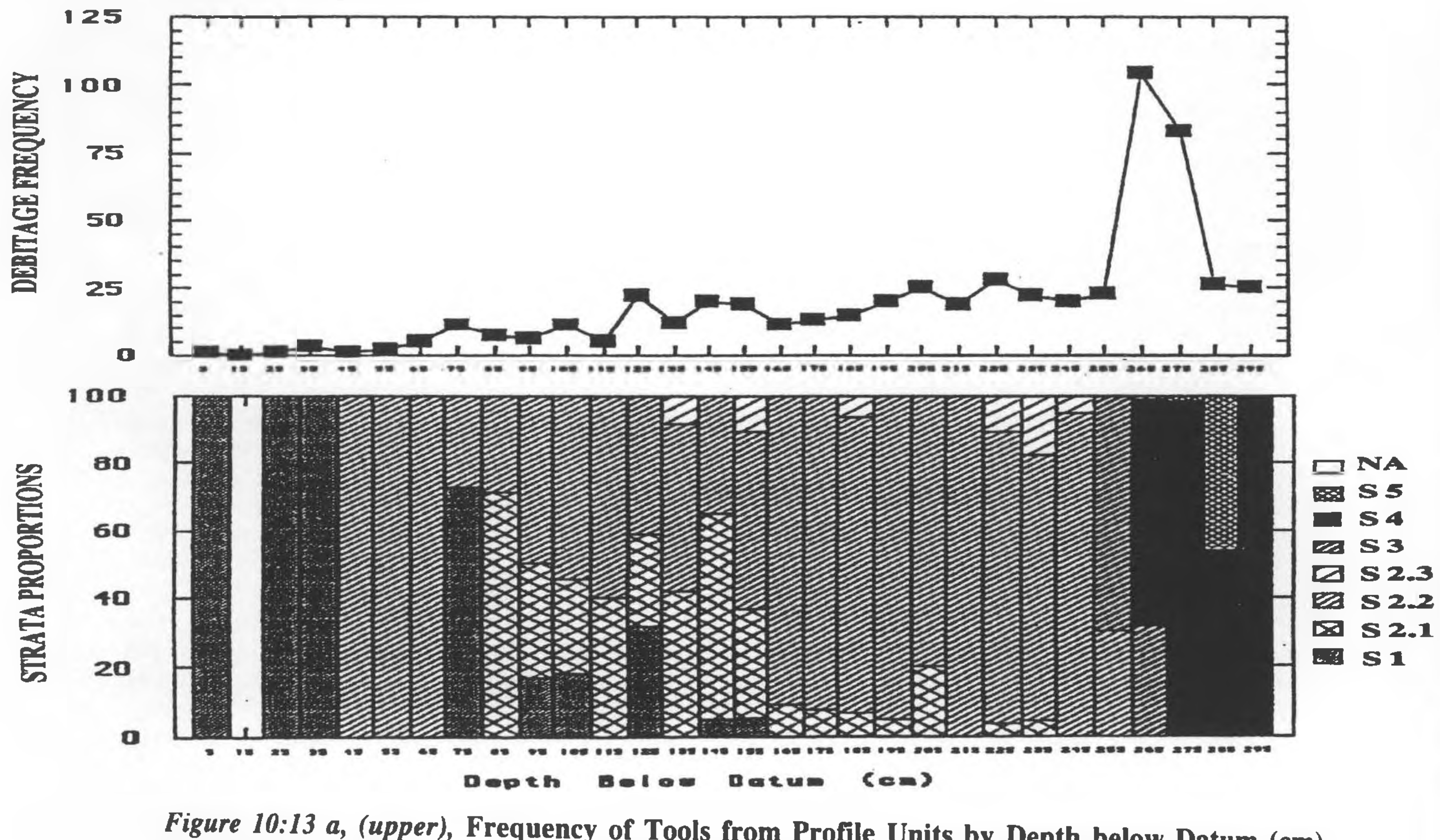


Figure 10:13 a, (upper), **Frequency of Tools from Profile Units by Depth below Datum (cm).** ***b, (lower),*** **Strata Proportions by Depth below Datum (cm) as extrapolated from Profile Unit Debitage Frequencies.**

noticeable in debitage distribution in Figure 10:12a. Between 265-275 cm BD, tool frequency peaks at 104 compared to the next highest value of 28, and debitage frequency peaks at 553. The next highest debitage frequency is 183 at 205 cm BD - forming a weak second peak. Aside from the individual pronounced peaks in each of these graphs, artifact frequencies are generally low with regular distributions.

Figures 10:12b and 10:13b present the 'relative proportions' of strata by depth below datum (in centimeters). These figures are derived from the cumulative percentages of artifacts within each stratum, per 10 cm level below datum. When paired with Figures 10:12a and 10:13a, he association between the vertical range of both artifacts and strata can be observed. As before, strata are provided central depth proveniences beginning at 5 cm BD. Figures 10:12b and 10:13b show very similar vertical distribution patterns per layer .Of interest are the distributions of Stratum 2.2 and Stratum 4, previously representing artifact frequency peaks. Significantly, Stratum 2.2 is vertically dispersed over a range of approximately 2.1 m between 145-255 cm BD, while the comparable verticalange of Stratum 4 is generally limited to the 20 cm between 260 and 280 cm BD. The additional range of Stratum 4 between 280-300 cm BD is associated with the rock-filled pit feature which intrudes into the sub-strate below 270 cmBD. Below 280 cmBD, artifact frequencies are insignificant. The pattern of primary interest is the peak in vertical artifact frequency associated with Stratum 4, and quickly diminishing distribution thereafter.

In relation to questions posed above, the data presented in Figures 10:12 and 10:13 indicate vertical clustering of artifacts between depths of 260 cm BD and 280 cm BD. Stratum 4 is predominantly concentrated within this vertical range. This range is consistent with the depth rf the Stratum 4 in Profiles A and B. Stratum 2.2, alternately, is dispersed over a vertical range of more than 200 cm. A weak debitage frequency peak remains identifiable within Stratum 2.2. Thus, the only pronounced artifact cluster exists in association with Stratum 4.

While a strong association of cultural material with Stratum 4 is indicated, the possibility of a second, overlying, cultural occupation cannot yet be dismissed. Graphs of cumulative vertical artifact frequencies by depth below an arbitrary datum only reflect artifact concentrations on level surfaces. Curvilinear artifact clusters associated with a concave ground surface or stratum, as at the Maurer site, would not be readily apparent in such graphs. Even so, weak indications of a second debitage distribution peak are noticeable. The effect of the curved surface is noticeable in the 'floating' 5 cm BD level in Figure 12b. This illusion is simply the result of the vertical rise between upper levels of units in markedly sloped sections of the profile. To compensate for this analytic drawback and investigate the possibility of a second cultural occupation, vertical artifact distributions are presented for each of the sampled units on Profiles A and B.

Artifact Distribution - Unit Specific

Figures 10:14 a, b (debitage) and Figures 10:15 a, b (tools) present artifact frequency profiles for the sampled units along Profiles A and B. Artifact frequency profiles were plotted to scale and overlain on stratigraphic Profiles A and B. It should be noted that sub-lettered figures correlate with profile designation, that is, Figures 10:14'a' and 10:15'a' correlate with Profile 'A,' while Figures 10:14'b' and 10:15'b' correlate with Profile 'B'. To permit horizontal continuity between graphs, artifact frequencies are plotted by depth below datum (in centimeters).

Four observations characterize the relationship between artifact and stratigraphic profiles,. and are best exemplified by the debitage profiles (Figures 10:14 a, b), summarized as follows:

- two distinct modes, manifest as either bimodes or individual upper or lower modes, are apparent in the artifact distribution profiles
- lower modes represent pronounced frequency peaks consistently associated with and limited to Strata 4 and 5
- comparatively less pronounced upper modes exist consistently within a limited vertical range between about 50-70 cm BS, creating a concave, crescent shaped band across both profiles
- upper mode frequencies increase west to east and are generally consistent north-south
- the transition to the lower, Strata 4 and 5-associated mode is typically abrupt - defining the separation between Strata 3 and 4

These four observations comprise basic patterns expected of a continuous, crescent shaped band of artifacts indirectly overlying a level, horizontally limited band of artifacts. Reproducing the bimodal pattern first described in Figure 10:10, these discrete bands suggest that two major cultural occupations are present within the area of the purported structural feature. The lower cultural band is positively associated with Strata 4 and 5 and contains high frequencies of both tools and debitage -- strongly suggesting a true floor or occupation surface assemblage. The upper cultural band is associated with a concave surface and contains far fewerrtifacts than its lower counterpart -- suggesting debris from a younger, less intensive occupation. The artifact cluster on that higher concave surface should also be identifiable through analysis of artifacts by depth below surface. Figure 10:16 represents cumulative debitage frequencies by depth below surface (cmBS). A distinct debitage cluster is identifiable between 55-75 cmBS, matching the profile pattern. These data support the presence of a second cultural component in the area of the Maurer feature. The vertical distance separating these two assemblages, and the abrupt artifact frequency transition, is suggestive of unmixed cultural components. However, while the majority of this evidence indicates discrete cultural components, two anomalous observations must be addressed.

Contrary to the bi-modal pattern with the abrupt transition, described above, the debitage profiles of Units 58 and 20 (Figure 10:14a) respectively depict a gradual downward transition to the 'lower' mode distribution, and an overall tri-modal distribution pattern. Interestingly, these anomalies occur at the lateral limits of the black layer. The gradually increasing artifact debitage frequency approaching Stratum 4, displayed in Unit 58, represents slumpage of debris from the adjoining ground surface -- approximately 40 cm higher. A similar explanation may be applied to the tri-modal pattern in Unit 20. The peak of the third mode is coincident with the level of the proposed bench, and tapers off downward toward Stratum 4. This pattern is, again, indicative of the accumulation of slumped debris at the edge of the recessed occupation surface. The following facts substantiate this explanation:

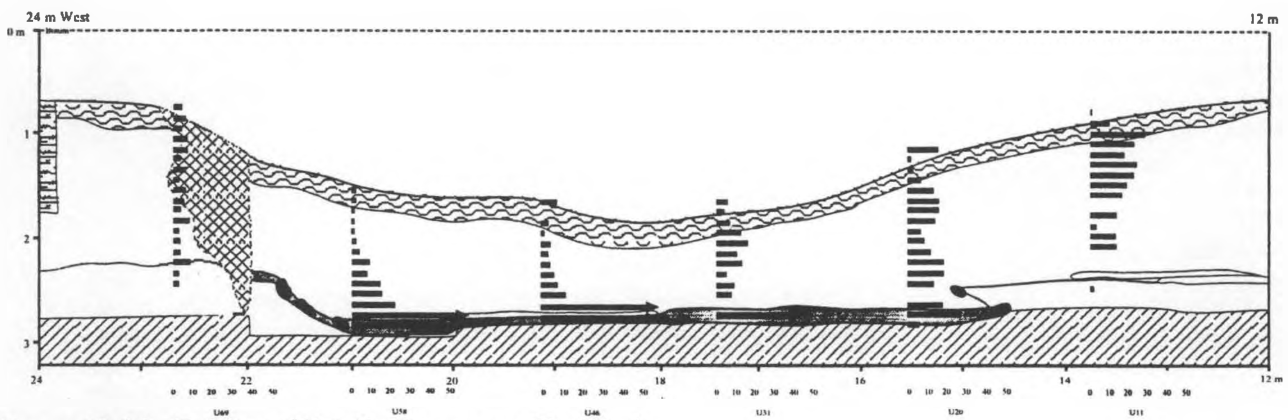


Figure 10:14a. **Debitage Distribution across Profile A.**

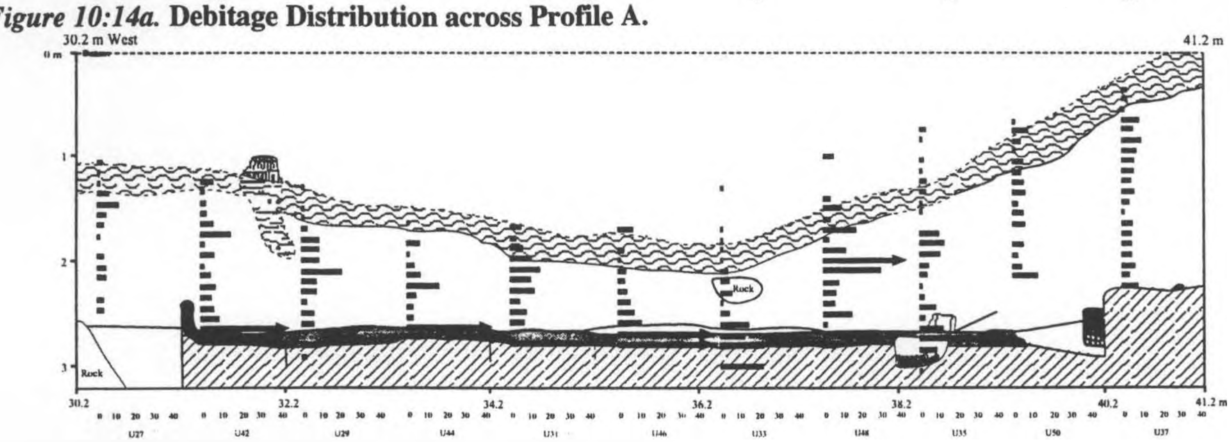


Figure 10:14b. **Debitage Distribution across Profile B.**

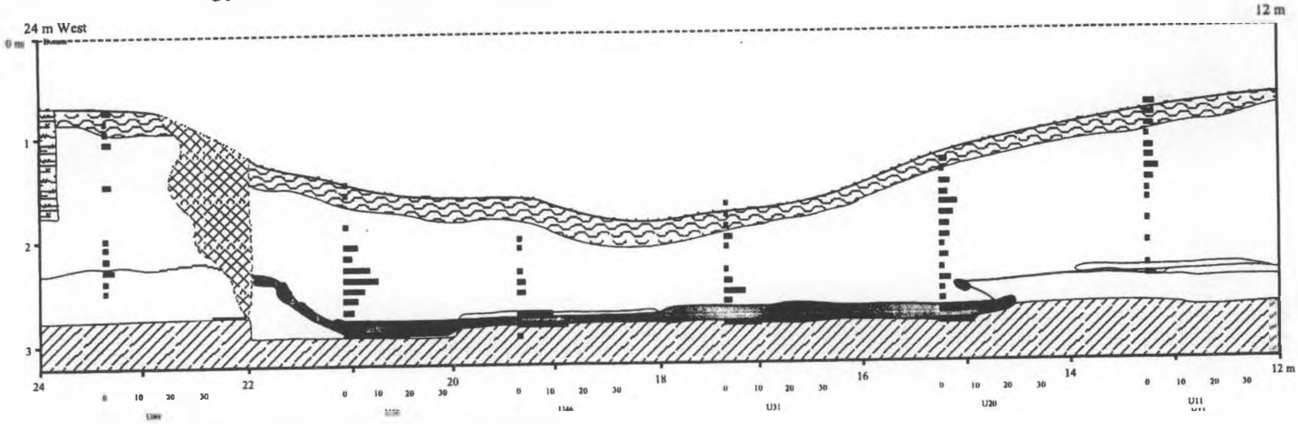


Figure 10:15a. **Tool Distribution across Profile A.**

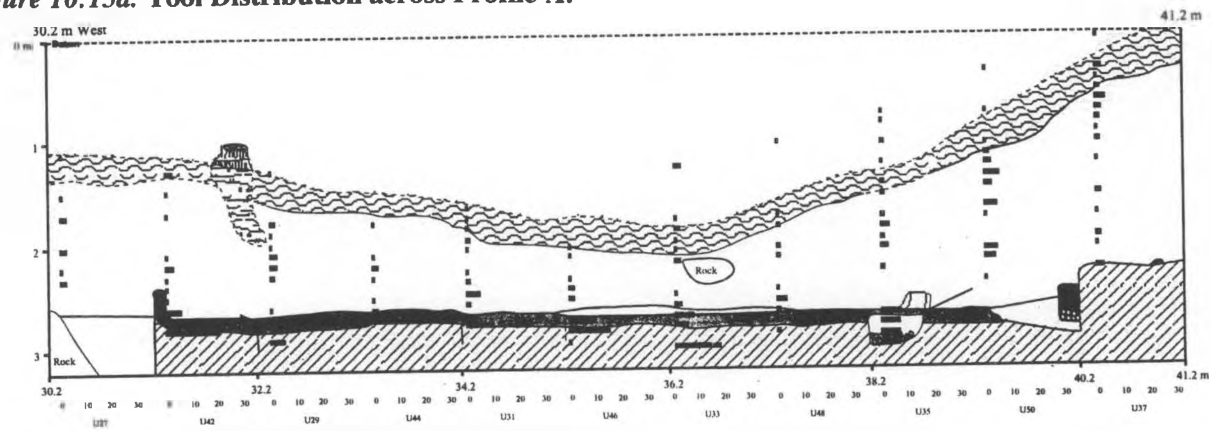


Figure 10:15b. **Tool Distribution across Profile B.**

- the apparent inward slumping of the dark stained band (possible wall remains) associated with the edge of the black layer (occupation surface or floor)
- the vague extension of the lens capping the mixed yellow-brown-gray sediments(Stratum 2.3) -- into which the floor appears to have been dug -- towards the inwardly sloping dark stained band (see Figures 10:14 and 10:15)

While sidewall slumping is generally expected to occur during post-abandonment erosion of structures with recessed floors, artifact frequencies and stratigraphic data coincident with Profile A indicate limited effects of this sort in the present case. While slightly higher debitage frequencies typify Stratum 3 deposits in Units 58 and 20, upper and lower assemblage mixing due to slumping is considered to be insignificant. Strata 3 (10 cm above occupation surface/floor) and 4 (occupation surface/floor) remain separable by the following:

- an abrupt stratigraphic transition
- significant differences in debitage frequencies, as evident in Unit 58
- significant differences in tool frequencies, as evident in both Units 58 and 20

Thus, contamination of the occupation surface/floor (Strata 4 and 5) with cultural material from the slumped ground surface does not appear to be a real detriment to the integrity of the Strata 4 and 5 assemblage. Additionally, no stratigraphic evidence of significant sidewall slumping is apparent in Profile B.

Sub-Occupation Surface/Floor Component

Given identifiable occupation surface/floor and overlying cultural components, the possibility of an earlier sub-floor cultural component must also be investigated. Whether or not the recessed occupation surface/floor intrudes into material from an earlier cultural occupation is an important consideration with potential taphonomic implications. Constraints on this aspect of the investigation are imposed by the variable depths of the excavated units and the fact that a definite sterile, natural basal deposit was not located by deep test excavations throughout the entirety of the feature area. Considering units along Profiles A and B, only Unit 27 (Profile B) depicts the sediment and cultural material below the exposed floor. Excavation of all the other analyzed units along the profiles stopped at the base of Stratum 5 or before reaching Stratum 4 .

Unit 27, located at the northern edge of the occupation surface/floor, provides a profile to a depth of 320 cm BD -- approximately 40 cm below the base of Stratum 5 (approximately 280 cmBD). According to the level notes for Unit 27, sediment is "yellow-brown [with] some dark brown blotches " between 240-250 cmBD and contains only three flakes (debitage). Levels below 250 cm BD are apparently sterile. At 260 cm BD, bedrock was exposed in a portion of the unit. Between 260 cm BD and the bottom of the unit at 320 cm BD, sediments graded from yellowish brown to gray and were mottled with iron-oxide staining. Though not excavated below Strata 4 and 5, the level notes for Units 42, 29, and 31 (Profile B) indicate that excavation of Strata 4 and 5 deposits ceased at the transition to a yellowish gray and/or gray substrate lacking the charcoal and mottled orange and black coloration of the occupation surface/floor. Three additional units, 69, 20 and 50 (Profiles A and B), adjoining the occupation surface/floor layer were excavated to depths minimally equivalent to the base of Stratum 5. Culturally sterile, yellowish gray or brownish gray sandy sediment predominated in these units at depths equivalent to or slightly below the base of Stratum 5.

Units 13 and 34, not covered by the profiles (see Figure 10:5), were excavated to minimal depths of 300 cm BD, or at least 20 cm below Stratum 5. Unit 34, located within the horizontal limits of the floor, contained only culturally sterile, loosely compacted gray sand between 280 cm BD and the unit bottom at 300 cm BD, except for a Stratum 4 associated pit feature. Unit 13, located adjacent to the floor but within the bench area (see Figure 10:5), contained only yellowish gray sediment between 235 cm BD and the unit bottom at 313 cmBD. Only three flakes (debitage) were found between 235-290 cm BD, No archaeological material was identified below 290 cm BD. A gray lens capping the yellowish gray sediment at 235 cm BD is the last substantial artifact-bearing facies in this unit.

The sediments into which Strata 4 and 5 intrude appear to be devoid of cultural material. The floor deposit is described as being contained within a gray sandy sediment, a portion of which directly overlays bedrock. The description of this sediment matches the natural C horizon discussed earlier. Basal cultural deposits are generally coincident with the B-C horizon transition between roughly 235-240 cmBD. The floor layer appears to be intrusive into the archaeologically sterile C horizon. While a sub-occupation surface/floor cultural component cannot positively be ruled out, there is no evidence in the existing data set to suggest that:

- a cultural component was present within the sediment into which Strata 4 and 5 intrude
- an earlier, underlying cultural deposit exists below Stratum 5

Thus, mixture of artifacts from previous cultural occupation(s) and the Strata 4 and 5 deposit does not appear to be a taphonomic factor affecting the Maurer feature.

Interpretive Summary - Profiles A and B

Analysis of stratigraphy and artifact frequencies along Profiles A and B provides only a portion of the data required in testing the 'structural' assertion presented in this section. From the above analysis, evidence was presented that supports a number of preliminary conclusions:

- two major cultural components are present in the area of the Maurer feature
- the lower cultural component is directly associated with an anomalous (that is, unnatural) stratigraphic layer ('Strata 4 and 5')
- the anomalous layer represents an occupation surface or structural floor
- the occupation surface/floor is recessed 30-40 cm below what is either a surrounding bench feature or the associated ground surface
- the black, linear band at the lateral margins of the occupation/floor surface represent the remains (decayed or carbonized) of a wooden retaining wall which extends vertically to the surrounding bench/associated ground surface
- the fire-cracked and thermally altered rock-filled pit directly associated with Stratum 4 represents a hearth feature
- the occupation surface/floor has been oxidized -- resultant from either burning or natural pedogenic processes -- as indicated by sediment oxidation and charcoal mottling across its surface, and blackened organic remains at its lateral margins
- only one occupation surface/floor zone is identifiable in the stratigraphic profile

These conclusions indicate only the presence of a subterranean floor or occupation surface. Little evidence of structural elements associated with this occupation surface/floor can be identified in Profiles A and B, except a hearth and remnants of a retaining wall. While there does appear to be an exterior surface with which the occupation surface/floor is associated, it remains unclear whether this is the prehistoric ground surface or the structural bench feature reported by LeClair (1976:35). Additional data are required to clarify these ambiguities. To address such issues, the following section presents additional data from the plan diagrams of the excavated feature. For simplicity, Strata 4 and 5, the occupation surface/floor zone, will be referred to as an 'occupation surface' in the following sections.

Plan Diagram Analysis

Plan view depictions of the Maurer feature are available from three main sources:

- field photographs of the exposed occupation surface and surrounding bench
- plan drawings from the 1973 excavation
- plan view reconstructions produced for the present study

Detailed photographs of several features and a number of original plan drawings accompany the 1973 excavation documents. The feature plans are somewhat variable and appear to represent different stages of analysis, from preliminary to finalized versions. Post-hole patterning is particularly variable between these plans, diminishing from 58 to 24 post-holes between preliminary and finalized plan versions. None of these counts match the "25 post-moulds" in LeClair's published description (1976:35). In the following section, LeClair's finalized plan will be presented and compared with a reconstructed plan drawing based on information from excavation unit notes and photographic evidence. A reliable plan is developed from this comparison. Lastly, structural elements observable in this array of evidence are investigated.

LeClair's finalized plan diagram of the exposed feature (see Figure 10:17) closely matches his description of the structure (1976). Evidence is provided for a recessed, central occupation surface associated with an elongated hearth, a surrounding bench, a number of post-holes and an entrance in the east wall. While this plan accounts for all the basic elements of LeClair's rectangular structure, the observed post-hole pattern is inconsistent with his description. Post-hole patterning is difficult to discern -- two types of post-holes (angled and vertical) are present, post-hole diameters are variable and evidence of aligned patterning is generally lacking. The association between post-holes and other structural elements is less obvious than was originally reported. The variation in the depicted post-hole pattern (Figure 10:17) increases substantially when post-holes from all three of LeClair's plan drawings are cumulatively considered.

Floor and bench representations are generally consistent between all three versions of the plan. With a total of 58 post-holes, the pattern observed in Figure 10:17 becomes more complex and somewhat less apparent. Twenty-three small posts (possibly stakes) only indicated on what appears to be the most preliminary of the three plans, precisely surround the bench, about a meter from the edge of the recessed occupation surface. Thirty-five larger, vertical and angled post-holes are distributed as depicted in Figure 10:17. "Rock" clusters are distributed across the bench, which is variably described as having "slight" to "no" charcoal associated with it (LeClair, plan drawing notes, 1974). Importantly, depths below datum are provided for the tops of most of the post-holes, a number of points on the bench surface, a number of points on the recessed occupation surface and the vertical extent of the hearth. Bench (230-240 cm BD) and occupation surface depths (260-280 cm BD) are consistent with Profile A and B measurements.

Post-hole (top) depths were evaluated to establish their vertical association with either the occupation surface or the bench. Post-holes with depths less than 220 cm BD were considered to lack association with either the occupation surface or bench. All the angled post-holes, ranging in depth between 120-180 cm BD, are associated with the upper rather than the lower cultural component previously identified. The arrangement of the angled posts is reminiscent of A-frame, pole-constructed, fish drying racks ethnographically documented in the upper Fraser River valley and Fraser Canyon. Their presence suggests that such a structure(s) may have been constructed in association with the upper cultural occupation. Thus, the angled post-holes cannot be considered elements of the feature under investigation and are, thus, not included in the revised feature plan.

Plan Reliability

A reconstruction of the feature plan (see Figure 10:18) was prepared to provide a basis for assessing the reliability of the LeClair's original structural plans. This reconstruction was based on available forms of information, including excavation unit notes, photographs and artifact catalogue entries. Similar to the profile reliability tests, degrees of similarity and dissimilarity are discernible between original and reconstructed diagrams. Differences (that is, irreproducible elements of LeClair's plans) are summarized as follows:

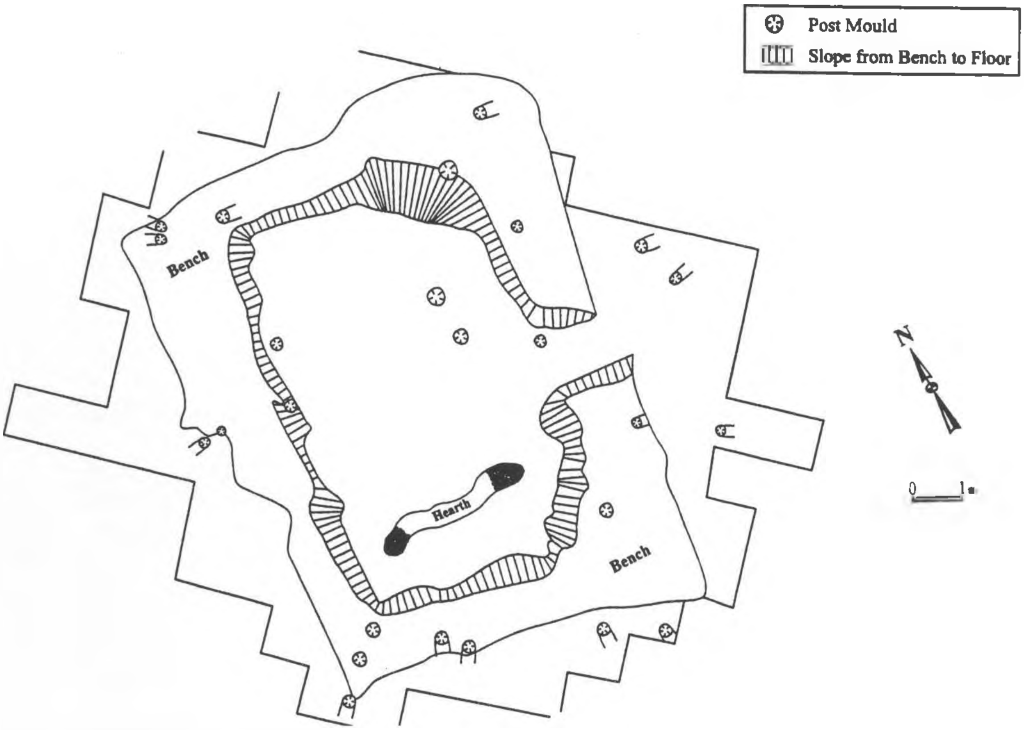


Figure 10:17. **Original Finalized Feature Plan**

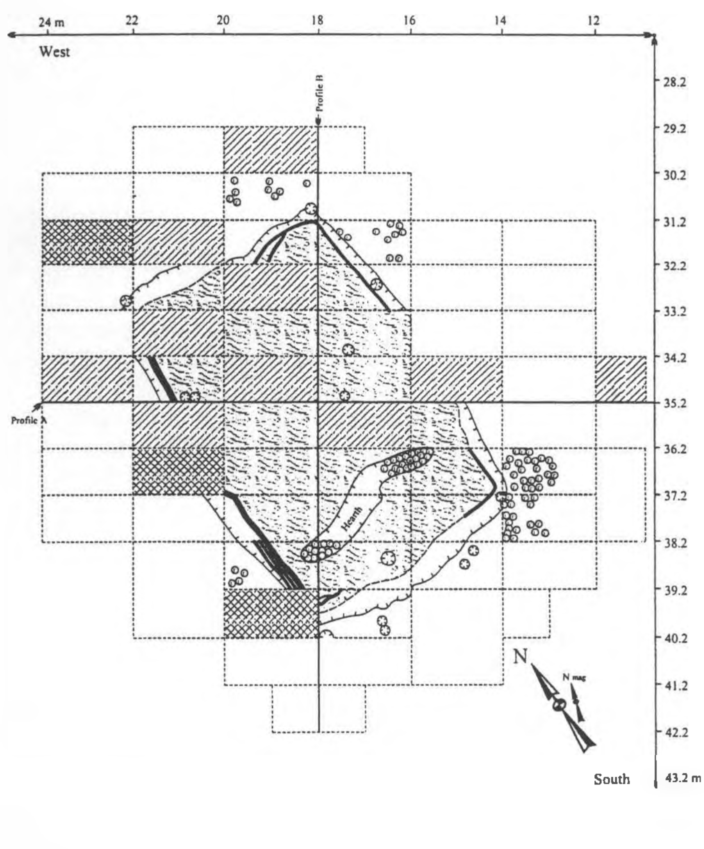
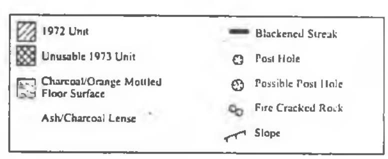


Figure 10:18. **Reconstructed Feature Plan.**



• none of the 23 small post-holes outlining the bench in the original plan(s) were reproducible

• the hearth feature differs slightly in position between the two diagrams

• definite evidence for a structural entrance is lacking

• the reconstructed occupation surface shape is more regular and complete than in LeClair's plans

Similarities (that is, reconstructible elements of LeClair's plans) include:

• a generally rectangular shape of the occupation surface

• depth of the recessed occupation surface

• dark, organic streaks defining the margins of the occupation surface

• notation of the vertical position of the dark perimeter streaks between the occupation surface and the bench surface approximately 30 cm higher

• fire-cracked and thermally altered rock (FCR) distributed over the bench surface

• thin ash and/or charcoal lenses distributed over portions of the bench surface, particularly the south end

• the position of some post-holes around the rim of the occupation surface depression

In the following section, I present reproducible plan elements in a reliable feature plan diagram.

Reliable Plan Interpretation

The reconstructed plan depicted in Figure 10:18, based on reproducible elements, is considered to represent a reliable feature plan diagram and will be referenced as such in the following text. Positions of the hearth and the post-holes in the northwest corner and center of the floor, as depicted, are observable in photographs taken of the exposed feature (see Figure 10:19; Section II). The reliable plan differs from LeClair's plans in two significant ways:

• post-holes in the reliable plan surround only the recessed floor (that is, they do not encompass a 'bench')

• in the reliable plan, the 'bench' lacks peripheral definition and is primarily associated with fire-cracked and thermally altered rock debris (as became apparent through inventorying the bench level material)

These differences are significant for two reasons:

• the occupation surface appears to have been enclosed by a wall constructed around the immediate margin of the depression rim, as indicated by the identified post-hole locations

• the' bench' may alternatively be interpreted as the original ground surface outside the wall, upon which refuse (e.g., hearth contents such as fire-cracked and thermally altered rock, ash and charcoal, debitage, etc.) accumulated

This midden should have a sharply defined 'inside' margin where it accumulated against and abutted the proposed wall. The 'outside' margin of the midden deposit, where it was not retained by the wall, should be less well defined and have a more diffuse edge than the 'inside' margin. This basic pattern is identifiable in the reliable plan.

A second argument against the existence of a discrete sub-structural bench feature is based on the distribution of proposed super-structural remnants. If the bench were contained within a walled structure, as implied by LeClair, evidence of the remains of the encompassing super-structure, whether subject to rapid combustion or slow pedogenic decomposition/carbonization, should be apparent on portions of the occupation surface and bench surface. However, such evidence is not apparent on the bench surface. Oxidized, carbon and ash mottled sediments on the bench surface are minimal and appear only as sporadic lenses, apart from the wall edge. The occupation surface, alternately, is moderately to heavily carbon mottled and consistently oxidized. No identifiable features, such as post-holes, indicate the inclusion of this 'bench' surface within the super-structure. Therefore, the presumed bench does not appear to have been contained within the super-structure. More explicitly, the 'bench' is not considered to be a part of the sub-structure but represents, rather, the original ground surface into which the occupation surface was excavated and on the lip of which the super-structure was constructed. Midden development accounts for the cultural material located on this ground surface, outside of and surrounding the recessed feature.

r It is now possible to present reliable evidence verifying portions of the sub-structure, sub-structural features and super-structure. Primarily, the sub-structure consists of a floor layer. This layer was previously identified as an 'occupation surface.' Now provided definite association with the feature's super-structural elements, I present this 'surface' as a sub-structural floor feature. The floor, as described in plan view, is:

• subterranean –excavated 30-40 cm below the original ground surface

Figure 10:19. **The exposed Feature - oblique View from the SW Corner. (Photo: LeClair).**

- rectangular – 7.5 m long by 5.0 m wide
- oriented N-S

The floor surface, which is relatively level (slopes slightly to the NW), is generally oxidized with an apparent carbon mottled matrix. Floor surface depths range from 259-275 cm BD. The margin of the floor is partially defined by 5-8 cm wide linear streaks (described as "burnt timber(s)" - Unit 58, 270-280 cm BD Level Notes). These linear streaks are similar to the description of the edges of wooden planks and plank outlines documented at the Ozette (Mauger 1978:183-185) and Scowlitz sites (Sandra Morrison, pers. com. 1997).

Such streaks extend vertically from the floor to the ancient ground surface some 30-40 cm above the floor surface. From this description, it appears that horizontal planks were laid on-edge to form a subterranean retaining wall at the perimeter of the recessed floor. Though incomplete, the implied plank remnants conform with the edge of the floor matrix and form a regular, rectangular outline. Additionally, evidence is shown by the small post-holes in Unit 58, and possibly in Unit 29, for stakes abutting the retaining wall. These stakes would have provided necessary vertical support to this retaining wall, keeping it from collapsing inward onto the floor.

According to analyses of local pollen spectra, western red cedar (*Thuja plicata*), became established in the upper Fraser River valley region nearly 6000 years ago [6820 cal BP] (Hebda 1966:64; Mathewes 1973:2100). By the period represented by the earliest date reported for the Maurer site, western red cedar would have been available as a usable resource. It is, therefore, possible that the outlines are the decomposed or carbonized remnants of cedar planks.

Carbonization of wood due to exposure to fire is one explanation for the preservation of the plank remnants as linear streaks of blackened organic matter. Apparent plank remnants are minimal in the south end of the house, nearest the hearth where exposed wood may have been a fire-hazard. If the hearth were the source of an accidental fire, wooden material nearest the hearth may have been more completely burned than that farther away. Earthen insulation of the plank retaining wall may have acted as a fire retardant, preventing complete consumption of the wood and stabilizing the charred remnants. Uninsulated wooden walls, stakes and posts may either have burned completely or been partially burned and scavenged as fire-wood, charcoal or still usable construction material, potentially accounting for their absence. Charcoal flecks and orange oxidized sediments within the floor matrix, particularly at the surface, provide supportive evidence of a burning event within the presumed structure.

Alternately, the preservation of the apparent plank remnants may be due to *in situ* pedogenic processes. As previously noted, slow decay of wood in acid rich sediment can resemble the effects of rapid combustion and result in the blackening of such remnants. Sediment oxidation through long-term soil-forming processes can also simulate the appearance of burned sediments. Whether through combustion or pedogenic decay, portions of the wooden sub-structure were preserved as remnant, black linear streaks and an orange oxidized and charcoal flecked floor surface. Insufficient data are present to definitively determine which process affected these organic remains.

Sub-structural features include a hearth and a number of post-holes and stakes. The hearth, excavated into the southern end of the floor (see Profile B), is approximately 3.5 m long by 0.3 to 0.4 m wide and 0.3 m deep. Charcoal and thermally altered rock are located at both ends of the hearth and charcoal impregnated fill lines the feature between these clusters. Additionally, four probable post-holes, (see Appendix II for post hole diameters) are located in the northern half of the floor.

Super-structural features include seven post-holes located around the rim of the floor depression. These include four large posts, one located at each of the floor pit corners, and three smaller diameter posts or stakes, situated in a line between the SE and SW corners. The larger post holes range between 20-26 cm in diameter, averaging 24 cm in diameter. All seven of the post / stake hole features are associated with the ancient ground surface between 230-240 cmBD. There is no indication of the type of wall or roof material supported by these posts. Super-structural wall and roof materials appear to have completely deteriorated.

Structural Taphonomy Reconsidered

Patterns in the stratigraphy and vertical distributions of artifacts presented above provide a basis from which to identify taphonomic agents which have affected the Maurer feature. A number of the factors, per the taphonomy list presented earlier, can be addressed. Summary assessments of these factors are presented below.

A subterranean floor, excavated 30-40 cm into the surrounding ground surface is the dominant representation of a structure at this site. Available data suggest this floor was excavated into a sterile substrate. If underlying cultural deposits are present, they are located below the basal level of the floor and floor features. Mixing of artifacts from an earlier cultural component with the floor assemblage does not appear to have occurred. Collapse of the structure appears to have occurred rapidly, as indicated by a lack of siltation between the floor matrix and any overlying decomposed or carbonized structural remnants. Resultant deposition of artifacts from a possible roof assemblage onto the floor surface does not appear to be a factor due to the rather abrupt transition in artifact frequencies between Stratum 4 (the upper floor zone) and the immediately overlying 10 cm, Stratum 3. Limited slumpage of the floor depression sidewalls is apparent. However, structural collapse appears to have preceded post-abandonment slumping. The transition between the charcoal and oxidized sediment capped floor and the overlaying slumpage around the edge of the floor is abrupt and easily identifiable in the stratigraphic profiles. Noticeable effects from slumping are limited to a slight obscuring of the floor perimeter.

Slow, natural size-sorted filtering of artifacts onto the floor has not yet been addressed in this study. In an attempt to identify natural sorting, I analyzed the relative proportions of different sized artifacts by depth below surface (DBS). Figure 10:20 presents the relative proportions of size-graded debitage by DBS based on cumulative debitage frequencies from the sampled profile units. Debitage size grades correspond with Ahler's mass analysis technique (1986) and are the result of sorting by 1", 1/2" and 1/4" screens. If size-sorting is a factor affecting the vertical distribution of artifacts within the Maurer feature, an inverse correlation in the proportions of small and large debitage, increasing by depth, should be evident. This pattern should be most clearly represented in the G2 and G3 debitage proportions, given their similar frequencies (G1 = 178, G2 = 1,255, G3 = 1,066). Analysis of the data plotted on Figure 10:20 shows no such correlation between any of the debitage size grades. Proportional fluctuations occur throughout the vertical extent of the profiled area. Natural size-sorting appears not to have affected the integrity of this portion of the site.

In relation to episodes of abandonment and reoccupation, profile analysis indicates the presence of a vertically undifferentiated floor layer between 10 and 15 cm thick. While the depth of the accumulated floor deposit indicates use of the floor over an extended period of time, specific occupation episodes are not definable. Occupation of this floor surface appears to have continued without identifiable floor reconstruction. Floor features are all associated with the floor surface, indicating continual structural maintenance and repair during the course of the structure's occupation. In relation to the super-structure, post-holes are relatively few in number, indicating relatively static structural supports which either lasted the lifetime of the structure or were repaired and/or replaced using the same post-hole locations. While the floor appears to have been either continuously or periodically occupied, there is no available evidence to indicate significant reconstruction of either the sub-structure or super-structure.

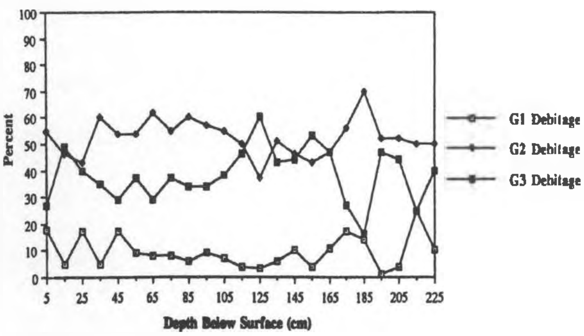


Figure 10:20. **Proportion of Size-graded Debitage by Depth below Surface (cm).**

Final abandonment of this structure appears to have been coincident with the apparent collapse of its super-structure, possibly due to partial or complete burning. Overlying sediments are comprised of silt deposits with low frequencies of artifacts. The profile of these deposits indicate that they accumulated on a concave surface, formed by the slumping depression. Approximately 30 to 60 cm above the floor, an accumulation of cultural material from a second cultural occupation accounts for roughly 50 to 60 cm of continuous deposition of cultural matrial. Angled post-holes originating within the vertical range of this deposit suggest light-framed structure(s) -- possibly A-frame racks -- associated with this younger cultural component. Approximately 15 cm of insubstantial cultural deposits accumulated above the second component, representing the deposits exposed on the contemporary ground surface.

Evidence of post-contact use of the site is provided by green glass shards and machine-cut, wire nails, restricted to Stratum 1. Additional recent surface remains are identifiable in photographs of the Maurer site taken at the beginning of the 1973 excavation. As mentioned previously, a wooden bin and a post (depicted in the original Profile A) were located at the edge of the depression. Evidence of significant recent disturbance of the site is limited to the 10 excavation units dug in 1972. Seven of these excavation units directly impacted structural elements under investigation.

Tree roots and other bioturbation agents are additional factors to be considered in this study. Visible tree root disturbances are depicted in a number of reconstructed unit profiles, though not in Profiles A or B. Moreover, these either did not reach the floor zone, or were no longer visible at the time of excavation. LeClair's Profile A provides possible evidence of rodent burrow disturbance within Unit 46. This apparent burrow extends from the upper portion of the site deposit to the floor at approximately 35.2 m South and 19 m West. Thus, artifacts may have been displaced by rodent burrowing and will be further examined in the following section.

In summary, relatively few taphonomic agents appear to have acted to disturb the integrity of the identified structural remains. Mixing of artifacts between floor and surrounding deposits is not observable to any significant degree. With the exception of super-structural elements, the remains uncovered during the 1973 excavation appear to have a high degree of overall integrity.

Evaluating Question One

The preceding portion of this section provides the framework for evaluating Question One -- that the remains uncovered during the 1973 excavation of the Maurer site are those of a structural feature. I used available data to evaluate a set of expectations developed in support of this question. Multiple lines of evidence (floor plans, stratigraphic profiles, artifact distributions, field records) substantiated the presence of directly associated sub-structural (including sub-structural features) and super-structural elements. Taphonomic factors discussed in this section cannot be considered responsible for the formation of the observed patterns. On a general level these attributes meet the explicit expectations required to verify this structural feature. Thus, the question that the feature excavated at DhRk 8 represents the remains of a structure is accepted.

However, while Question One can be accepted at a general level, there is some divergence between the demonstrable pattern of structural remains and those described by LeClair in his preliminary report (1976:35-36). My analyses presented in this section result in a lack of verification of several expectations and in significant changes in the following:

- the internal bench feature originally thought to be part of the structure's architecture was, rather, an external midden and results in a significantly reduction of the floor area and alteration of the perception of the structure's architecture
- all of the small diameter, angled post-holes previously thought to define the bench perimeter were associated with a younger, overlying cultural component rather than the structure, itself, and this also changes the perception of the structure's architecture
- the feature was a plank-walled structure, a previously unspecified detail

A revised structural description, incorporating these differences, is presented below.

Revised Structural Description

The Maurer structure can now be confidently described as a north-south oriented, 7.5 m x 5.0 m, shallow semi-subterranean (0.3 - 0.4 m deep), rectangular structure with a floor surface area of 37.5 square meters. In the absence of angled post-holes, extrapolation of its roof height is not possible. Post-holes associated with this structure are all vertical in cross-section, so perimeter walls were vertical rather than angled. An interesting post-hole pattern is suggested by the position of large post-holes at the corners of the structure with smaller post-holes (i.e., stakes) placed in-between. This pattern is best observed along the south edge of the floor pit and resembles that of the 'rafter support post/wall pole' systems associated with plank-walled structures at the Ozette site (Mauger 1978:142-143, 151-152). Large corner posts function as weight-bearing supports, while planks are lashed to smaller, intermediate retaining posts or stakes. The post-hole pattern at Maurer suggests a similar architecture.

Apparent plank retaining walls, lining the floor pit side-walls, extend vertically between 30 to 40 cm from the floor surface to the ancient ground surface into which the floor was recessed. Small interior posts (stakes) abutting the retaining wall appear to have acted as reinforcements, preventing the retaining wall from collapsing inward. A 3.00 m long x 0.35 m wide x 0.30 m deep hearth, with fire-cracked and thermally altered rock concentrations at its extremities is located in the southern third of the structure. Four possible post-holes are located in the northern half of the floor. No substantial evidence exists for the location of an entrance. Refuse appears to have been deposited around most of the outside perimeter of the structure, forming a midden. Accumulation of a 10-15 cm thick floor deposit, confined within the floor depression, indicates extended use of the structure.

It should be explicitly stated that the Maurer feature was a quasi-permanent structure. While elements of the structure were likely transportable, such as the above ground wall and/or roof elements (possibly planks), portions of the structure represent permanently set, non-transportable features such as the recessed floor, hearth and large corner-posts. While the architecture of the Maurer structure has been analyzed, the function of this quasi-permanent structure remains to be assessed. Analyses of the types and patterns of artifacts associated with the floor are carried out in the following Section II.

Section II: Evaluating Function – Was the Maurer Structure a House?

As a basis for testing this question, I developed a set of archaeological expectations generally associated with houses (i.e., domestic residences). I assess taphonomic factors possibly affecting the floor assemblage, and investigate the frequencies and functions of artifacts associated with the floor and floor features.

Expectations

The limited data from the Maurer structure - only lithic artifacts and a few structural features - must be accommodated in any comparisons. Development of a comparable set of testable expectations was hindered by the lack of precedent for functional tests of this sort on the Northwest Coast. Structures identified in archaeological sites have generally been assumed to be houses without critical evaluation. Alternate functions are rarely considered even though this actuality is documented in both the ethnographic and prehistoric records (Moss and Erlandson 1992). While a number of apparent prehistoric houses have been excavated in the upper Fraser Valley (e.g., Hanson 1973; von Krogh 1976), more useful descriptions of prehistoric house assemblages are provided by pithouse analyses at the Keatley Creek site in the Fraser Canyon (e.g., Spafford 1991; Hayden and Spafford 1993). Ethnographically documented residences.facilitated identification of houses at this site by strong analogic association. Despite the lack of comparable data for Maurer, hypothetical expectations of house associated assemblages may be developed provided guiding assumptions are explicitly stated.

The expectations I present in support of a house function for the Maurer structure are based upon the notion that the household is the center of production and the basic socioeconomic unit of society (Mitchell and Donald 1988:313). Thus, such a household group carries out a wide range of activities, material correlates of which should be associated with the structure they inhabit(ed). Again, the Keatley Creek site offers a number of parallels to the Maurer site. There, floor-associated artifact distributions were analyzed with respect to defining activity areas, the way house space was functionally appropriated. Spafford's (1991) analysis of artifact distributions on housepit floors revealed cooking and storage features, and artifactual evidence of flintknapping, hide processing and food preparation activity areas. The functional analyses and types of structures at Keatley Creek provide a scenario similar to that of the Maurer site, although modeling of house function at Maurer based on analogies to Keatley Creek is necessarily limited to the most general comparisons.

As the residence of a household group, a house functions as an inhabitable shelter. Within this shelter, space is usually provided for consumption, production and living. Consumption activities include:

- food preparation
- cooking
- eating

Production activities include:

- tool production
- tool maintenance
- the production and maintenance of various non-food items

Living activities include:

- sleeping
- socializing
- entering and exiting the structure

These three activity sets, heretofore cumulatively referred to as household activities, are wide ranging and, together, are presumed to correlate with house function. Material remnants of such household activities are possibly preserved in the forms of structural features, botanical and faunal remains, chemical signatures and artifacts. At Maurer, such material evidence is limited to lithic artifacts and structural features.

A basic premise is that if the Maurer structure functioned as a house, floor features and artifacts from the floor deposit should be associated with consumption, production and living related activities. Floor features should include:

- a hearth for cooking, heat and light
- storage pits (possibly)

The artifact assemblage from the floor should include:

- tool types indicative of a variety of functions, such as cutting, scraping, incising, piercing, grinding, hammering

Additionally, debris from household activity, that is the floor deposit, is expected to reflect either continuous or intermittent extended occupation of the structure should be indicated by:

- hearth(s) with a high degree of use
- a rich, possibly thick organic floor deposit
- possibly numerous and varied artifacts

These qualities, reflecting intensive use of the structure for consumption and production activities, are proposed as indicators of house assemblages. Variations in predicted patterns might indicate alternative functions for the structure. Evidence of less intense occupation and/or the prevalence of artifacts associated with either consumption or production activities might indicate specialized use as a fort, refuge, resource processing, or ceremonial structure. These expectations are believed to be valid for house assemblages in which the household unit represents the basic means and mode of production. Though simplistic, this set of expectations can be tested against the material remains from the Maurer structure.

Taphonomy

Beyond the problems related to developing testable expectations, other factors interfere with the ability to test Question Two. Using data derived from excavation methods that were not explicitly designed to test this hypothesis represents one such confounding factor. The 'coarse' excavation methods employed at Maurer in 1973 (e.g., arbitrary 10 cm levels; not providing floor-associated artifacts with three-dimensional provenience;

vague descriptions of features) also compromise my ability to adequately test Question Two. The concentration of the excavation on the area within the structural feature also limits this study to the analysis of the floor-specific assemblage. It should be noted that the entire range of household activities may not be performed inside the house, and floor assemblages are potentially subject to a number of taphonomic factors. While the former limitation represents an unavoidable deficit to this study, its effects identifiably reduce the level of resolution of the ensuing analyses. The latter limitation -- floor taphonomy -- must be considered in greater detail before its associated effects may be likewise identified.

In Section I, taphonomic processes were considered in relation to the general integrity of the structural feature. The conclusion that the floor, as a structural feature, appeared to be relatively intact, is not necessarily transferable to all portable, floor-associated artifacts. A number of taphonomic agents possibly affecting the position of artifacts recovered from the floor must be investigated prior to interpreting floor assemblage distributions as anthropogenic. Inter-component mixing, one taphonomic agent previously examined, does not appear to have affected the development of the floor assemblage. However, additional taphonomic agents which must be considered include:

- periodic cleaning of all or part of the floor
- post-abandonment recycling and scavenging of tools and raw material
- post-abandonment bio- and cryoturbation (that is, rodent burrowing, animal scavenging, frost heaving) of the floor surface
- post-abandonment discard of non-occupation associated artifacts in the structure

These taphonomic factors may have affected the original floor assemblage composition and disturbed primary spatial patterning.

As a subtractive mechanism, periodic floor cleaning is likely to have had the most profound effect on the assemblage. In living areas, cleaning was most likely a continuous practice responsible for removal of most of the accumulated debris. In areas where consumption and production activities took place, cleaning may have been less frequently and/or thoroughly practiced. Floor cleaning is likely to maintain artifact-clear living areas, while debris is more likely to accumulate around consumption and/or production activity areas. Debitage and broken tools are most likely to be reduced in number by cleaning practices. Functioning tools and usable raw materials would not be expected to have been removed in this manner. Cleaning is therefore considered to be only partially effective in disrupting floor assemblage patterns. Conversely, cleaning may maintain clear floor areas indicative of living spaces.

Post-abandonment scavenging or recycling of artifacts remaining on a floor surface is more likely to result in the removal of usable raw materials and tools. I hypothesize that broken tools, expedient tools lacking labor-added value, debitage and commonly available raw materials represent unlikely targets of scavenging. Exotic raw materials, complete formed tools -- particularly those whose manufacture is labor intensive, such as bifaces and ground stone tools -- prepared cores and ornamental goods are considered to represent items more likely to retain value and, therefore, be scavenged. As such, the extent of scavenging may be related to the nature of the floor assemblage itself. Floor assemblages containing valuable items are logically more prone to scavenging or recycling than those lacking such items. Scavenging is not likely to remove all such artifacts, particularly those accumulated within deposits below the floor surface and not readily visible. Theoretically, the possible extent of scavenging can be inferred from the artifact proportions in the remnant floor and sub-floor assemblages.

Bioturbation is considered to have been minimally disruptive to the Maurer structure floor assemblage. Artifact positions can shift considerably as a result of bio- and cryoturbation. Identifiable bioturbation is restricted to minimal evidence of rodent burrowing in LeClair's Profile B.

Additive taphonomic processes may also be considered. Though slim, the possibility that artifacts were secondarily added to the floor assemblage does exist. Mixing from over- or underlying cultural deposits has been ruled out as a significant additive factor. Use of the floor for purposes besides its principle function, such as dumping refuse, may have occurred during intermittent periods of disuse separating transitory occupations of the structure, if such periods existed. While there is no clear evidence of intermittent occupation of the Maurer structure (such as, waterlain silt or humified lenses, and floor reconstruction), such a scenario is possible. However, it is likely that any material deposited in the structure during periods of disuse would have been removed upon reoccupation. The probability of such material remaining on the floor of the structure, mixed with the actual household deposits, is largely dependent upon the nature of the structure's abandonment and speed of its collapse. Given that the abandonment of the Maurer structure and the ensuing collapse and decomposition of its super-structure appears to have occurred rapidly -- possibly as a result of burning -- post-abandonment deposits would likely lay above the floor, separated by the super-structural remnants which apparently cap the floor. The abrupt transition both stratigraphically and in artifact (particularly debitage) frequencies between Strata 3 and 4 is considered to illustrate this situation. Therefore, as artifacts directly associated with Stratum 4, the floor surface, appear to be isolated from overlying, post-abandonment accumulated deposits, additive taphonomic processes are not considered to be significant factors affecting the floor deposit.

The effects of taphonomic agents presented in this section are generally more difficult to identify than those discussed previously. Taphonomically, human cleaning and scavenging/recycling of the house floor remain potentially significant factors whose possible effects are investigated in the following section.

Methods

The artifact frequencies presented in this section represent the entire Maurer floor assemblage. I derived data for this stage of the analysis from portions of 20 excavation units comprising the majority of the floor area. Data from a number of excavation units (from both the 1972 and 1973 excavations), which affected part of the floor area, were not available. The available data represent approximately 75% of the total floor area, with the missing portions primarily confined to the central and northern portions of the structure (see Figure 10:18).

Data for floor associated (Strata 4 and 5) artifacts were easily isolated from excavation units adjoining the profile which I fully analyzed. Retrieving similar data from partially analyzed floor units (that is, units for which only the floor layer, Strata 4 and 5, material was analyzed) was more difficult. Referring to excavation plans, stratigraphic profiles and level notes, I located level bags containing cultural material associated with the floor. I classified such material according to the tool and debitage typologies which I established for the fully analyzed excavation units. The entire, undifferentiated (though labeled with discrete artifact numbers) tool assemblage from both DhRk 8 and DhRk 8A was found to have been removed from provenienced level bags and mixed together. I initially separated artifacts labeled with a 'DhRk 8A' designation from the DhRk 8 collection. I classified the remaining tool assemblage according to the typology presented in Appendix I of my M.A. thesis (Schaepe 1998). Discrete proveniences for remaining artifacts from DhRk 8 were then re-established by cross-referencing labeled artifact numbers with the proveniences recorded in LeClair's artifact catalogue, and with artifact descriptions and locations provided in level notes. A significant number of tools with direct floor association could be referenced to specific level note descriptions. Excluding a few tools and tool fragments discovered in the level bags (which were not physically reincorporated with the tool assemblage), I reestablished the entire assemblage of tools from the floor of the Maurer structure.

Artifact Frequencies - Floor Assemblage

Table 10:3 presents the frequencies and proportions of artifacts in the Maurer structure floor assemblage. Floor 1 (Stratum 4) was distributed across the entire sampled floor area, therefore, Floor 1 totals are derivative of the

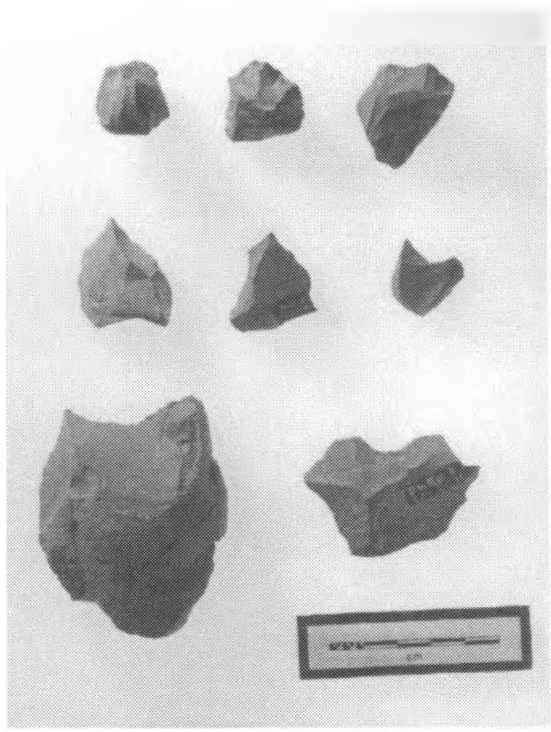


***Figure 10:21.* Microblade Core and Pressure-flake Cores (top); Burin and Gravers (middle), and Notches (bottom).**

complete floor sample. Because of the uneven thickness of the floor deposit, the Floor 2 (Stratum 5) deposit existed in less than 50 percent of the sampled floor area and, thus, represents an incomplete floor area sample. Floor 1 and 2 totals are, therefore, not directly comparable. Because of the indirect association between feature contents, artifacts located within floor features such as the hearth and the surrounding floor assemblage. Floor Feature totals were isolated from those of Floor 1.

The proportions of artifacts found in the floor deposit are comparatively consistent across each of the defined floor categories (e.g., Floor 1 Floor 2 and Total Floor) as exemplified by the Total Floor figures. For simplicity of discussion, reference to 'tools' will include cores. Debitage will be referenced separately.

Table 10:3 shows that a total of 230 tools and 1,189 pieces of debitage are associated with the floor deposit. An additional 45 tools and 224 pieces of debitage were located within

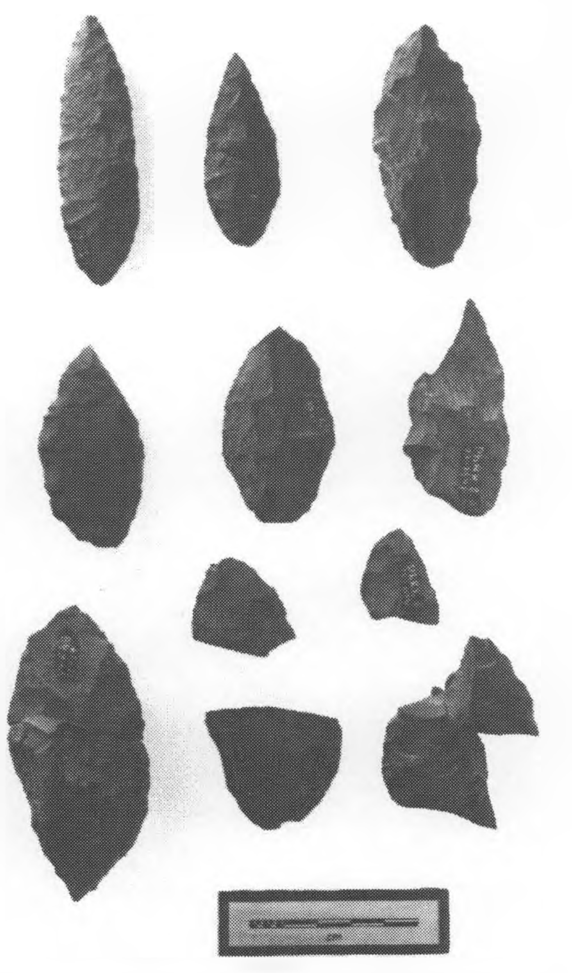


Figure 10:22. **Bifaces and Biface Fragments.**

floor features, primarily the hearth. Three of the tool classes in the Total Floor assemblage have high relative proportions:

- acute-edged utilized flake fragments (26%)
- acute-edged utilized flakes (22%)
- core fragments (12%)

Proportions of the remaining 32 tool categories fall, individually, below 3%. While 59% of the identified tools are represented in only three categories, the variety of tools comprising the remaining 41% of the assemblage is significant. Microblade and pressure-flake cores, pebble core tools, spalls, leaf-shaped and lanceolate bifaces, blade-like flakes, notches, gravers, a burin, a drill fragment, ground and battered stone tools, tabular palette fragments and a few miscellaneous types are present in low frequencies (see Figures 10:21-22).

Categories of individual tool types combined into groups of related items, as presented in Table 10:4, results in a slightly more distinctive pattern of relative tool proportions. While 'Cores and Core Fragments,' 'Biface Points' and 'Burins, Drills, Gravers, Notches' categories are self-evident, the composition of the remaining combined tool categories require explicit definition. 'Expedient Acute-edged Tools' include utilized and unifacial flake tools and fragments, 'Spalls' include unmodified, unifacial and bifacial spalls, and 'Expedient Obtuse-edged Tools' include utilized and unifacial flake tools and fragments. From the figures presented in Table 10:4, it is possible to conclude that an expedient tool technology -- tools requiring little or no modification for use -- dominates this assemblage.

Functional Variation - Floor Assemblage

Based on macroscopic morphological attributes, the floor assemblage tools represent a number of broad functional types. Scraping, cutting, sawing, perforating, drilling, incising, abrading, and battering represent some functions with well established and generally accepted macroscopic morphological correlates in stone tools (e.g., Hayden 1979, Keeley 1980, Semenov 1970). In order to investigate evidence of macroscopic use-wear, I examined the floor assemblage tools under 16x magnification. Though few in number, tools with multiple attributes, such as acute and obtuse edges, were identified. I classified these tools according to their predominant (that is, most well used) morphological feature. Such analysis accounts for the functional classifications of tools presented in this study. Table 10:5 summarizes the conventional tool/function correlates employed here.

Based on the these correlates, tools in the Total Floor assemblage functionally represent: light to heavy cutting, drilling, light to heavy scraping, chopping, perforating, grinding, incising, and percussing

Table 10:4 demonstrates that expedient cutting tools are, by far, the most numerous type in the Maurer floor assemblage. In both individual and combined tool categories, tools with other functions range proportionally below 5%. It is obvious that while this assemblage is comprised of a diverse array of tool types, its proportions are heavily weighed toward tools with cutting functions. This extreme contrast in proportions of tools is explainable in a number of ways. As reported by Hayden, Franco and Spafford (1996), raw materials, and task, social, technological and ideological constraints act as limiting factors in tool assemblage variability. Variable frequencies of tools in a diverse assemblage, as in the present case, may result from the influence of one or more of these constraints. While one functional type predominates in the Total Floor assemblage, task specialization is not considered to be an appropriate interpretation of this pattern, particularly given the unspecialized nature of expedient cutting tools. A wide range of possible activities -- including those defining consumption and production activities -- is inherent in the expedient acute-edged tools dominating the floor assemblage of the Maurer structure.

In the absence of residue and high-magnification use-wear analyses, determining the types of material worked by these tools is not directly possible. Hide- and wood-working may, however, be inferred. Notches and cobble core tools traditionally have been described as woodworking tools (Eldridge 1982:43; Haley 1987:39). Spalls have been linked with hide-working (Hayden 1990:96). Given the presence of a variety of cutting implements (unmodified flakes, unifaces, bifaces), it is probable that bone/antler, meat and vegetal materials were also processed. This inferential evidence indi cates that the Total Floor assemblage tools may have been used to work a variety of materials.

Floor Features

As described in the previous section, several post-hole and hearth features are associated with Floor 1 (Stratum 4) of the Maurer structure. The hearth, because it is the only floor feature which is not a post-hole, is of primary importance to this investigation. As verified, the hearth was located in the south end of the floor. Oxidized sediments, carbonized material and fire-cracked and thermally altered rock (FCR) comprised the majority of the hearth contents (see Figure 10:23). Variable amounts of lithic debitage and small numbers of stone tools, apparently not fire-altered, were found within the matrix of this material.

As recorded in the level notes for Units 21, 33, 34 and 35, abundant FCR was present throughout the length of the hearth. This description contrasts with LeClair's original floor plan drawings and excavation photographs which show FCR absent from the center of the hearth. This gap is largely coincident with Unit 34, the level notes for which do indicate the presence of FCR. During analysis, however, no FCR was recovered from the Unit 34 'hearth'-level bags. It is possible that if FCR were originally present in Unit 34, it might have been excavated and discarded without being recorded. Collection of FCR during the 1973 excavation appears to have been unsystematic and dependent upon individual excavators' initiatives. Review of the level notes indicates that the exca- vation of Unit 34 was undertaken early in thefield season, prior to the excavation of the other units in which the hearth was present. Thus, the practice of leaving feature deposits *in situ* may not yet have been established.

A notably large amount of lithic debitage (n = 183) was recovered from the hearth matrix in Unit 34. This debitage frequency is significantly higher than was recovered in the other portions of the hearth and on the surrounding floor, and could indicate the infilling of the central portion of the hearth with refuse. When this might have occurred, and whether the hearth was subsequently re-used, is indeterminate. While the hearth pit and some evidence of its use are documented in the Unit 34 level notes, a general lack of information frustrates the reconstruction of hearth-use history. Except for Unit 34, it is possible to define the composition of the east and west ends of the hearth. These extremities are defined by FCR concentrations associated with a small number of tools and debitage. The FCR accumulations overlay charcoal rich sediments, which defined the base of the feature (see Figure 10:23). The sides of the hearth and its base are further defined by oxidized sediments which, in profile, formed a U-shaped pit intrusive into the sterile gray layer below the floor (see Profile B – Figure 8b). Tools and debitage within the

Table 10:3. Floor Assemblage Artifact Frequencies and Proportions.

ARTIFACT TYPES	Floor 1 (n)	Floor 1 (%)	Floor 2 (n)	Floor 2 (%)	Total Floor (n)	Total Floor (%)	Feat.s (n)	Tot. Assmb. (n)	Tot. Assmb. (%)
CORES									
Cores	12	6	3	8	15	7	1	16	6
Core Fragments	20	10	7	18	27	12	6	33	12
Bipolar Cores	3	2	0	N/A	3	1	0	3	1
Microblade Cores	1	<1	0	N/A	1	<1	0	1	<1
Pressure-Flake Cores	1	<1	1	3	2	1	0	2	<1
TOOLS									
Pebble Core-Tools									
Uniface Pebble Core-Tool - Acute	2	1	0	N/A	2	1	0	2	<1
Uniface Pebble Core-Tool - Obtuse	1	<1	0	N/A	1	<1	0	1	<1
Biface Pebble Core-Tool - Obtuse	0	N/A	0	N/A	0	N/A	1	1	<1
Utilized Flakes/Spalls									
Utilized Flake - Acute	41	21	9	23	50	22	7	57	21
Utilized Flake Fragment - Acute	50	26	9	23	59	26	9	68	25
Utilized Flake - Obtuse	1	<1	1	3	2	1	0	2	<1
Utilized Flake Fragment - Obtuse	3	2	0	N/A	3	1	0	3	1
Spall (unmodified)	6	3	1	3	7	3	2	9	3
Utilized Spall - Acute	1	<1	0	N/A	1	<1	0	1	<1
Expedient Unifaces									
Expedient Uniface - Acute	11	6	1	3	12	5	3	15	5
Expedient Uniface Fragment - Acute	6	3	1	3	7	3	2	9	3
Expedient Uniface - Obtuse	2	1	0	N/A	2	1	2	4	1
Expedient Uniface Fragment - Obtuse	3	2	0	N/A	3	1	0	3	1
Notch - Acute	4	2	1	3	5	2	0	5	2
Notch Fragment - Acute	0	N/A	0	N/A	0	N/A	1	1	<1
Uniface Spall - Acute	0	N/A	0	N/A	0	N/A	1	1	<1
Uniface Spall - Obtuse	0	N/A	0	N/A	0	N/A	1	1	<1
Scrapers									
Scraper	1	<1	0	N/A	1	<1	0	1	<1
Scraper Fragment	1	<1	0	N/A	1	<1	1	2	<1
Expedient Bifaces									
Biface Spall - Obtuse	1	<1	0	N/A	1	<1	0	1	<1
Expedient Biface Fragment - Acute	3	2	0	N/A	3	1	1	4	1
Expedient Biface Fragment - Obtuse	1	<1	0	N/A	1	<1	0	1	<1
Bifaces									
Leaf-Shaped Biface	0	N/A	2	5	2	1	0	2	<1
Leaf-Shaped Biface Fragment	1	<1	0	N/A	1	<1	0	1	<1
Lanceolate Biface	1	<1	0	N/A	1	<1	0	1	<1
Triangular Biface	0	N/A	0	N/A	0	N/A	1	1	<1
Leaf-Shaped Preform	1	<1	0	N/A	1	<1	0	1	<1
Miscellaneous Point Fragment	3	2	1	3	4	2	0	4	1
Miscellaneous Biface Fragment	1	<1	0	N/A	1	<1	0	1	<1
Blade Tools									
Blade-Like Flake	1	<1	1	3	2	1	1	3	1
Misc. Chipped Stone Tools									
Graver	1	<1	1	3	2	1	0	2	<1
Drill Fragment	1	<1	0	N/A	1	<1	0	1	<1
Burin	1	<1	0	N/A	1	<1	0	1	<1
Misc. Ground/Battered Stone Tools									
Miscellaneous Ground Stone	1	<1	0	N/A	1	<1	0	1	<1
Misc. Pecked/Battered Pebble	0	N/A	0	N/A	0	N/A	1	1	<1
Hammerstone	1	<1	0	N/A	1	<1	1	2	<1
Anvilstone	0	N/A	0	N/A	0	N/A	1	1	<1
Edge/End Battered Pebble	1	<1	0	N/A	1	<1	1	2	<1
Tabular Palette - Pecked	0	N/A	0	N/A	0	N/A	1	1	<1
Misc. Tabular Palette Fragment	2	1	0	N/A	2	1	0	2	<1
Total - Tools & Cores	191	100	39	100	230	100	45	275	100
Total - Tools	156	82	28	72	184	80	36	220	80
COMBINED TOOL CATAGORIES									
Cores & Core Fragments	35	18	11	28	46	20	9	55	20
Pebble Core-Tools	3	2	0	N/A	3	1	1	4	1
Expedient Tool Fragments - Acute	58	30	10	26	68	30	12	80	26
Complete Expedient Tools - Acute	54	28	10	26	64	28	10	74	27
Expedient Tools - Acute	112	59	20	51	132	57	22	154	56
Spalls	8	4	1	3	9	4	4	13	5
Expedient Tool Fragments - Obtuse	7	4	0	N/A	7	3	0	7	3
Complete Expedient Tools - Obtuse	4	2	1	3	5	2	1	6	2
Expedient Tools - Obtuse	11	6	1	3	12	5	1	13	5
Bifaces	7	4	3	8	10	4	1	11	4
Biface Points	6	3	3	8	9	4	1	10	4
Notches,Drills, Gravers, Burins	8	4	1	3	9	4	1	10	4
DEBITAGE									
Debitage - Size Grade 1	26	3	13	4	39	3	14	53	4
Debitage - Size Grade 2	393	46	121	36	514	43	77	591	42
Debitage - Size Grade 3	438	51	198	60	636	54	133	769	54
Total - Debitage	857	100	332	100	1189	100	224	1413	100

Table 10:4. Combined Tool Category Data Total Floor.

Combined Tool Category	Total Floor (n)	Total Floor (%)
Cores and Core Fragments	46	20
Expedient Acute-edged Tools	132	57
Spalls	9	4
Expedient Obtuse-edged Tools	12	5
Biface Points	9	4
Burins, Drills, Gravers, Notches	9	4
Misc. Tools	13	6
Total	230	100

hearth contents may have resulted from primary deposition,or secondary deposition from slumping floor deposits or infilling events, specific to the hearth pit itself. Given the available data, it is not possible to determine the factor(s) responsible for the deposition of these artifacts within the hearth. While the hearth contents may be somewhat mixed, these materials likely originate from the surrounding floor deposits. Because the origin of these artifacts is uncertain, their separation from the floor deposits is maintained both in Tables 10:3 and 10:4, and the spatial analysis of the floor assemblage. Though questions concerning the integrity of the hearth contents exist, the underlying charcoal-rich sediments constitute primary deposits forming the bottom of the hearth.

In evaluating hearth integrity, I determined that cultural materials accumulated within this feature are possibly of mixed origin. Insufficient data made it impossible to assess the integrity of the hearth section covered by Unit 34. Addition- ally, it was not possible to establish whether the hearth trench functioned as a single elongated feature or two separate features when the Maurer structure was abandoned. The presence of at least one hearth feature is not in doubt. However, documentation of the hearth lacked the detail necessary to assess its intensity of use. Cross-sections and descriptions of the extent of oxidation and the amount of charcoal and carbon accumulations were not provided. Although significant amounts of FCR occur in both ends, collection of FCR from the entire hearth trench appears to have been unsystematic. Notwithstanding the above, the hearth feature, including its carbon-impregnated base, appears to be relatively intact.

Table 10:5. Artifact/Tool Function and Worked Material Correlates.

Artifact Type	Conventional Function	Worked Material
Core	Raw material for stone tool and flake manufacture	Lithic
Microblade Core	Raw material for microblade manufacture	Lithic
Microblade/Blade-Like Flake	Precision cutting	Meat, Plant
Pebble Core-Tool	Heavy chopping	Wood, Meat, Miscellaneous
Expedient Tool - Acute Edge	Light to moderate cutting	Plant, Meat, Hide, Miscellaneous
Expedient Tool - Obtuse Edge	Light to moderate scraping	Wood, Bone, Hide, Miscellaneous
Spall	Moderate to heavy scraping	Hide, Miscellaneous
Biface Point/Knife	Light to heavy cutting; Weaponry	Meat, Miscellaneous
Notch	Scraping and shaving	Wood, Bone, Antler
Graver	Incising	Wood, Bone, Antler; Soft Stone
Drill	Perforating	Wood, Bone, Antler; Soft Stone
Burin	Incising	Wood, Bone, Antler, Soft Stone
Tabular Palette	Platform for chopping, mashing and grinding	Plant, Meat, Mineral
Edge-/End-Battered Pebble	Mashing and pounding/percussing	Plant, Mineral, Miscellaneous
Debitage	Debris from stone tool manufacture and maintenance; potential expedient tool stock	Lithic

In functional terms, remains from the hearth indicate its use as, minimally, a place for building fires and heating stones. Functional implications may be extended to include:

- heating the space within the structure
- lighting
- cooking
- heat-treating lithic material
- the possible smoked or dried preservation of organic material

Summary - Artifacts and Features

Lithic raw materials, tools and debitage were recovered from the floor deposit of the Maurer structure. The identified patterns of tools in this assemblage, while best exemplified by the Total Floor figures, are recognizable in the Floor 1 deposit as well. The Floor 2 sample does not represent the entire floor area and therefore was not discussed. Though expedient, utilized flake tools predominate, a wide range of tool types, cores and debitage comprises this assemblage. Minimally, eleven functional classes of artifacts occur, representing a wide range of inherent potential activities. At least one hearth feature is associated with Floor 1. Carbonized material and heated rocks in it suggest general heating, lighting and cooking functions, but the intensity of use of this feature could not be established.

Testing Question Two

Analyzing the composition and taphonomy of the Maurer structure floor assemblage allows the testing of Question Two -- that the structure functioned as a house. The observed results of this analysis compare favorably with the expectations developed for testing Question Two. A variety of tool types and at least one hearth feature represent a diverse range of possible functions amongst the floor assemblage. These activities are representative of the wide range of activities expected of a household group, comprising the basic socioeconomic unit of organization and means of production. The observed floor assemblage composition satisfied the expectations for a domestic structure, as developed in this study. Evidence supports the inference that this structure functioned as the location for a variety of activities. While available data does not permit assessment of the intensity of hearth use, the identifiable FCR and charcoal concentration indicates that the hearth was utilized up until the final abandonment of the structure. The thickness and rich organic nature of the floor deposits infer an extended and generally intensive use of the structure. Given the positive outcome of the above comparison, Question Two is accepted. It is concluded that the Maurer structure was a house.

Section III: Evaluating the Age of the Maurer House – How old is the Maurer House ?

In this section, I focus on assessing Question Three that the Maurer house represents a 5500-3500 years old [6300-3800 cal BP], Eayem Phase structure (LeClair 1976:42). I analyze the reliability of the data on which LeClair's age estimates are based. As a means of assessing its relative age, I compare the Maurer house assemblage to the most relevant comparative assemblage -- Occupation Three from the Hatzic Rock site. In additiona, I compare this assemblage to cultural material typifying a range of time periods in the upper Fraser Valley culture historical sequence.

Expectations

As stated above, two forms of data -- radiocarbon dates and assemblage composition -- are expected to support Question Three. Some, if not all, of the reported DhRk 8 radiocarbon dates (uncalibrated) ranging between 3860 and 4780 BP[10] (LeClair 1976:42) should relate directly to the Maurer structure. If valid, processed radiocarbon samples should have three-dimensional proveniences directly associated with elements of the house remains, and represent undisturbed primary deposits of material of appropriate type and adequate quantity for radiocarbon dating. Sample locations and materials should be replicable, that is, adequately referenced in the 1973 excavation notes. Field collection and radiocarbon dating methods should have followed acceptable standards, minimally of 1973 and ideally of the present. A consistent range of dates should be represented by radiocarbon samples from the house remains.

Additionally, the Maurer house assemblage composition is expected to resemble other upper Fraser Valley, Eayem phase / Charles Culture sites. Such assemblages should be consistent in terms of the general presence or absence of artifact types and/or specific artifact proportions. I compare the Maurer house assemblage with that from the only other site in the upper Fraser Valley with an apparent similar function and age -- the circa 4800 BP [5590 cal BP] Occupation III at Hatzic Rock (DgRn 23).

Radiocarbon Dates

It was possible to determine date associations by referencing field notes documenting the locations of sample material for each of the seven reported dates. I found that only five of the seven dates are associated with DhRk 8, while the remaining two relate to material from DhRk 8A, an adjacent site. Data for the DhRk 8-associated radiocarbon dates, including both uncalibrated and calibrated[11] dates, are presented in Table 10:6. Additionally, radiocarbon sample locations, identified in LeClair's field notes, are depicted on the house floor plan in Figure 10:25.

As Figure 10:25 illustrates, three of the five radiocarbon samples from DhRk 8 appear to have been collected from the area within the Maurer house. Samples 2 (GaK-4919) and 9 (GaK-4922) represent carbonized organic matter from the bottom of the hearth trench in Unit 34 and Unit 33, respectively. Sample 8 (Gak-4921) consists of a charcoal fragment apparently located on the surface of the house floor. Both uncalibrated and calibrated (in parentheses) radiocarbon dates for these three samples are presented, as 'BP' values, below. Thus, Sample 2 dating to 4220±100 BP and Sample 9 dating to 4240±380 BP represent consistent dates from the hearth feature. Alternately, Sample 8 provides an anomalous age of 1410 ± 90 BP. These dates will be discussed in greater detail below.

The two remaining radiocarbon samples, 10 (GaK 4923) and 13 (GaK-4927), are not directly associated with the Maurer house. Sample 10, which dates to 4720±380 BP, was collected from the basal cultural deposit 4.5 m west of the structure. Sample 13, associated with what may be a second structure, was collected from a dark layer of organic sediment -- an apparent floor deposit with an associated pit feature -- located in the north side of the road cutbank approximately 20 m northeast of the Maurer house feature. The length of the exposed portion of this apparent floor layer is roughly the same as the SE-NW axis of the Maurer house. LeClair notes (C14 notes) that the depth (1.3 m below ground surface) and stratigraphic location (associated with the terminal B horizon) of the cutbank feature are similar to the Maurer house. Sample 13 provided an age of 4780±340 BP.

Assessing Radiocarbon Sample Reliability

Verification of radiocarbon sample locations from the house feature and immediate vicinity was only partially successful. The degree of correlation between the three-dimensional proveniences, material and matrix descriptions (LeClair, C14 notes) for Samples 2, 8, 9 and 10 was investigated as a means of establishing radiocarbon sample reliability. Of these, only the hearth-associated Samples 2 and 9 had reconstructible location, material and matrix descriptions. Such data for Sample 9 were documented in excavation unit notes as well as a detailed photograph of the hearth. Unit 34 excavation notes confirm these data for Sample 2. Thus, Samples 2 and 9 both represent reliable radiocarbon samples.

Table 10:6. Dated Radiocarbon Sample Data (DhRk 8).

Sample No.	GaK No.	Provenience	Sample Material (per Gakushuin)	Matrix Description (per LeClair)	Association (per LeClair)	Radiocarbon Date (calibrated)
2	4919	37.55 mS/17.10 mW; 286 cmBD (Unit 34)	humic soil	greasy black charcoal matrix; burned soil and organic matter	central hearth area	4220 ± 100 (4850)
8	4921	34.40 mS/16.00 mW; 272 cmBD (Unit 31)	charcoal	greasy black material; burned soil and organic matter	taken from the east side of the house floor and represents the burned organic material common over the floor; burned timber fragment laying on the house floor	1410 ± 90 (1310)
9	4922	36.25 mS/16.00 mW; 300 cmBD (Unit 33)	peat	greasy black burned soil and organic matter	NE corner of the hearth; 15-20 cm below the house floor - in direct association with fire-cracked rock	4240 ± 380 (4870)
10	4923	38.20 mS/24.79-24.92 mW; 79 cmBD (Unit 74)	soil	slightly greasy, black with organic matter and soil	basal cultural deposit west of house; division between the yellow brown and olive brown (deposit); immediately above sterile	4720 ± 380 (5460)
13	4927	10.00 mS/11.74 mW; (not w/in excavation)	soil	burned soil and organic matter	possible structure profile in road cut @ 20 m NE of house	4780 ± 340 (5510)

Alternately, Sample 10 is noted as being located "immediately above cultural sterile" (LeClair, C14 notes) at 79 cm BS. Cross-referencing this depth with corresponding excavation notes for Unit 79, neither the reported stratigraphic position nor the absence of cultural material underlying this sample could be verified. Contextually unreliable, the association of the radiocarbon date derived from Sample 10 remains unclear.

The anomalous date derived from Sample 8 requires explanation. Sample 8, described as a "burned timber fragment laying on the house floor" (LeClair, C14 notes), should provide a charcoal based, structurally associated date. The sample material (that is, a burned timber

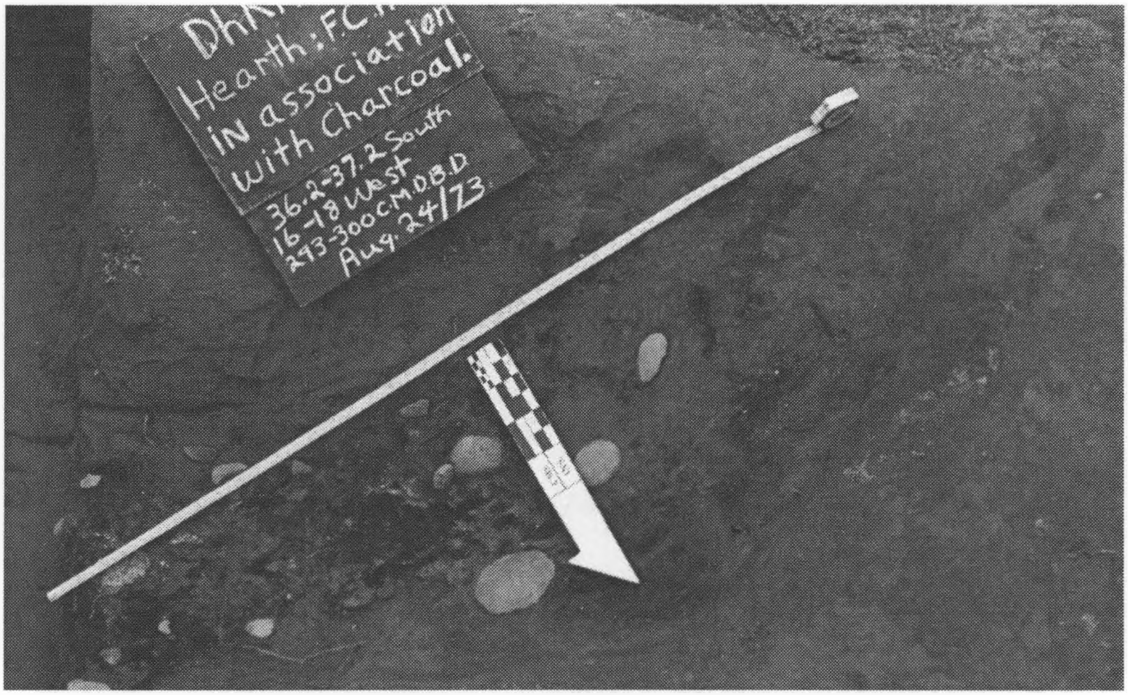


Figure 10:23. **Hearth Feature. Photo: R. LeClair.**

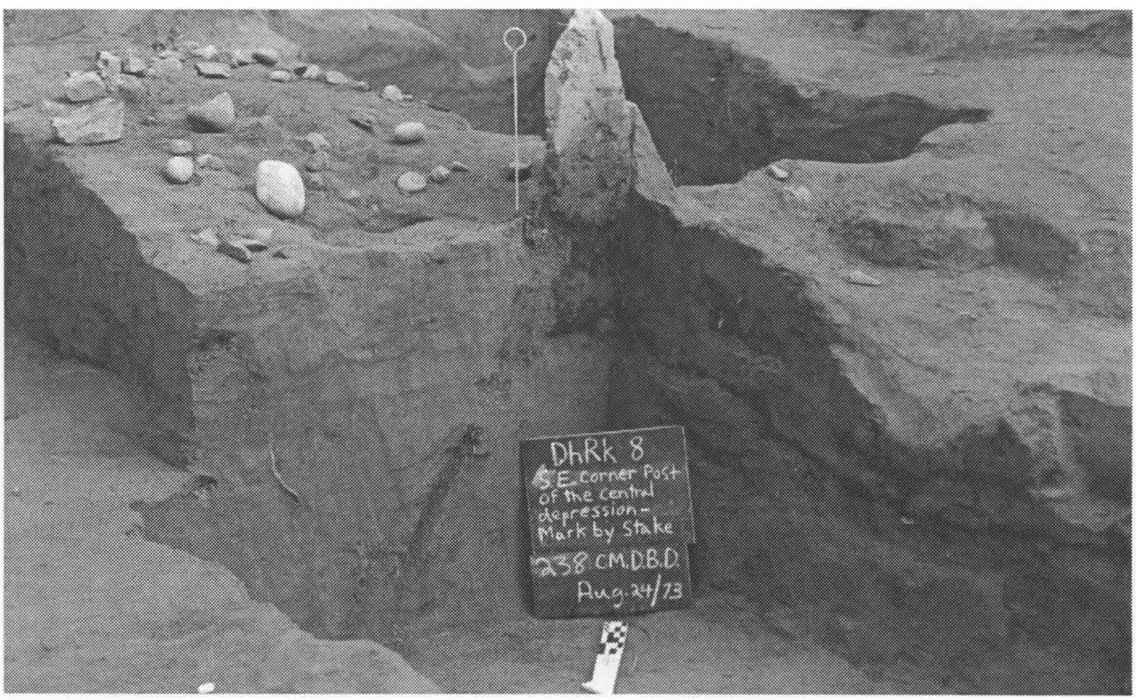


Figure 10:24. **Post Mold, Southeast Corner (Photo: R. LeClair.**

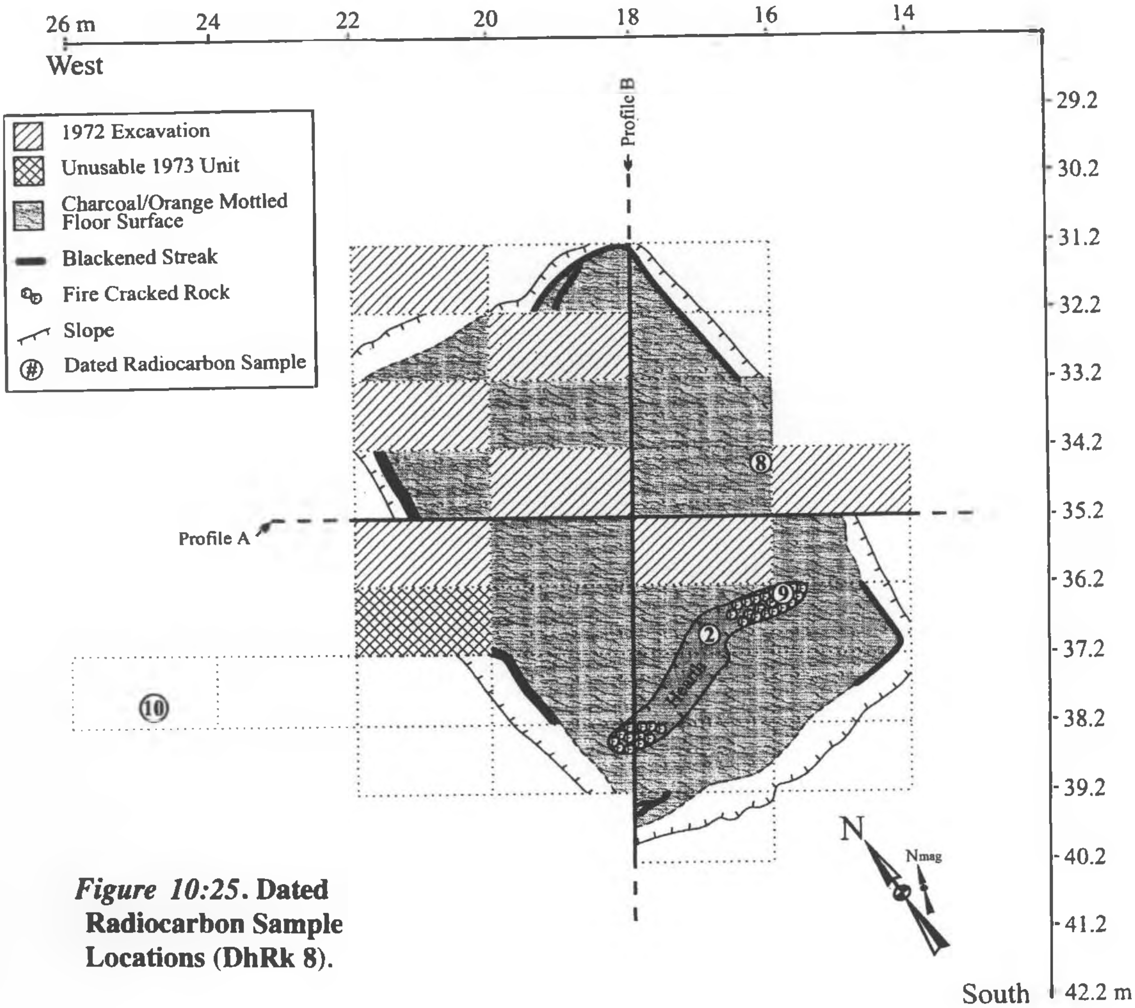


***Figure 10:25*. Dated Radiocarbon Sample Locations (DhRk 8).**

fragment at 121 cm BS, Unit 31) should represent a fairly obvious specimen laying on the floor surface. However, after having assessed the reliability of this sample, a number of discrepancies emerged. The noted provenience of Sample 8, provided above, corresponds with the bottom of the floor deposit rather than the surface. Unit 31 excavation notes nowhere indicate burned timber remains, and describe only the general char- coal and orange mottled deposit consistent across the floor.Charcoal "spots" are identified in the unit notes at 230-240 cm BD and 240-250 cm BD, located above the floor surface by a minimum of 16 cm. Thus, the context of Sample 8 was unable to be verified.

Further investigation of Sample 8 revealed that it may have been misprovenienced. LeClair's 'vertical distribution notes' and excavation unit notes both identify a carbonized log 120 cm BS in Unit 10, two meters east of Unit 31, outside the floor area. Further, LeClair's C14 notebook entry describes Sample 8 as being "taken from the east side of the floor and [does not] represents the burned organic material common over the floor..." 'Does not' was added -- apparently by LeClair, judging from the handwriting -- as an amendment to this description, adding to the ambiguity of this sample. Whether or not Sample 8 was misprovenienced, it lacks a reliable context within the Maurer site. Therefore, Sample 8 lacks utility in determining the age of the Maurer house.

The contexts of Samples 2 and 9, the two reliable radiocarbon samples with direct structural association, must be investigated for evidence of disturbance. As previously determined, the integrity of the hearth feature appears to be intact. While the post-abandonment deposition of materials from the surrounding floor deposit -- such as, charcoal, FCR and artifacts -- and collapsed superstructural remains into the hearth are possible sources of radiocarbon sample contamination, such materials are structurally associated and would not invalidate the dates derived from Samples 2 and 9. Effects of such contamination are considered to be negligible.

A more pertinent issue is the effect of the possible infilling of the central portion of the hearth trench, in Unit 34, on hearth-associated radiocarbon dates. Such infilling represents differentially discontinued hearth-use. Even so, carbonized deposits located throughout the hearth trench would result from hearth-use associated with the house occupation. Central hearth deposits would be comprised of somewhat older material than that in the lateral portions of the hearth trench, which appear to have been continually used until final abandonment of the structure. Dates derived from central hearth material should reflect the age of the house occupation, sometime prior to final abandonment. The 4220 and 4240 BP dates from Samples 2 and 9 reflect the consistency expected of radiocarbon samples from similar contexts, and indicate a tight temporal association of material from the hearth.

Methods

Very little can be said about how radiocarbon samples from the Maurer site were collected, the quantity of materials collected or how they were processed. In these regards, all that can be surmised is that Samples 2 and 9 were collected and submitted to Gakushuin University radiocarbon laboratory for dating in 1973. In 1974, Gakushuin laboratory successfully processed these samples, identifying their material composition as humic soil (Sample 2) and peat (Sample 9). While radiometric methods have significantly changed since 1974, dates produced during this era -- including those from Gakushuin -- are still generally considered valid.

The state of collected but unprocessed radiocarbon samples in the DhRk 8 and DhRk 8A collections indicate that acceptable packing and storage procedures (that is, wrapped in tinfoil and individually stored in glass containers) were implemented, but were not submitted for dating. Thus, only two of the reported seven radiocarbon dates were determined to have direct and reliable association with structural remains from the Maurer house. Samples 2 and 9, both collected from carbonized material in the bottom of the hearth, provided respective dates of 4220 BP and 4240 BP. A third reliable sample (Sample 13), which provided a date of 4780 BP was collected from the profile of what appears to be the exposed floor layer of a second structure in close proximity to the Maurer house.

Comparative Assemblage Composition

Using data compiled by Mason (1994) it is possible to compare tool proportions from the Maurer house assemblage to a representative Eayem Phase (5500-3500 BP) [6300-3800 cal BP] assemblage from the Hatzic Rock site (DgRn 23) also located in the lower Fraser River valley. While a thorough comparison of these sites is beyond the scope of this study, a broad and preliminary comparison was performed as a means of determining the general degree of inter-assemblage variability. Given the similarity in its location, apparent age and function of these sites, the assemblage from the Maurer house, if actually an Eayem Phase assemblage, is expected to be similar to that from Occupation III of Hatzic Rock.

Comparison with the Hatzic Rock Site - Occupation III, and Upper Fraser Valley Sequences

Table 10:7 presents selected combined tool frequencies and proportions from Occupation III at Hatzic Rock and the Maurer Total Floor (that is, Floor 1 and 2, not including feature fill artifacts) assemblage[12]. These two assemblages are most similar at the presented level of the comparison, that is, of broad categories of tool types. Conforming to traits considered typical of the proposed Charles Culture (Pratt 1992:289-292), both assemblages are comprised largely (roughly 80 %) of cores, expedient tools and chipped stone bifaces. While comparative tool proportions vary, it is apparent that the types of tools comprising these two assemblages are relatively similar. Only a few tool types are present exclusively in one assemblage, including microblades and microblade cores at Maurer, and stemmed bifaces, pièces esquillée, paint stones and a number of ground stone artifacts at Hatzic Rock. Comprising small relative proportions (individually < 5%), the differences associated with these artifacts are not significant in overall assemblage comparisons.

At the analytic level of simple presence/absence, a relatively high degree of similarity exists between the types of artifacts comprising the Hatzic Rock Occupation III and Maurer house assemblages. However, some degree of dissimilarity is apparent in the relative proportions of generalized tool categories. At present, these differences, possibly related to functional differences between sites, are considered to be insignificant to this analysis.

Table 10:7. Comparative Tool Proportions from the Hatzic Rock (Occupation) III) and Maurer (Total Floor Assemblage) Sites.

Tool Type	Hatzic Rock Occupation III (%)	Maurer Total Floor Assemblage (%)
Expedient Tools	41.0	62.0
Cores/Pebble Tools	29.2	21.0
Blade-Like Tools	0.0	1.0
Projectile Points/Bifaces	17.9	4.0
Misc. Ground/Battered/Pecked Stone	5.4	2.0
Misc. Tools	6.9	10.0
Total	100.0	100.0

Also significant are the similarities of the structures located at both the Maurer and Hatzic Rock sites. As described by Mason (1994), the Hatzic Rock structure is semi-subterranean, excavated 30-40 cm below original ground surface. While a clear outline of the building is obscured by a multitude of undifferentiated post-holes Mason (1994:92) concludes that it is basically square. Excluding the purported gravel bench feature -- which has an ambiguous identity as a structural feature -- from Mason's structural plan (Mason 1994:104), a rectangular to sub-rectangular shape is discernible. Based on the extrapolated outline of post-holes, the 'interior' portion of the Hatzic structure measures approximately 9.0 m x 6.5 m and is oriented north-south along its long axis. It has not been determined if planks were used in the construction of the Hatzic Rock structure. Mason states that this structure served a residential function, although this conclusion is not specifically tested. Both the artifact assemblage and structural features at Maurer and Hatzic Rock (Occupation III) share a high degree of similarity.

It is temporally informative to note the absence, in the Maurer house assemblage of artifacts such as ornaments and small points that typify Baldwin and Skamel, the later upper Fraser Valley cultural phases/culture types (See Borden 1975:62; Mitchell 1990). Thus, the Maurer house assemblage must pre-date these phases (3700-2500 BP) [4000-2500 cal BP].

Summary

In summary, I assessed the age of the Maurer house by radiocarbon dating and comparative assemblage analyses. Two reliable, radiocarbon dates of 4220 BP and 4240 BP were derived from samples directly associated with the Floor 1-associated hearth feature. A relatively high degree of similarity was found to exist between the general composition of the Maurer and Hatzic Rock Occupation III assemblages. Both sites additionally contain similar types of structures. Artifacts typical of late phases are absent from the Maurer house assemblage. In conclusion, general agreement between the results of reliable radiocarbon dates and the comparison of the Maurer house assemblage to artifact sets typical of Borden's Fraser Canyon cultural phase assemblages, supports the inference of an Eayem Phase age for the Maurer house.

Testing Question Three

Results of the above analyses can be compared to expectations developed in support of Question Three. The results of the above analyses satisfy the expectations developed for Question Three. I conclude that Question Three -- that the Maurer house is between 5500-3500 [6300-3800 cal BP] years old -- is accepted. Analyses in this section resulted in the ability to further refine the estimated age of the Maurer house, with a high degree of certainty, to approximately 4230 BP (4860 cal BP average).

CONCLUSIONS

In this study, I examined materials collected and derived by Ronald LeClair during his 1973 excavation of the Maurer site (DhRk 8). Three questions, based on LeClair's (1976) insightful preliminary interpretations of the site, were developed and evaluated using this material. Each of the following interpretations made by Ronald LeClair were validated:

1. the remains excavated at the Maurer site were those of a structural feature
2. the structure functioned as a house
3. the house was between 5500-3500 [6300- 3800 cal BP] years old

Analyses applied in the evaluation of these interpretations resulted in a number of significant additional findings, including:

1. the structure was somewhat different, both dimensionally and architecturally, than originally described
2. refinement of the age of the Maurer house to 4230 BP (4860 cal BP)

3. description of a house structure and floor assemblage from which household inferences may be drawn (see Schaepe 1998)

The analyses confirm with a high degree of certainty that the Maurer house and associated artifact assemblage belong in the Middle Period. Thorough analysis of the site data has added to the long neglected, but now quickly developing upper Fraser River valley archaeological database. Data from the Maurer house have many applications. For example, these data may be used in evaluating local differences within the Fraser Canyon culture historical sequence that have long been broadly applied to the central/upper Fraser River valley area. As a reliable comparative sample, the Maurer house component represents an intact assemblage contemporaneous with the Mayne and St. Mungo Phase sites of the Gulf Islands and Fraser Delta. Inter-site comparison between the rising number of valid 5500-3500 [6300-3800 cal BP] year old cultural assemblages in the Gulf of Georgia may prove useful in refining the Charles Culture concept and identifying local degrees of variation. Lastly, the Maurer house represents the earliest concrete evidence on the Northwest Coast of what amounts to *at least* a semi-sedentary household. The implications of this socio-economic development can potentially add significantly to our understanding of arising social complexity and inequality in this culture area. I conclude that as a valid 4200 [4800 cal BP] year old house, the Maurer site need no longer be neglected or deferentially referenced in discussions of the archaeology of the upper Fraser River locality, the Gulf of Georgia region, or the greater Northwest Coast Culture Area.

Notes

[1] The Maurer site is located in S'ólh Téméxw -- Stó:lō Traditional Territory. This study was conducted with the consent of the Stó:lō Nation.

[1] The term 'question' is applied to LeClair's findings in reference to them as preliminary statements rather than formal, i.e., evaluated, inferences or conclusions.

[1] The possibility of reexamining the Maurer feature is owed to Ron LeClair for providing both the entirety of available raw data and an intriguing archaeological platform for assessing the uncertainty surrounding this feature.

[1] A more complete evaluation of impacts to the Maurer site and feature is presented in Schaepe 1998. The Maurer feature appears to have escaped significant impact by all known activities except the 1972 excavations.

[1] Lacking faunal or botanical samples, this study was limited in nature to a lithic analysis.

[1] One of the objectives of this Opportunity for Youth-funded project was to provided a means for interested youth to obtain experience in archaeology. The Maurer site was, thus, the primary training ground for many of the 1973 field personnel.

[1] Additional taphonomic processes affecting artifact distributions, specifically, will be presented in the following section.

[1] Insufficient bulk sediment samples were collected to allow for fine-screening of a representative sample of G4 debitage.

[1] These 'strata' are largely pedogenic soil horizons which developed, in situ, in previously existing sediments. No intrinsic chronological or associational relevance is provided to the cultural remains found within them.

[1] I am aware that, with the exception of the cultural 'floor' layer, the so-called 'strata' are actually soil horizons. Given the combination of both the cultural stratum and the soil horizons in these profiles, the descriptive term 'strata' is employed for the sake of continuity and ease of communication.

[1] In order to standardize date reporting, these figures were derived by adding the amount of 1950 to the 1910 and 2830 B.C. uncalibrated dates originally presented by LeClair. Additionally, all presented dates are uncalibrated, unless otherwise noted.

[1] Radiocarbon age calibrations were based on the radiocarbon time scale calibration curves derived by Stuiver and Becker (1993).

[1] Hatzic Rock (otherwise known as 'Xaytem') data was compiled from Mason's Table 4.2 - Tool Counts and Percentages from Occupation Zones I/II

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