

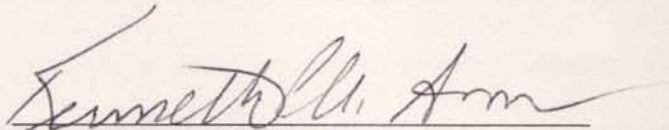
ABSTRACT

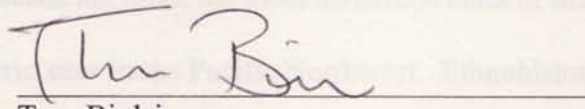
An abstract of the thesis of Gretchen Anne Kaehler for the Master of Arts in Anthropology presented March 11, 2002.

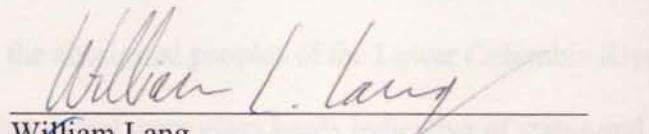
THEESIS APPROVAL

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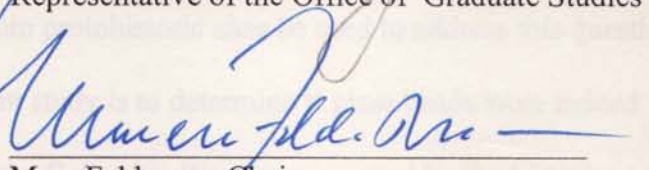
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## ABSTRACT

An abstract of the thesis of Gretchen Anne Kaehler for the Master of Arts in Anthropology presented March 11, 2002.

Title: Patterns in Glass: The Interpretation of European Glass Trade Beads from Two Protohistoric Sites in the Greater Lower Columbia Region.

The issue of social status as it manifests in the archaeological record has long been a problematic one. Glass beads are often the most numerous class of historic artifacts recovered in protohistoric sites in the Pacific Northwest. Ethnohistoric accounts indicated that these beads might have functioned as prestige items and as a form of "primitive cash" among the aboriginal peoples of the Lower Columbia River in the early to mid 1800s. To what extent were glass beads indicative of status and can their spatial distribution within protohistoric sites be used to address this question?

The purpose of the present study is to determine if glass beads were indeed wealth and prestige items along the Columbia River as suggested by the historic record. A distributional study of glass beads in three plankhouses in the Lower Columbia River area was used to address this question in the archaeological record.

Seven hundred and four glass beads from the Cathlapotle (45CL1) site in Ridgefield, Washington and the Meier (35CO5) site near Scappose, Oregon were classified and their positions within the study sites plotted. Both visual and statistical analyses were used to determine if there were any significant differential distributions of glass beads within these sites.

There were some statistically significant differences in bead distributions within and between both of the study sites. However, these differences could not be definitively correlated with social differences in the archaeological record. The differences in bead distribution within and between these sites can be linked to chronology and site formation processes.

While the archaeological record does not agree with the historic record, glass beads in protohistoric sites can be used as chronological indicators as well as markers of European contact within archaeological sites.

GREYCHEN ANNE KAHILER

A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF ARTS  
in  
ANTHROPOLOGY

Portland State University  
2012

**PATTERNS IN GLASS: THE INTERPRETATION OF EUROPEAN  
GLASS TRADE BEADS FROM TWO PROTOHISTORIC SITES IN THE  
GREATER LOWER COLUMBIA REGION**

by

**GRETCHEN ANNE KAEHLER**

A thesis submitted in partial fulfillment of the  
requirements for the degree of

**MASTER OF ARTS  
in  
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I would like to thank the staff at Fort Vancouver National Historic Site for allowing me access to their collection of glass beads. This collection is an invaluable tool for comparison and was integral to the completion of this thesis.

My friends Melissa Lamb and Alice Arrue somehow knew from the other side of the world when I needed a supportive postcard or email and thoughtfully provided them. Last but not least, I would like to thank my family for their support.

ETHNOGRAPHIC ACCOUNTS OF THE FUR TRADE: EARLY CONTACT  
1790-1800: METAL AS A PRESTIGE ITEM ..... 38

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## Chapter 1

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rectifying that situation.

Archaeological investigations along the Lower Columbia River (Ames et al. 1992, Ames et al. 1995) in both Oregon and Washington have compiled a large dataset on Chinookan plankhouses and their related features from two prehistoric sites. The Meier Site (35CO5) contains the remains of a large, single plankhouse as well as associated midden and activity areas. The Cathlamet Site (35WA1) is a plankhouse village site with the remains of between twelve to fourteen plankhouses.

To date, examinations of prehistoric artifacts, including projectile and ground lithics and bone and antler tools from these sites have addressed issues of subsistence, storage and social stratification (Davis 1998, Hamilton 1998, Smith 1993, Wolf 1994). The results of these studies have not been conclusive in demonstrating unequivocal spatial patterning reflecting social status within these sites. The use of an historic artifact class may yield different and more conclusive results. Archaeological remains consisting of glass and ceramics are often less affected by problems of preservation and identification than are bone and plant artifacts. The nature and luminescence of glass

## Chapter 1

### Introduction

In this study, the spatial distribution of glass trade beads is used to examine social dynamics and site formation processes at two protohistoric sites along the lower Columbia River. It has been suggested that the interpretive potential of glass beads as an artifact class to address questions of social complexity within the archaeological record has not been fully explored (Spector 1976). This study is a contribution toward rectifying that situation.

Archaeological investigations along the Lower Columbia River (Ames et al. 1992, Ames et al. 1999) in both Oregon and Washington have compiled a large dataset on Chinookan plankhouses and their related features from two protohistoric sites. The Meier Site (35CO5) contains the remains of a large, single plankhouse as well as associated midden and activity areas. The Cathlapotle Site (45CL1) is a plankhouse village site with the remains of between twelve to fourteen plankhouses.

To date, examinations of prehistoric artifacts, including chipped and ground lithics and bone and antler tools from these sites have addressed issues of sedentism, storage and social stratification (Davis 1998, Hamilton 1994, Smith 1995, Wolf 1994). The results of these studies have not been conclusive in demonstrating unequivocal spatial patterning reflecting social status within these sites. The use of an historic artifact class may yield different and more conclusive results. Archaeological remains consisting of glass and ceramics are often less affected by problems of preservation and identification than are bone and plant artifacts. The nature and hardness of glass

and ceramic artifacts means that their quality does not decline as quickly or as completely as does the quality of floral and faunal artifacts. No historic artifacts have yet been examined in terms of spatial distribution from either site. This examination may provide new information regarding sociopolitical dynamics as they existed in both a single plankhouse (35CO5) and in a plankhouse village (45CL1).

Ethnohistoric (Hajda 1984, Ruby and Brown 1976) and archaeological evidence (Ames and Maschner 1999) suggest that the Chinookans of the Lower Columbia practiced a system of social stratification. This system was based on inherited status and prestige, measured in the ability to control and accumulate wealth. Based on archaeological research conducted at the Meier Site (35CO5), Ames et al. (1992) proposed that status may have been distributed along the long axis of that dwelling with rank decreasing along that axis. In this instance, the axis was aligned from north to south. Ethnographic research along the Lower Columbia (Ray 1938) suggests that individuals of different ranks may have inhabited different areas of plankhouses.

The underlying hypothesis of this study is that the spatial distribution of historic artifacts can be used as a measure of social differentiation within the plankhouse. I suggest that glass beads constitute an ideal artifact class with which to test this hypothesis. Glass beads are often the most common class of historic artifacts within protohistoric sites. Historically and ethnographically, they were prestige items among the Native Americans within the Northwest Coast region. This was particularly true of the Chinook peoples along the Lower Columbia during the later

historic period from 1810-1830 (Coues 1897, Franchere 1968, Hajda 1984, Moulton 1990). The social gradient within the plankhouses from the two study sites should be reflected in the archaeological record in differential bead distribution. This is based on the assumption that the individuals living within the plankhouses had differential access to glass beads. At 45CL1, numbers of beads should also vary between plankhouses. Hajda (1984) states that inherited status allowed differential access to wealth and prestige items. She further suggests that villages were often composed of one or more "chiefs" or high-ranking individuals. These chiefs and their collateral kin often occupied separate houses or different areas of the same house. The inter and intra-site distributions of glass trade beads at both sites 35CO5 and 45CL1 will provide the comparative data to test this hypothesis.

Preservation biases favor long-lasting artifacts such as lithics, ceramics, and glass. In addition, the concept of "use-life" defined here as the frequency and length of use of an artifact is important in determining socioeconomic differences in historic sites. Artifacts with long use-lives such as glass and ceramics are usually utilized for extended periods of time. They tend to be "more biased by socioeconomic and individual differences in frequency of use, breakage, loss and discard..."(Spencer-Wood 1987:13). Breakage, loss, and selective discard in the archaeological record can be determined through the examination of site formation processes (Schiffer 1987). Site formation processes will be discussed further in **Chapter 2**.

While longer use-life artifacts such as ceramics and glass may reflect socioeconomic differences in historic sites, can similar inferences about these artifact

types be drawn in protohistoric sites located along the Lower Columbia River? If glass beads were wealth and prestige items along the Lower Columbia in the later historic period (c.1810-1830), they should display some kind spatial patterning in the archaeological record. This patterning might then be used to infer the social status and rank of those who lived in protohistoric sites in the region.

The materials that I examine in this study include 704 glass beads from 45CL1 and a smaller assemblage of 49 beads from 35CO5. The spatial distribution of these artifacts are hypothesized to be indicative of status and interpreted as a measure of wealth and prestige. The studies of lithic, ground stone, and bone artifacts that have been done in the past (Davis 1998, Hamilton 1994, Smith 1995) have focused on energy expenditure, material type, and usewear. These characteristics are not considered in this application. Instead, the frequencies and densities of different types of glass beads within and between plankhouses are the data for this study.

In **Chapter 2**, I present the formal hypothesis, descriptions of both sites and the theoretical basis of the study. **Chapter 3** summarizes the ethnographic and ethnohistorical accounts of bead use. It also attempts to build a historical base for the value of glass beads along the Lower Columbia River in the 1800s. **Chapter 4** presents the typological classification of the bead assemblages from both sites. **Chapter 5** describes the methods of the statistical tests. **Chapter 6** presents the results and analysis of those tests and **Chapter 7** discusses those results within the framework of the study and presents some generalized conclusions.

The historic record supports the hypothesis that glass beads were items of status and wealth along the Lower Columbia in the early 1800s, however, the archaeological record at the two study sites does not. The distribution of glass beads at the Cathlapotle site (45CL1) is largely random in nature. Some patterning in bead distribution at the Meier site (35CO5) is statistically significant but cannot be linked unequivocally to rank or status areas within the plankhouse.

While glass beads do not appear to have been items of value at the two study sites in terms of spatial patterning, the bead assemblages as a whole can be used to answer questions of occupation and chronology.

### Social Status on the Lower Columbia

In order to present the formal hypothesis of this study, it is necessary to summarize what is known about social dynamics and stratification on the Lower Columbia River. Scholars (Drucker 1965, Hajda 1984, Ray 1978, Silverstein 1990) agree that some sort of social stratification was practiced in the Northwest Coast region and along the Lower Columbia. To what extent this stratification existed before European contact and the extent to which it was changed by that contact is a matter of debate.

## Chapter 2

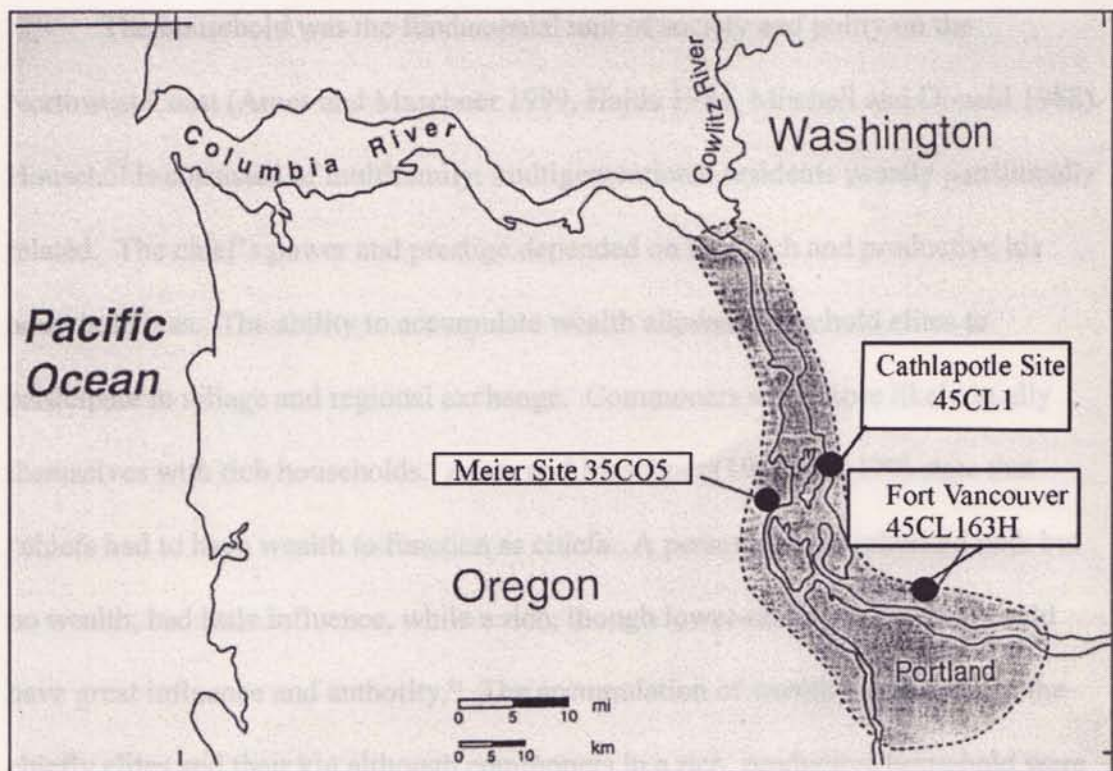
### Background

The two study sites, Meier (35CO5) and Cathlapotle (45CL1) located near Scappoose, Oregon and in Ridgefield, Washington (**Figure 1**) respectively, have yielded numerous house features in addition to large historic and prehistoric artifact assemblages. The Meier site contains the remnants of a large plankhouse and related features such as hearths, processing areas and middens as well as evidence of multiple structural rebuilding and reworking (Ames et al. 1992). Excavations at Cathlapotle have revealed six large houses and their related features (Ames et al. 1999). The examination of these two sites offers an opportunity to compare the manifestations of Northwest Coast ranking within and between households through the archaeological analysis of recovered artifacts and their differential placement.

### Social Status on the Lower Columbia

In order to present the formal hypothesis of this study, it is necessary to summarize what is known about social dynamics and stratification on the Lower Columbia River. Scholars (Drucker 1965, Hajda 1984, Ray 1978, Silverstein 1990) agree that some sort of social stratification was practiced in the Northwest Coast region and along the Lower Columbia. To what extent this stratification existed before European contact and the extent to which it was changed by that contact is a source of debate.

According to Mitchell and Donald (1988), Northwest coast societies were stratified into two classes, free and slave. The free class was ranked. There were chiefly elites who ranked highest. This rank was hereditary. The chiefly elites had no coercive power over their household but were respected and could often use prestige and respect to convince others to do what they wanted. Their prestige came partly from noble birth but depended upon the ability to accumulate wealth. The second highest ranked were free individuals who were the collateral kin of the chiefly



**Figure 1** Map of Study Sites

elites. These individuals held some wealth and had some influence in the household.

The last and lowest rank of free individuals were commoners. Commoners held little or no wealth but could ignore the orders of their household chief if they wished.

However, since it was of paramount importance to all that the household prospered, the wishes of the chief were probably more often followed than not. Slaves were the lowest class of individuals. They were required to obey the orders of their masters who held the power of life and death over them. They had no rights and held no wealth or property. While it was possible for elites and commoners to increase status and prestige through wealth and property accumulation, the element of rank was fixed for life (Ames and Maschner 1999, Hajda 1984).

The household was the fundamental unit of society and polity on the Northwest Coast (Ames and Maschner 1999, Hajda 1984, Mitchell and Donald 1988). Households consisted of multifamily, multigenerational residents usually patrilineally related. The chief's power and prestige depended on how rich and productive his household was. The ability to accumulate wealth allowed household elites to participate in village and regional exchange. Commoners were more likely to ally themselves with rich households. Ames and Maschner (1999:178-179) state that "chiefs had to have wealth to function as chiefs. A person of high inherited rank but no wealth, had little influence, while a rich, though lower-ranked, individual could have great influence and authority." The accumulation of wealth was easier for the chiefly elites and their kin although commoners in a rich, productive household were probably able to accumulate some wealth.

Before European contact then, there was a system of social stratification and ranking in place in the Northwest Coast region and on the Lower Columbia. This system was based in the household and on the ability of household chiefs to produce

and accumulate wealth. Wealth was easier to accumulate and redistribute for the elite class and their kin because they were able to operate at both the local and regional levels. A rich household had many slaves. The high ranked individuals within that household owned exotic items such as dentalia shells and argillite. The acquisition of these exotic items often involved the manipulation of complex trade networks. In addition, elites also controlled labor-intensive goods consisting of ground stone implements and food gathering equipment such as nets and net weights.

In the 1790s, a new kind of wealth began to make its way down the Columbia River from the coast. This new wealth consisted of European trade items such as metal, cloth and beads. At first, only the chiefly elites could possess this wealth for they were able, because of their status, to operate in long-distance trade networks. In addition, the Europeans were gifting and trading primarily with those Native Americans that they perceived to be "chiefs" or persons of high-status. Gabriel Franchere in 1811 states that the "politics of the natives of the Columbia are a simple affair: each village has its chief, but that chief does not seem to exercise a great authority over his fellow citizens. The chiefs are considered great in proportion to their riches: such a chief has a great many wives, slaves and strings of beads: he is accounted a great chief" (Franchere 1968:190). By 1825, Fort Vancouver was established on the Lower Columbia. The Hudson's Bay Company traded not only with elites but also with any individual who brought them furs. The influx of new wealth into the area may have allowed commoners to increase their prestige and status. Even those free individuals not of high birth were able to accumulate wealth in

the form of European trade goods. It has been suggested that this produced a new rank within the commoner class (Hajda 1984). While elites with wealth and inherited status still existed, there was a second rank of individuals. These individuals, by their abilities as hunters and traders, were able to accumulate a measure of wealth and prestige. Thus, two classes may have existed side by side, a more traditional "old-money" class and a "new-money" class spawned by the fur trade.

### **Formal Statement of Research Question and Hypothesis**

While there are many ethnographic and historical accounts of status on the Lower Columbia River, the processes of social stratification and social dynamics in the Northwest Coast region as a whole are not yet fully understood. Ethnographically, households on the Lower Columbia were occupied by the household chief, his collateral kin, commoners and slaves. This means that large plankhouses were occupied by more than one nuclear family as well as servants. Hajda (1984) and Ames et al. (1992) suggest that different ranks of individuals occupied different areas of the plankhouse. If this was the case, then the distribution of wealth items in an archaeological context should be mirrored spatially. There was also likely some degree of household hierarchy within villages. For example, households located closest to the house occupied by the village chief may have been inhabited by higher status individuals (Hajda 1984:164). This suggests that social stratification existed not only within households, but between households as well. Therefore, we can expect to

see differences in the archaeological record reflecting both intra and inter-household social differences.

During the early 1800s, glass beads were a new kind of wealth item. This is discussed further in **Chapter 3**. If individuals of differing ranks occupied different areas of a plankhouse, then the distribution of glass beads should reflect this. The assumption here is that access to glass beads or different types of glass beads was restricted by status. The primary research question and basis for this thesis is whether glass beads as an artifact class were considered a wealth and therefore prestige item along the Lower Columbia River during the historic period, ca. 1790-1850. If beads were wealth and prestige items, this should be reflected in the archaeological record through statistically different spatial distribution. Divergent areas of a plankhouse should contain different densities and types of glass beads reflecting the social gradient within that house. There should also be differences in bead types and densities between plankhouse features assuming that individuals of different ranks were engaged in different activities (Smith 1995). The formal hypothesis for this study then, is that glass beads were a wealth and prestige item and this will be visible in the archaeological record of the Lower Columbia region.

In order to test this hypothesis, the historic and ethnographic records of the Northwest coast region were examined for references describing the value of glass beads as trade items. The results of this examination are discussed in **Chapter 3**. Also, glass beads from two sites along the Lower Columbia have been classified and their position within these sites examined to determine if there was any differential

spatial patterning. In the next section, I provide a description of the two study sites, 35CO5, the Meier site and 45CL1, Cathlapotle.

### **Meier Site (35CO5)**

The Meier Site (35CO5) is located near Scappoose, Oregon in the Wapato Valley. The Wapato Valley extends from the Sandy River to the mouth of the Cowlitz River in Longview, Washington. **Figure 1** locates the site in the Lower Columbia study area and shows its position with regard to the Cathlapotle Site (45CL1) in Ridgefield, Washington and the Fort Vancouver National Historic Site (45CL163H) in Vancouver, Washington. The Meier Site was excavated by Portland State University under the guidance of Prof. K. M. Ames, over five seasons from 1987-1992. The site is 130 m in length by 60 m in width (Ames et al. 1992). Approximately 35% of the interior of a large plankhouse was exposed during excavations (Smith 1995:12). The plankhouse measures 35 m x 14 m. There is evidence of at least two major construction phases and further multiple reconstruction episodes.

Before the Portland State University excavations, Pettigrew 1981 and Ellis n.d. established the general site boundaries. Looters had destroyed most of the east side of the site. The landowner had also made extensive modifications to the site area. By 1987, it was estimated that only 50% of the original site remained (Ames et al., 1992). Excavation units concentrated on the west side of the plankhouse as this was considered to be the least disturbed. Units were placed both inside the house and exterior to house wall features to identify associated midden and yard area deposits.

Portland State Summer Field School excavations exposed evidence of numerous features including plank-molds, post-holes and pits. In addition, various architectural areas, henceforth called facility areas, were identified. These areas include benches, cellars, hearths and midden areas.

The Meier plankhouse is radiocarbon dated from approximately 1400-1800 AD (Ames et al. 1992:286). During this roughly 400 year period of occupation, the plankhouse was rebuilt and repaired many times. The site was inhabited during both pre and post-contact periods. The post-contact period for the Meier site, which could have begun around 1790, includes the beginning of intensive fur trading activity in the Lower Columbia region.

#### **Cathlapotle (45CL1)**

The Cathlapotle is the site of a large plankhouse village marked by six house depressions. The site was occupied by Chinookan speaking peoples between ca. AD 1400-1830. There are six visible semi-subterranean plankhouse features although there may be more than this present at the site that have not yet been located. Lewis and Clark visited Cathlapotle in 1805-1806 and remarked that it was a "large village, the front of which occupies nearly one quarter of a mile fronting the Chanel and closely Connected, I counted 14 houses" (Moulton 1990 [6]:23). An 1825 survey map of the Lower Columbia River from Cape Disappointment at the mouth of the Columbia River to the first site of Fort Vancouver marks various sites of native

villages along the banks. The village depicted across from Deer Isle is very likely Cathlapotle (**Figure 2**).

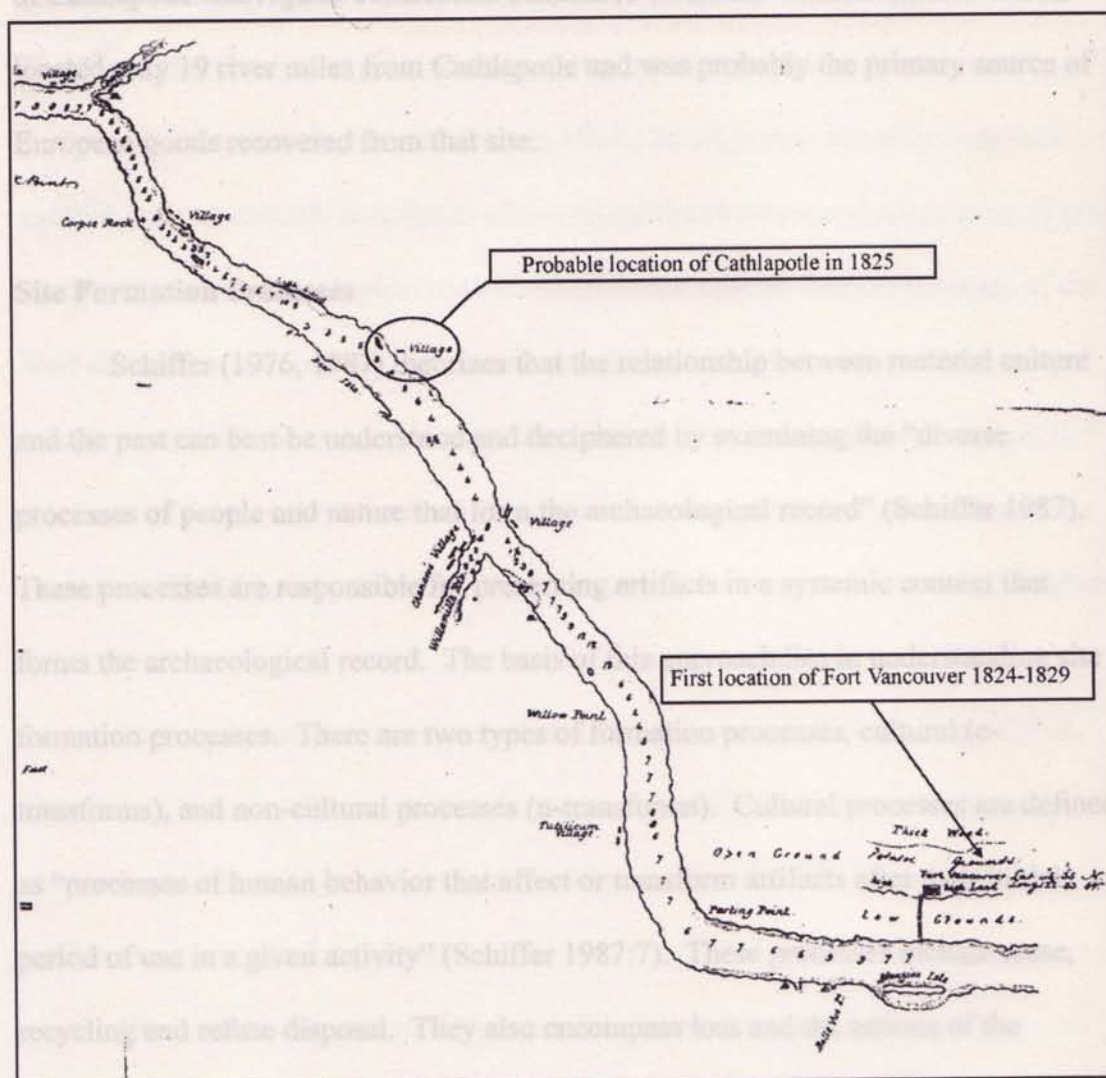
Field investigations began at the site in 1991 and are currently ongoing. Major excavations were conducted by the Portland State University summer field schools from 1994 to 1996. The work concentrated on two of the plankhouses: House 1 and House 4 (**Figure 6**). House 1 is roughly 60 x 10 m and was extensively excavated. House 4, measuring roughly 18 x 10 m, has been approximately 40% excavated. In addition to house features, exterior deposits associated with these structures were intensively sampled.

#### **Fort Vancouver (45CL163H)**

While Fort Vancouver is not one of the sites used as data for this study, it is mentioned here because it provided the basic study collection for the comparison and typological classification of glass beads from Meier and Cathlapotle. Many of the beads recovered from both sites match those stocked at Fort Vancouver from 1829-1860 (Ross 1990).

Fort Vancouver National Historic Site is the premier historic site in the region and has the largest collection of Hudson's Bay Company artifacts in the United States, numbering over one million. Fort Vancouver was established on the bluffs above the banks of the Columbia River in 1825. It served as the headquarters of the Hudson's Bay Company's (HBC) Columbia Department. The HBC's territory stretched from

The Fort traded extensively with the peoples of the Lower Columbia during the Russian Alaska to Mexican California, and from the Rocky Mountains to the Pacific Ocean (Mackie 1997).



**Figure 2** 1825 Survey of the Lower Columbia River, Presented at the Lithographic Establishment, Quarter Master General's Office, Horse Guards, October, 1826. Reprinted with permission of the Washington State Historical Society.

The Fort traded extensively with the peoples of the Lower Columbia during the period from 1825-1860. It was moved to its final location, closer to the bank of the Columbia River, in 1829. Ethnohistoric records (Merk 1931) reveal that the residents of Cathlapotle had regular contact and commerce with Fort Vancouver. The Fort is located only 19 river miles from Cathlapotle and was probably the primary source of European goods recovered from that site.

### **Site Formation Processes**

Schiffer (1976, 1987) theorizes that the relationship between material culture and the past can best be understood and deciphered by examining the “diverse processes of people and nature that form the archaeological record” (Schiffer 1987). These processes are responsible for preserving artifacts in a systemic context that forms the archaeological record. The basis of this approach lies in understanding site formation processes. There are two types of formation processes, cultural (c-transforms), and non-cultural processes (n-transforms). Cultural processes are defined as “processes of human behavior that affect or transform artifacts after their initial period of use in a given activity” (Schiffer 1987:7). These processes include reuse, recycling and refuse disposal. They also encompass loss and the actions of the archaeologist. Non-cultural processes or n-transforms are defined as “any and all events and processes of the natural environment that impinge upon artifacts and archaeological deposits” (Schiffer 1987:7). These processes include disturbances such as floods, earthquakes, fire, erosion and the effects of decay and decomposition.

In order to apply the theories of site formation to the study at hand, it was necessary to define the nature of the artifact class used. It has been previously stated in the introduction that glass beads have an extended use-life. Glass is not subject to the same rate of decay as organic artifacts such as bone and other faunal materials. The physical properties of glass are such that glass beads would survive several centuries in an archaeological site (Moura 1991:17). However, the actions of both cultural and non-cultural transforms often change the structure and appearance of glass beads within the archaeological record. Acids in the soil can weaken the body of the bead allowing water to enter. This causes cracking and discoloration. The action of recovery itself, allows oxygen to reach the surface of the beads causing a chemical reaction that leaches the color from the glass and causes peeling of the exterior. The processes of bead preservation and deterioration will be discussed further in **Chapter 4**.

Post-depositional cultural transforms include reuse. While the longevity of glass makes it an excellent candidate for reuse, defined by Schiffer as “a change in the user or form of an artifact after its initial use” (Schiffer 1987:28), glass beads, once broken, were probably not reused.

Glass beads, regardless of their possible function as symbolic wealth or prestige markers, had a utilitarian function on the Lower Columbia during the 1800s. The perforation through the center allowed beads to be sewn, strung or otherwise attached to people and objects. If a bead was broken through the perforation and

could no longer be worn or displayed, it was useless to fulfill its utilitarian function. Therefore, beads were probably not subject to reuse or to recycling processes.

In order to apply the principles of site formation to the study sites, it was necessary to understand how glass beads might have been deposited in those sites. Glass beads in the archaeological record are most often deposited in an archaeological context through either loss or discard. Loss is defined as the “disassociation of an artifact from its user” (Fehon and Sholtz 1978:271). Several factors influence the likelihood that an artifact will be lost and not retrieved. Small items with long uselives, such as glass beads, are more likely to be lost. Retrieval of an item is influenced by the size and color of the item and the surface on which that item is lost. Obviously, the more that the item contrasts with the surface on which it falls or is deposited on, the more its chances of retrieval will increase. In the case of glass beads, the range of colors attributed to them might have increased their chances of being retrieved if dropped onto a wood or soil surface within a plankhouse. This should also have been the case if beads were dropped in a yard or activity area. However, if beads were small enough to fall through cracks in the plank flooring, they would be more difficult to retrieve. Schiffer (1976) defines areas where lost artifacts accumulate because of low retrieval probability as “artifact traps”. I suggest that the surface underneath a plank floor is one of these artifact traps. This is also likely to be the case for areas underneath and behind the benches, and next to the walls within the plankhouse (See **Figure 10**).

Discard patterns are another process affecting glass beads distributions. As previously stated, if an artifact cannot perform the function for which it has been intended and recycling does not occur, it is usually discarded. Schiffer (1987) differentiates between primary and secondary refuse. Primary refuse is material that has been discarded at its area of use, for example, some kinds of craft production and food preparation wastes. Secondary refuse is material that is transported to an area of discard separate from its area of use. This may occur immediately or after a period of refuse storage before the material is deposited as secondary refuse.

In the study sites, glass beads may have been subject to both types of disposal. Beads that fractured while being sewn or strung may have been discarded in place. Other beads were deposited in middens, hearths, tofts and yard areas as floor sweepings. Primary and secondary refuse disposal as well as loss will be distinguished in the study sites by designating the excavation units as facilities types. For example, lobe middens are areas of primary refuse while sheet middens are often zones of secondary refuse scatter.

Post-depositional cultural agents at the Meier site include agricultural plowing and pothunter looting. Artifacts in the plow zone, the first 30 centimeters of the surface, were probably moved many times (Ames et al. 1992). Looting of the site was so severe that most of the east side of the site was considered extensively disturbed (Smith 1998). The Cathlapotle site eluded pothunters and plowing but the upper sediments were somewhat disturbed by cattle.

Non-cultural processes or n-transforms also play a role in the spatial distribution of beads at the study sites. The Cathlapotle site on the banks of the Lower Columbia River lies within a floodplain. It is subject to winter flooding and bioturbation by an extensive population of burrowing rodents. The Meier site was subject to the same type of bioturbation disturbance though Smith (1995) suggests that movement of artifacts by rodent activity at the site was limited to two or three meters in any direction. Both the cultural and non-cultural site formation processes discussed above will be considered in the analysis of glass bead spatial distribution at each site. Cultural or c-transforms encompass the actions of the archaeologist and include the effects of recovery methods on the amount and quality of the artifacts. The following section discusses the recovery methods used at each of the study sites and possible biases in terms of glass bead recovery.

### **Recovery Bias**

The recovery of small artifacts during archaeological excavation can have an impact on the results of density studies. At Meier, matrix was dry-screened through ¼" mesh and bulk samples were taken for fine-mesh screening and hand-sorting in the lab. These bulk samples were collected to use in estimating the loss of small artifacts in the field. I am not aware of any beads that were recovered from these bulk samples although a large portion of samples remain to be processed. At this time, I am unable to confirm or deny a bias in bead recovery from the Meier site.

At Cathlapotle, matrix was screened only through 1/4" mesh during the 1993 field season. However, three buckets of sediment from unit MM (see **Table 11** and **Figure 8**) were screened through 1/8" mesh to determine whether glass beads were being missed in the larger mesh. Only five glass beads were recovered following screening through the 1/8" mesh (Ames et al. 1999:27). During the 1994 field season, matrix from each 1 x 2 or 1 x 4 meter unit was screened through 1/4" mesh with the exception of one m<sup>2</sup> unit each level that was screened in 1/8" mesh. In addition, a one quart bulk soil sample to be hand-sorted in the lab and a one quart sample to be screened through 1/16" mesh was taken from the quadrant that was screened in 1/8" mesh. The 1995 and 1996 field seasons relied on a combination of methods as a control for recovery bias. Fine-mesh water-screening of 10 liter sediment samples was completed in the field. Additionally, 10 liter bulk samples were collected to be sorted in the lab.

At this point, it is unclear exactly how many of these bulk samples have been processed in the lab. Two out-of-state researchers have taken some of the bulk samples and sorting in the Portland State University lab is ongoing. Counts of beads recovered in 1994 showed that out of 369 beads total recovered, 37%, or 103 beads were recovered in 1/8" mesh as opposed to 1/4" mesh. Of that 37%, approximately 84% (n=85) of the beads were 3-5 mm in size. Does this represent a significant recovery bias against 3-5 mm beads?

Sixty-four of the eighty-five beads were white cylindrical beads recovered from Unit M. I believe that this cluster of beads was the result of the deposition of a

single beaded article. In addition, the white color of the beads would stand out against the darker matrix making them more likely to be recovered during normal excavation. I believe that these beads would have been just as easily recovered in ¼" mesh as 1/8" mesh. In addition, only twenty-nine beads have been recovered from bulk samples that have been screened in 1/16" mesh and hand-sorted in the lab. Of those twenty-nine beads, only six beads measuring 2-3 mm and under have been recovered through fine-mesh hand-sorting and water-screening techniques.

I stated before that I was unable to confirm the exact number of bulk samples that have been processed. However, there have been multiple 10 liter bulk samples processed and twenty-nine beads hardly represents a significant recovery bias. In addition, only five beads were recovered from Unit MM in 1993 by screening three buckets of sediment in 1/8" mesh. Since Unit MM produced the highest density of glass beads at the Cathlapotle site, 1.82 beads per m<sup>3</sup>, it is unlikely that small beads were lost during recovery. During the 2001 Portland State University field school held at Fort Vancouver, fine-mesh water-screening techniques routinely recovered 60-90 small beads, those 2 mm and under, in a 12.5 liter sediment sample. There appears to be a marked lack of beads under 2 mm in size at the Cathlapotle and Meier sites. Some reasons for this are discussed below.

Very small beads, those under 2 mm, are known as "seed beads". These beads were not common until after 1826 (Moura 1991:21). By that time, several epidemics had reached the Lower Columbia (Boyd 1990) area and it is likely that the population of Cathlapotle was reduced to some extent. At exactly what point Cathlapotle was

abandoned is uncertain. Boyd (1990) claims that the malaria epidemic of 1830 devastated the Chinook population in the Lower Columbia and it is likely that Cathlapotle was abandoned sometime in the early 1830s. If this were the case, then it would explain the paucity of seed beads at the site. The Meier site may have been abandoned in the early 1800s. This date would preclude the deposition of seed beads in any appreciable numbers. Unless further processing of bulk samples shows an increase in the numbers of small beads, then I suggest that recovery bias has little if any effect on the results of this study.

Historical archaeology as a discipline often examines the role of socioeconomic status in historic sites as it manifests in material culture. Within the Northwest Coast region, some archaeological research has addressed the issues of

## Chapter 3

### Review of Literature Relevant to the Study

The relevant literature concerning status in relation to historic artifacts in protohistoric sites is limited. What research that is comparable to the present study has been done on purely historic sites. Examples exist in studies of plantation sites and slave quarters in the southern United States and on European and American historic sites in all parts of the country (Spencer-Wood 1987, Stine et al. 1996). Status differences on southern plantation sites have been documented, for example, between house and field slaves and there have been studies on the placement of historic artifacts within sites that manifest these differences (Singleton, 1985). In other historic sites, studies have focused on consumer choice models, dietary studies and the economic ranking and affordability of certain artifact classes (Spencer-Wood 1987). One of the best examples of the latter types of analysis is George Miller's (1991) ceramic indices. In his study, the relevant social rank values of varying types of ceramics are equated with a monetary value. This kind of analysis however, is only feasible when there is a basis for equating price. In the case of the Miller Ceramic Index, historic records documenting ceramic prices during different chronological periods were used (Miller 1991).

Historical archaeology as a discipline often examines the role of socioeconomic status in historic sites as it manifests in material culture. Within the Northwest Coast region, some archaeological research has addressed the issues of

status and ranking at the household level. Scholars such as Ames (1985), Mitchell and Donald (1988) and Smith (1995) have used this framework as a productive means to address status in both prehistoric and historic contexts as it manifests in the archaeological record. However, these studies tend to concentrate on prehistoric artifacts with little mention of historic artifact classes.

Ethnohistoric and ethnographic accounts, discussed in more depth in the next section, focus primarily on the commercial aspects of trade goods in the context of the fur trade. They are useful as background literature and in the present study I have used the historic record to build a model of value for different type of beads

Another branch of archaeological research that attempts to use material culture to answer questions of space, wealth and status is mortuary analysis. Mortuary archaeology supposes a correlation between the type and quantity of grave goods, as well as body position and burial placement within a cemetery or burial ground. O'Shea (1984:21) states that observed mortuary differences are consistent with an individual's social standing in life.

One method of facilitating the analysis of artifacts within a mortuary context is to assign a summary value to each good recorded. Mainfort (1985) assigned value to historic trade goods found at the Fletcher Site (20BY28) in Saginaw Lake, Michigan by converting each item to a number of "made beaver". Made beaver is a dried and stretched beaver pelt. For example, a musket was valued at six made beavers (Mainfort 1985:561). Mainfort used historic records and tables of trade good exchange values to infer the value of the burial goods. The burials were then ranked

by the number of made beaver pelts calculated for each grave assemblage. The higher the number of made beaver pelts a grave assemblage was worth, the higher the status and rank of the individual. In Mainfort's study, black and white glass seed beads are classified as "imitation wampum" and ranked by a number of made beaver per 100 beads. One hundred seed beads is probably more or less a fathom, the standard of bead measure throughout the fur trade. A fathom appears to have been a somewhat fluid measure. It was generally defined as the length of a man's outstretched arm from the elbow joint to the tips of the fingers.

There are inherent difficulties with this type of wealth calculation. The standard of worth for each trade item has been based on a European value of the item. This is not necessarily a valid correlation to wealth within the culture into which the items were traded. The concept of wealth as it relates to prestige, is often embedded within a given culture. Wealth may not be based on monetary value and might include both symbolic and mythological elements.

Schulting (1995) in his study of Columbia Plateau burials used the diversity and frequency of various types of grave goods, including glass beads, to draw correlations between age, body and status. In that study, the quantity and diversity of artifact types were used to calculate a "richness" value for each grave assemblage. Glass beads in the plateau study were given the same analytical weighting as dentalium, native copper and steatite carvings (Schulting 1995:29). The statistically significant results of these weightings were inferred to be measures of the status of the individuals in each burial.

The current study builds a case for the use of a single class of historic artifacts as a measure of status and social distinction in protohistoric sites on the Lower Columbia. In order to facilitate this, I examined the ethnohistoric record for the period encompassing the late 1700s to the mid-1800s.

### **Ethnohistoric and Ethnographic Sources**

Beads are mentioned frequently in ethnohistoric accounts from the fur trade period, the approximately 60 years spanning 1810-1870. In the context of introductory gifts and trade items, the journals and logs of early explorers such as Captains Vancouver, Cook and Meares begin to mention glass beads as early as 1790. In addition, Lewis and Clark when exploring the Lower Columbia area in 1805-1806 found beads to be a much desired trade item. Fur trade company employees such as George Simpson, Alexander Henry and Gabriel Franchere repeated this finding well into the mid-1800s.

In the following sections I summarize the descriptions of bead trade and bead use among Native Americans as related throughout the journals and narratives of the Euroamericans who had early contact and trade with these peoples. This is not meant as an exhaustive list of ethnohistoric bead references. Rather, its purpose is to establish the cultural and economic value of glass trade beads among the aboriginal peoples of the Northwest Coast region in general, and the Lower Columbia study area specifically.

It is imperative to state that ethnographic accounts pertaining to status and the identification of "chiefs" or chiefly practices must be viewed in light of the typical European background. Reliance on the ethnohistoric record denotes a reliance on the creditability of explorers, traders, missionaries and settlers who were often of limited education and of a predominately white, European-Christian background (Vibert 1997). Those individuals identified by Europeans as "chiefs" may have simply been persons of high status. Conversely, they may have been middlemen, adept at orchestrating the flow of Euroamerican goods in exchange for furs, a position requiring some higher rank. The ability of an individual to accumulate wealth in the form of Euroamerican goods no doubt benefited from the European perceptions of leaders and chiefs. It was customary to offer extra presents to those natives deemed to be chiefs as a means to establish trade relations with the native community at large (Ray 1978).

To begin to delineate status in the archaeological record it is first necessary to identify status goods within a given artifact assemblage. Researchers (Ames and Maschner 1999, Hajda 1984, Sobel 1997) hypothesize that status in Northwest Coast societies was highly correlated with wealth. Therefore, status goods and wealth goods often occupy the same sphere in the social hierarchy "being differentially distributed according to status and the degree to which they symbolized high status" (Sobel 1997). It is in this context that I examine ethnographic and ethnohistoric references to glass beads. I begin this examination with a section that attempts to draw parallels between economic and cultural functions of blue glass beads and dentalium. Dentalia shells are

generally recognized in the archaeological study of the Northwest Coast region as symbolizing not only wealth but high status.

### **Blue Beads as Primitive Cash**

Sahlins (1965) defines primitive currency as a commodity that can be converted from its original form to that of another, for example, shells exchanged for slaves. To function as a currency and facilitate inter-regional and inter-tribal trade, a commodity must be acceptable on all sides. Therefore, the commodity must be equally or nearly equally esteemed by all parties involved in the exchange. Before contact, shells, *wampum* in eastern North America or dentalium or *hiaqua* in the Northwest Coast region, functioned as the primitive "currency". *Wampum* manufactured from bivalve shells was a commodity of exchange among the aboriginal peoples of eastern North America at the time of contact in the late 1500s (Martien 1996, Stearns 1887). Similarly, the tusk-shaped shell of a deep-water mollusk, genus *Dentalium Indianorum* or *Dentalium pretiosum*, was widely exchanged on the Northwest Coast from Alaska to California, and as far east as the plains (Simeone 1995).

One species of dentalia shells was harvested along the west Coast of Vancouver Island. Ames and Maschner (1991) state that this was the primary North American source for dentalium. Dentalia shells, once harvested, were subjected to a grading process and separated into long, medium and short sizes. Those of longer, unbroken shape were the more valued. Dentalia shells were strung on sinew that was

often decorated with other species of marine or freshwater shell. The measure of the string of shells as well as the length of the shells themselves determined the value. They were traded either in packets of cedarbark or in fathom strings (Gibson 1992:9). Forty high-quality dental shells, that is, long, unblemished and unbroken shells in a fathom, made up the standard although that standard was to vary with time, as documented in historic records (Gibson 1992, Stearns 1887).

Euroamericans saw dentalium as a kind of primitive currency. This is clear from Stearns (1887) who wrote one of the earliest treatises on primitive currency.

The short, broken and inferior shells are strung together in the same manner but in various lengths and represent shillings or pence, as the string is either long or short or the shells defective.....The *hi-qua* (long string of high-quality, high length shells) represents the sovereign, the highest standard of currency, and as a rule, would purchase one male or two female slaves (Stearns 1887:316).



**Figure 3** Pacific Coast Dentalium

With the influx of Euroamerican trade goods during the first half of the fur-trade, blue beads became a form of primitive "currency" particularly along the Lower Columbia. Along the Lower Columbia in the 1800s, blue beads were described by Alexander Henry as "being considered as cash here" (Coues 1897:820). According to the ethnohistoric record, the value shift from dentalium to glass beads and subsequently to other trade goods was gradual (Hajda 1994, Gibson 1992). Blue

beads early on were not as highly valued as dentalium and were not exchanged equally. Henry, in 1814, refers to this in his account of the breakage of a dentalia shell belonging to a Chinookan "chief" named Concomely. The shell was broken by an employee of the Pacific Fur Company, Duncan McDougall. Concomely was compensated for the breakage of one dentalia shell with "40 grains of large China beads, which did not seem to please the chief" (Coues 1897:753). Notably, Concomely was not offered blankets or metal, both of which were purported to be trade items valued by the people of the area. The appropriate items of recompense for the grievous offense were "large China (blue) beads". This suggests some reciprocal value between dentalium and blue beads although this was certainly not an equal exchange as the reparation in beads "did not seem to please the chief". This may have been because by 1810, large blue "China" or "Canton" beads were falling out of fashion in favor of smaller blue Canton beads.

Franchere (1968) states that blue beads either formed another circulating medium by themselves or when strung together with dentalia shells. He writes of the Chinook that "their ornaments consist of bracelets of brass, which they wear indifferently on wrist and ankles; of strings of beads of different colors (they give a great preference to blue) and displayed in great profusion around the neck and on arms and legs; and of white shells called *Hiaqua*, which are their ordinary circulating medium" (Franchere 1968:185). Hajda asserts that for Euroamericans blue beads "were easy to equate in use with dentalium" (1984:232). Like dentalium, beads were usually traded by the string and measured in fathoms. They were also subject to value

in terms of size, the larger blue beads being preferred to the smaller before 1812 (Coues 1897:231). This fluctuation in size preference, however, did not occur with dentalium as the larger unblemished shells were always considered the more valuable.

From the Euroamerican standpoint, beads were a preferred trade item in a system of unequal exchange. Beads were simple to convert to a "cash" status with strings of beads given a certain market value. The fact that beads, like shells, were considered by fur traders to be "trifles" or "items of small value" (Meares 1967) was a fortunate device in a commercial venture that was based upon the premise of obtaining much for little.

In any discussion of trade items in the Northwest Coast region, it is imperative to make a distinction between wealth items and sumptuary items. Sumptuary items are those items to which access is restricted by status. Wealth items are those items available to any individual who could afford them (Ames and Maschner 1999:178). Sumptuary items are those items considered exotic or alternately those considered to be labor intensive. Decorated objects are often considered sumptuary as are ground stone implements in conjunction with their labor-intensive production. Wealth items may be considered those items to which access was restricted only by the ability to accumulate wealth. Researchers (Ames and Maschner 1999, Hajda 1984, Mainfort 1985, Schulting 1995) have pointed out that social status is generally either ascribed, achieved or some combination of both. As discussed in the previous section, inherited status, along with the accumulation of wealth, was the basis for the system of social stratification practiced by the Chinook peoples of the Lower Columbia and throughout

most of the Northwest Coast region. Both dentalium and beads fall into the category of wealth items rather than sumptuary items although this distinction may have been a by-product of the fur-trade era. At the time of first contact in the area in 1792, wealth items included slaves, dentalium, furs, horses, canoes and fishing and hunting equipment (Hajda 1984:250). Ames et al. (1992), Ames and Maschner (1999) and Wolf (1994) contend that items of laborious, time-consuming manufacture such as ground-stone implements were also linked to high-status individuals.

The influx of large numbers of glass beads during the late fur-trade period as evidenced by the archaeological record in sites along the Lower Columbia, would preclude the adoption of beads as a sumptuary item in any long-term sense. In short, glass beads became too commonplace during the approximately 50 years that spanned the height of the fur-trade, circumventing their value as status markers.

As wealth and prestige items, however, glass beads would have functioned well. Like dentalium they were often items of personal adornment, worn as earrings, necklaces, bracelets and anklets. Beads frequently embellished clothing and implements (Franchere 1968, Moulton 1990). In this context, beads functioned as wealth and social markers as well as reinforcements of prestige. In addition to ornamental statements of wealth, they became expressions of prestige in conjunction with items such as dentalium and copper. Strings of dentalia shells were sometimes decorated with glass and copper beads and dentalia shells are frequently found coincidentally with glass and copper beads in mortuary contexts (Mainfort 1985, Schulting 1995).

The equation of blue beads as “cash” by Euroamericans is prevalent in the ethnohistoric record. While it was apparent to traders that Indians valued glass beads and other trade goods, Euroamerican observers did not understand how these “trifles” or “gewgaws” were mutated into symbols of wealth and prestige.

Sahlins (1972:227) refers to money in primitive societies as “objects...that have token value rather than use value and serve as means of exchange...the exchange use is limited to certain categories of things.” Hajda (1984:230) also contends that “Dentalia (hiaqua) shells had acquired the status of a medium of exchange, at least for other valuables” before contact. The implications then, are that valuables were usually only exchanged for other valuables. If we examine this assertion in terms of “spheres of exchange” as Hajda (1984) has done, then we can separate exchange into spheres comprising food exchange, valuable exchange etc. This involves assigning goods to certain non-overlapping spheres where, for example, goods from the food sphere were rarely exchanged for those from the valuables sphere at least prior to direct Indian and White contact. Hajda (1984:248) actually recognizes only two exchange spheres. The first contains the food and raw materials sphere. These things are acquired easily and at little energy cost. This sphere contains those items that are abundant at a given locality. The food/raw material sphere for the Lower Columbia region included wapato, certain kinds of fish, boiled berries and beargrass as well as other local goods. The second sphere, the valuables sphere, included dentalium, slaves, furs, skins, canoes and exotics. These things were acquired through long-distance trade and often

at considerable risk. Later, after contact, the valuables sphere expanded to include European trade items.

Ethnographically, the valuables sphere in the Lower Columbia region during the first part of the 1800s consisted of dentalium, slaves, furs, blue glass beads and other Euroamerican trade items (Coues 1897, Drucker 1965, Franchere 1968, Hajda 1984, Simeone 1995, Moulton 1990). Blue glass beads were exchanged and disseminated through gambling, the acquisition of slaves, often in a direct exchange and in marriage payments. Glass beads were rarely items of food exchange among Indians according to Hajda (1984).

The ability to limit access to beads and other trade goods while accumulating the same possibly allowed vertical movement within Chinookan social structure. An individual might accumulate wealth in the form of trade goods which would in turn, increase his prestige and status within his household, his village and even regionally. This vertical mobility in the Chinook social realm was likely limited to the commoner sphere; slaves would have been precluded from amassing wealth, and elite rank was hereditary. The accumulation of wealth by higher status individuals was probably more easily achieved than for commoners. Elites possessed the basic wealth along with local and regional sociopolitical ties that may have facilitated access to high-cost prestige items.

During the early 1800s, Euroamericans, particularly those involved in the fur trade, saw blue glass beads as a form of currency along the Lower Columbia River. Blue glass beads may have gradually replaced dentalia shells as wealth items among the native peoples in the area. However, I suggest that the popularity of glass beads

and their use as currency and wealth items was eventually effected by their unrestricted availability in the 1830-1840s. As their scarcity declined, so did their popularity and prestige value among Native Americans along the Lower Columbia.

I begin the section of ethnographic accounts by briefly summarizing the history of the fur trade on the Northwest Coast. This is followed by ethnographic accounts of the early fur trade on the Northwest coast and into the interior along the Lower Columbia River. At first contact, metal was more sought after than glass beads. As the fur trade began to enter the interior, the function of glass beads as wealth and status markers became more apparent.

### **The Fur Trade in the Northwest Coast Region**

Early contact between Euroamericans and Native peoples in the Lower Columbia region is first documented in 1792. However, this postdates contact in Alaska and British Columbia. Native peoples along the Northwest Coast may have been introduced to foreign goods by Asian and European shipwrecks as early as 1600 (Plummer 1991).

By 1741, Vitus Bering had discovered Alaska under the auspices of Russia. By 1805, the Russian American Company had established its base of operations in New Archangel, now Sitka, Alaska. According to Meares, who explored that region in 1788-1789, the "Russians anchored the (fur) trade from Unalaska to Prince William Sound" (Meares 1967:96).

*Ethnographic Accounts from the Maritime Fur Trade: Early Contact 1790-1800:*  
*Metal*

The lure of commercial wealth to be made in the fur trade with China soon drew other nations to the region. Before Meares's expedition, Captain James Cook explored the area in 1776-1779 followed by Vancouver in the 1790s. By this juncture, the enormous potential of the fur trade had already been realized and English, Canadian and American concerns rushed to establish fur trade posts in the region. In 1810, the Montreal based Northwest Company established Spokane House on the Spokane River. For a time, the Northwest Company controlled the fur trade with a license from the British East India Company that allowed them to export furs directly to Canton, China (Mackie 1997:18). John Jacob Astor's Pacific Fur Company, formed in 1809, established a prime location in Astoria when its first ship the *Tonquin* reached the mouth of the Columbia River in March of 1811. However, location and business acumen were not enough to ensure success and the disgruntled and ill-provisioned employees of the Pacific Fur Company sold the company and its supplies to the Northwest Company in 1813 for the sum of \$80,000 (Mackie 1997:16). The Northwest Company fully used their advantageous position on the Columbia River, establishing Spokane House, and controlling the fur trade in the area for the next ten years. The company was absorbed, employees and goods, by the Hudson's Bay Company in 1821. The Hudson's Bay Company virtually monopolized the fur trade in the region well into the mid 19<sup>th</sup> century until the ultimate demise of the region's fur trade circa 1850.

*great distances. An alternate source of metal was probably drift  
metal from shipwrecks. A Klatsop oral tradition contains a narrative of first contact  
at the mouth of the Columbia River where three survivors from a wrecked ship came*

### **Ethnographic Accounts from the Maritime Fur Trade: Early Contact 1790-1800: Metal as a Prestige Item**

During the earliest episodes of European-Native contact, beads were not a highly desired trade item. Captain Cook, arriving in Nootka Sound on the west coast of Vancouver Island in 1778, observed "beads they were not fond of and cloth of all kinds they rejected" (Beaglehole 1967:297). Iron and various kinds of metal were the most prized items of trade by the natives of Nootka Sound. For iron, the natives would part with their furs. If natives and Europeans could not come to an agreeable exchange, the natives would often take what they desired most. Cook and his crew found that the Nootka peoples "had a very great genius and a passion for stealing" (Beaglehole 1967:298).

Alexander Walker preceded Cook into Nootka in 1785-1786. At Nootka, Walker found iron and copper to be the staple trade goods. "A bit of Copper six inches long and one broad, was preferred to the best Tool in our possession, but large pieces of Iron, Hatchets and Chisels were nevertheless prized" (Walker 1982:108-109).

This predilection by the Nootka peoples for metal can be attributed to likely factors such as the relative lack of metal in the prehistoric period. Non-historic sources of metal include meteorites and other natural sources. Native sources of metal were often from pure veins gathered from the surface of the earth. Copper from Alaska was traded great distances. An alternate source of metal was probably drift metals from shipwrecks. A Klatsop oral tradition contains a narrative of first contact at the mouth of the Columbia River where three survivors from a wrecked ship came

ashore at Point Adams (Klatsop Point) sometime during the 1720's. An Indian woman who had recently lost her child was mourning that loss on the beach and ...saw a large object lying on the beach and while looking at it in wonder, the seamen came ashore and approached, holding a bright kettle and motioning her to bring water. The Klatsop Indians sent for others on the river, who came in great numbers. Astonished at the value of their prize and, hoping to get the whole of the metals which it contained, they set fire to the wreck, by which means they lost all. There were copper kettles on the vessel and pieces of money, having a square hole in the center. The two surviving seamen remained as slaves to the Klatsop until it was found that one was a worker in iron, of which the Indians began to see the value, when they made him chief (Gibbs 1877:236-237).

At Port Stewart on Prince of Wales Island in Southeast Alaska in 1791, Vancouver's crew "entered into a brisk trade with blue cloth, files and tin kettles, which they preferred next to firearms in exchange for their sea otter skins, but their fish and other less valuable articles were readily parted with for pewter spoon, looking glasses, beads and other trinkets" (Vancouver 1994:1042). At Gray's Harbor, Washington in 1792, Vancouver again noted that the natives demanded principally iron and copper for furs but "for their less valuable commodities they were partial to blue beads" (Vancouver 1994:775).

The ensuing surplus of European goods along the Northwest Coast trade routes resulted in fluctuations in the value of certain trade goods. At Johnstone Straits in 1792, Vancouver was able to purchase 200 sea otter skins in a single day but "at least a hundred percent dearer" than in former visits to the same coast. "Iron became a mere drudge" and even firearms were refused. Nothing but "large sheets of copper and blue woolen cloth" were accepted for sea otter skins (Vancouver 1994:627). In

1793, while anchoring at some small islands near the Queen Charlotte Sound in British Columbia, Vancouver found the native inhabitants willing to trade sea otter and small land mammal skins for copper, blue cloth and blankets. However he found that copper "...seemed highest in their estimation" (Vancouver 1994:963).

The shift in preference from iron to copper may have resulted from the increased availability of some prestige goods, in this case trade iron. Before contact, both iron and copper had to be traded for via complex trade networks. High-status individuals would have had differential access to these trade sources.

With the advent of the maritime fur trade, prestige items whose procurement was previously limited to high-ranking individuals became more plentiful. As previously stated, Europeans tended to trade with those individuals they perceived to be high-status or chiefs. Those individuals perceived as chiefs by Europeans were often presented with extra presents or "badges of office" in an effort to gather allies and stimulate trade with the people as a whole (Mainfort 1985:559). With prestige goods becoming more available to the masses regardless of rank, high-status individuals had to resort to either the removal of prestige items through destruction or burial, or adopt less plentiful items as prestige goods (Schulting 1995:15).

Alaskan copper was a prestige item before European contact. The availability of trade sheet copper from which ornaments could be made probably lessened the value of copper as a prestige item. The maritime fur traders' complaints about the fickleness of the Indian trade were likely a consequence of flooding the coast with European trade goods. As early as 1788 at Prince George Sound, Meares commented

that “at one time, copper was their favorite object, at another, iron was the only commodity in estimation among them; beads would also have their turn of preference” (Meares 1967:121).

### **Glass Beads: the Emissaries of the Fur Trade**

The popularity of glass beads as trade items took longer to develop than did the popularity of metal. According to Gibson, the use of glass beads as trade items was started by the Russians.

At first—in the last half of the 1780s—the Indians demanded principally iron, copper and colored glass beads, although beads, like all trinkets, were accepted mainly as introductory and conciliatory gifts. The use of beads as trade goods seems to have been limited to Cook Inlet and Prince William Sound where they were popularized by the Russians and where five blue beads obtained one Sea-otter pelt in 1786 (Gibson 1992:217).

According to the majority of ethnographic accounts from this period, glass beads were often used as an opening gift to induce trade. Presents of beads were frequently sent first to solicit visits from natives (Beaglehole 1967, Meares 1967, Vancouver 1994).

As Captain Cook moved northward up the coast towards Alaska in 1789-1790, he found that beads became a more favored and even indispensable trade item. Entering Prince William Sound in May of 1778, he encountered a Native “clothed in dress made of sea beaver skin and on his head such a cap as is worn by the people of King George’s Sound, ornamented with sky blue glass beads about the size of a large pea. These he seemed to set ten times more value upon than our white glass beads

which they probably thought was only crystal which they have among them. They however esteemed (sic) beads of all sorts and gave whatever they had in exchange for them, even their fine sea beaver skins" (Beaglehole 1967). Cook had only clear beads with him in his trade stock. He surmised that the Russians had not been physically present at Prince William Sound. He based this assumption on the abundance of furs and skins possessed by the natives for, he concluded, "the Russians would find some means or another to get them all from them" (Beaglehole 1967:371).

When Meares explored the Russian Islands in upper Alaska in 1788-1789, he noted that iron and other European commodities "were scarce with them" but concluded that the Indians had been trading those articles to peoples further down the coast (Meares 1967:vii). At King George Sound, he wrote that the inhabitants were "totally destitute of European articles: for all of the iron, copper, beads, etc. which they must have received in return for their furs, not a particle of them was now to be seen" (Meares 1967:120).

At Breaker's Point in 1788, Meares and his crew presented glass beads and earrings to high-status women (Meares 1967:141). At Prince Williams Sound in the same year, he writes that he purchased "sixty-five fine sea otter skins" for a moderate quantity of spike nails (iron). Then to "conciliate their friendship, the principal men amongst them were presented with beads of various colours, and they promised to bring us skins as fast as they could" (Meares 1967:xv).

While the item of highest esteem for the most part was still metal, Meares found that "green glass beads were much sought after, and at times those which were

red and blue” (Meares 1967:xxxiv). At King George Sound in 1789, Meares persuaded the native inhabitants to build a house for his men. The Indians were to supply all the labor and materials. In return for this, they were given a certain proportion of beads or iron at the end of the workday (Meares 1967:115).

Green glass beads appeared to have been steadily increasing in desirability along the Northwest Coast. A letter from another British captain, Nathaniel Portman, who was also sailing in the region, asked Meares if he could spare some trade articles, specifically “beads of different kinds, particularly the small green and yellow sort and of them as much as possible....” (Meares 1967:xxvi).

Glass beads became more frequently accepted as a trade item rather than introductory gift along the coast during the late 1700s. However, they do not seem to have reached the status of a prestige or wealth item until the fur trade was firmly established in the Lower Columbia region in the early 1800s. The next section summarizes accounts of beads and trade along the Lower Columbia and at Fort Astoria and Fort Vancouver during the early to mid 1800s.

They found that along the Lower Columbia River the most desired colors of beads were blue and white and not necessarily beads that were expensive or well-made.

### Accounts of Beads along the Lower Columbia River, 1805-1824

The first explorers and traders along the Lower Columbia noted the appearance of the people that they encountered. Some of the most extensive accounts of the region come from Lewis and Clark who explored the area in 1805-1806. The first account in which beads are included appears in their description of the Chinookan peoples of the Lower Columbia. Lewis and Clark noted not only the appearance of these peoples, but also kept notes and journals on aboriginal society and commerce.

The favorite ornament of both sexes are the common coarse blue and white beads which the men wear tightly wound around their wrists and ankles many times until they obtain the width of three or more inches. They also wear them in large rolls loosely around the neck or pendulous from the cartilage of the nose or rims of the ears which are perforated for the purpose. The women wear them in a similar manner except the nose which they never perforate (Moulton 1990 [6]:490).

During an encounter with the Chinook peoples at Chinook Point, Lewis and Clark again noted the propensity for blue beads. They describe the decoration of Chinook women writing that "many have blue beads threaded and hung from different part of their ears and about their neck and around their wrist..." (Moulton 1990 [6]:472).

They found that along the Lower Columbia River the most desired colors of beads were blue and white and not necessarily beads that were expensive or well-made.

the natives are extravagantly fond of the most common cheap blue and white beads of moderate size, or such that from 50-70 will weigh one pennyweight. The blue is usually preferred to the white. These beads constitute the principle circulating medium with all the Indian tribes on this river; for these beads they will dispose of any article they possess. The beads are strung on strands of a fathom in length and in that manner sold by the breadth or yard (Moulton 1990 [6]:492n).

By the early 1800s, blue and white beads had already become a standard of exchange on the Lower Columbia. Closer to the mouth of the Columbia at Fort Clatsop, Lewis and Clark were visited by a party of Clatsop Indians wishing to trade. The chief, Comwool, wears three sea otter skins which Lewis and Clark badly want. At this point in their journey, they are short of trade stock and especially short of blue beads. A bargaining session ensues in which items other than beads are offered for trade,

but he would not dispose of them for any other consideration but blue beads...nor would a knife or an equivalent in beads of any other colour answer his purposes. These coarse blue beads are their favorite merchandise, and they are called by them...chief's beads. The best wampum is not so much esteemed by them as the most inferior beads (Moulton 1990 [6]:470).

Here "wampum" may refer to small seed or embroidery beads (Mainfort:1985:561) but most likely refers to shell beads such as dentalium and olivella. This may suggest that blue glass beads, the "*tia comshuk*" or chief's beads, are being equated with prestige goods such as dentalium. Also implied is that blue beads are considered appropriate payment for sea otter skins which are documented prestige items and historically worn by persons of high status (Thompson 1994:362-363).

Again, at Chinook Point in 1805, Lewis and Clark attempted to trade with a Clatsop Indian for sea otter skins. The Clatsop offered to trade two sea otter skins for blue beads "at such high prices" that the skins could not be afforded.

Merely to try the Indian I offered him my watch, handkerchief, a bunch of red beads and a dollar of American coin, all of which he refused and demanded *tia comshuk*, which is Chief's Beads, and the most common blue beads but few of which we happen to have at this time (Moulton 1990 [6]:472n)

It is clear that from as early as 1805, blue beads were an established commodity of trade along the Lower Columbia River. It can be further stated that blue beads were reaching the status of a prestige item. The name "chief's bead" implies that these beads were wealth items simultaneously conferring some measure of prestige upon the possessor. Hajda states that valued objects serve as standards or measures of value but also as symbolic social values. The exchange of items that symbolize rank and prestige as well as wealth, is also a transfer of symbolic social values. "A change in the relative numbers of valuables held by an individual, therefore would signal that his prestige had risen or fallen..." (Hajda 1984:258).

Despite inferences that equate beads with rank, there are relatively few specific references to this in the historic record. A more pointed reference to beads and social value comes from Gabriel Franchere in 1811. On the Lower Columbia River, he witnesses the last instructions of a dying native man. He (the dying man) "caused to be brought to him whatever he had that was most precious-his bracelets of copper, his bead necklace, his bows and arrows and quiver, his nets, his lines, his spear, his pipe...he distributed the whole to his most intimate friends" (Franchere 1968:97). The

“intimate friends” were more likely relatives and while Franchere does not implicitly state that the dying man was of high rank, the scene was observed while “passing the night in a chief’s lodge”. Later, when commenting on slavery among the natives of the Columbia River, he writes that they are “acquiring slaves from the neighboring tribes in return for beads and furs” (Franchere 1968:192). This supports Hajda’s (1984) claim that exchange existed in terms of spheres, in which valuables were exchanged for other valuables. A further comment on beads as a prestige item comes from David Thompson in 1812. Commenting on the appearance of Chinookan chief Concomely’s wife, he writes that she is “well-dressed with ornaments of beads and shells” (Thompson 1994).

The journal of Alexander Henry in 1814 provides an interesting commentary on the changing preference in bead size among the natives of the Lower Columbia. He writes that blue beads are the most esteemed in the area but only of certain smaller sizes. This is one of the earliest times the term “Canton bead” is used in the historic record. The connection between “Canton beads”, size and the *tia comshuck* will be discussed further in the next three chapters. Henry writes of native people wishing to trade that “these people...seem to care but little about anything except for a few blue beads” (Coues 1897:662). At this time, the amount of beads traded to the Indians for skins was reduced because of shortages in trade stock. Henry notes that the Indians “do not like this”. The Indians want “as usual one fathom of small Canton beads for a skin” (Coues 1897:719). The reduced price per skin is now  $\frac{2}{3}$  of a fathom. Henry notes that the small Canton beads “are the only bead now in fashion amongst them.

The 1<sup>st</sup> and 2<sup>nd</sup> size they will not take” (Coues 1897:719). The historic size of blue Canton beads is speculative but it appears from historic documents that they ran in order of size from largest to smallest and were referred to as the 1<sup>st</sup> to 4<sup>th</sup> sizes. It is possible that the shortage of blue trade beads referred to by Henry is actually a paucity of only the 3<sup>rd</sup> and 4<sup>th</sup> sizes which would correspond to the smaller beads. The 1<sup>st</sup> and 2<sup>nd</sup> size blue Canton beads might still have been in stock in number, however the refusal of the native peoples to accept them rendered them worthless as trade items. The fluctuations in size preference for the Canton bead and how those fluctuations appear in the archaeological record, will be discussed in depth in **Chapter 4**.

In 1824, George Simpson established Fort Vancouver on the Lower Columbia under the auspices of the Hudson’s Bay Company. He comments on the appearance of the Chinook people that “eares are perforated all around and Beads and Hyaques suspended therefrom in quantity according to rank or taste of the party” (Merk 1931:96). This suggests that beads and dentalium are worn in numbers dictated by differences in status and rank and the ability to amass those items in quantity. He goes on to state that the Chinook have little need for the majority of European goods and make little effort to hunt furs for trade. “Cloth blankets and ironworks they rarely purchase and they merely take the trouble of looking after a few beaver in order to supply themselves with Tobacco, Beads, Guns and Ammunition” (Merk 1931:94).

Gambling was a favored activity among the Chinook and Simpson noted that glass beads formed one of the gambling stakes along with slaves and Hyaques (Merk 1931:102). The passion for gambling among the Indians was noted by the Europeans

especially at the larger Indian trading centers such as The Dalles, the Cascades and Willamette Falls (Hajda 1984:229). During the summer months, the peoples of the Lower Columbia region gathered at these sites to trade with upriver tribes. Alexander Ross (1904) noted that more goods were disseminated through gambling than trade at these trading centers. Since slaves, blue beads and dentalia shells were the standard gambling stakes, it can be inferred that beads were probably widely distributed regionally and beyond through these yearly trading marts. Hajda (1984:237) also suggests that gambling was yet another method of wealth acquisition for the upwardly mobile commoner as all ranks of people, men and women, participated with the exception of slaves.

### **Summary and Basis for Equating Beads with Status**

It appears that blue glass beads had become a circulating medium along the Lower Columbia River in the early 1800s. The influx of wealth in the form of trade goods and the presence of permanent white settlements allowed for wealth accumulation to become possible for elites of lower prestige and for commoners.

From the historic record, I infer that the beads of most value in the early 1800s throughout the Lower Columbia region were spherical, blue "China" or "Canton" beads. The larger sizes of these beads became less popular sometime between 1805 and 1815. Either this size preference must have changed again sometime after the later date or Fort Vancouver was left with a surplus of large beads that could not be traded as they were "out of fashion". The early Indian Trade Store (1829-1843-44) at

Fort Vancouver still retained the larger size Canton beads in their stock (Ross 1975). Blue beads of other shapes and sizes would likely have been next in popularity. This preference for blue beads was followed by a marked preference for white beads. I suggest that the preferred white beads were those beads that measured 3-4 mm in size as beads smaller than this would be less visible, thereby defeating their purpose as status markers. Glass beads of colors other than blue and white were less desired and valued. Beads of other colors may have been traded singly or as additions to fathom strings that contained predominately blue and white beads.

#### Classification Systems for Glass Beads

Classification systems for glass trade beads have often provoked more questions than they have answered. No two systems are alike and each researcher tends to use his or her personal nomenclature. In order to facilitate the analysis of a large glass bead assemblage and allow for inter-assemblage comparison, it is

## Chapter 4

### The Glass Bead Study Assemblage

Typologies are important in the evaluation of recovered archaeological materials for two reasons. First, typologies allow and enhance comparisons between similar artifact assemblages at different sites. Secondly, typologies and classifications based on specifically chosen attributes are necessary for answering specific questions. For instance, typologies based on characteristics of manufacture can be used to answer questions about chronology by defining the frequencies of artifacts of certain manufacturing techniques since those techniques change over time. The glass bead classification used in this study is multidimensional. It is based on a series of characteristics and attributes rather than focusing on only one attribute such as manufacture or color. The purpose of this form of classification is not only to address the questions put forth in this study, but also to provide a comprehensive catalog description of both bead assemblages. It is hoped that this will provide a basis for other researchers to compare bead assemblages from other sites within the region and beyond.

### Classification Systems for Glass Beads

Classification systems for glass trade beads have often provoked more questions than they have answered. No two systems are alike and each researcher tends to use his or her personal nomenclature. In order to facilitate the analysis of a large glass bead assemblage and allow for inter-assemblage comparison, it is

necessary to use some standard system of classification. The classification system used here was developed by Lester Ross (1997:179-212) to classify the bead assemblage from Native Alaskan Village Site (NAVS) located in Fort Ross, California. The system builds upon his previous work with beads from the Fort Vancouver National Historic Site (Ross 1990). Ross's system is based on a classificatory scheme developed by Kidd and Kidd in 1970 for the general classification of glass beads in the field. This system was modified by Karklins (1985) before Ross's 1990 work. Ross's system uses visual attributes and follows a hierarchical scheme based on material, manufacturing techniques, stylistic classes and type attributes that include color, diaphaneity, shape and the presence or absence of decoration.

Ross's classification system required color values to be standardized. I accomplished this by using the Munsell Book of Color vol. 1 and 2 (Munsell 1998). Bead size is a significant attribute and bead sizes were determined by measuring the maximum diameter (mm) x length (mm) using digital calipers. The diameter of each bead was measured at the maximum point of density from side to side, and the length was measured from perforation to perforation. Bead specimens were not included in this study unless they could be definitely identified by manufacture and unless there was enough of the bead present to obtain at least one diameter or length measurement. Less than five beads were excluded from the study. This included charred, melted glass fragments that are most likely melted beads based on the glass color. The

(Karklins 1985).

measurement values were entered into the SPSS computer statistical software package. The SPSS k-means cluster analysis function identifies homogenous groups of cases based on selected characteristics. The k-means analysis also requires that the number of clusters be specified. Size measurements were the characteristics selected, and I based the number of specified clusters on the count of sizes populations determined for the Fort Vancouver bead assemblage (Ross 1990). For example, if a given variety of bead from Fort Vancouver had three discrete size populations, I specified three clusters for the same variety of bead recovered from Meier and Cathlapotle. Size populations are separated by equal to or greater than 4 mm increments in diameter or length. Using the k-means cluster analysis, I determined the discrete size populations of each bead variety for those varieties that included ten or more specimens. When a bead variety had less than ten specimens, a simple determination of the mean measurement was used to determine discrete size populations. Perforation size was not measured.

Another characteristic considered in Ross's classification scheme that requires some explanation of determination is diaphaneity. Diaphaneity is defined by the quality of light that can penetrate a bead. This was determined by placing a pin or other long object in the bead perforation and holding the bead up to a light source such as an electric bulb. Transparent beads are those that are completely penetrable by light. Translucent beads are also penetrable by light but objects viewed through them appear diffuse. Opaque beads are penetrable by light only at the thinnest edges (Karklins 1985).

The classification scheme is based on Kidd and Kidd's system of Roman numerals but uses letter code varieties instead. The letter codes are shown in **Table 1**. Using this classification scheme allows beads to be assigned to discrete varieties. Each bead belongs to a given variety based on the sum of its attributes. For example, an undecorated, drawn, monochrome bead with a cut finish would be classified as D/MCCU. Ross's 1997 classification system was followed for both the Cathlapotle and Meier glass bead assemblages with exception of a "short" or "long"

**Table 1 Classification System for Glass Beads**

| <i>Manufacturing Technique</i>               | <i>Type of Layering</i>      | <i>Shape</i>  | <i>Type of Finishing</i> | <i>Decoration</i>  |
|--|------------------------------|---|--------------------------|--|
| D/=Drawn<br>W/=Wound<br>Ws/=Wound and Shaped | M=Monochrome<br>P=Polychrome | C=Cylindrical<br>S=Spherical<br>E=Ellipsoidal<br>O=Ovoidal<br>T=Toroidal<br>CN=Conical<br>MS=Multi-sided<br>M2=Molded sides and two rows of ground facets<br>M4=Molded sides and four rows of ground facets | C=Cut<br>H=Hot-tumbled   | Dcl=Combed Loops<br>Df=Faceted<br>Ds=Striped<br>Dd=Dotted<br>Dfl=Foil<br>U=Undecorated |

designation. These designations are based on an arbitrary division of size and are unnecessary and redundant when measurements are provided as they are in this study. Similarly, designations such as small, medium and large are avoided. Variety numbers are assigned to each bead type. When Meier or Cathlapotle bead varieties corresponded to bead varieties present at Fort Vancouver National Historic Site, they were given a FOVA pre-fix. Beads that did not correspond to FOVA varieties were

given either a CAT or MER pre-fix corresponding to either the Cathlapotle Site (45CL1) or the Meier Site (35CO5). Kidd and Kidd (1970), Karklins (1984, 1985),

Ross (1990) The bead assemblage from Fort Vancouver is an excellent comparative base for the analysis of beads recovered from Pacific Northwest sites. The majority of Hudson's Bay Company (HBC) stations have tightly defined dates of occupation. Fort Vancouver served as an HBC headquarters and redistribution center for goods "servicing no fewer than 38 forts, houses and warehouses throughout present-day Oregon, Idaho, Washington and British Columbia" (Ross 1990:29). The Hudson's Bay Company literally monopolized the fur trade in the region well into the mid 1800s. Fort Vancouver is located approximately nineteen miles down river from Cathlapotle and the ethnohistoric as well as historic records suggest that people at the two locations had regular contact and commerce with each other. The Fort Vancouver bead assemblage contains well over 100,000 beads of many varieties. While I do not claim that all beads at the two study sites were procured from Fort Vancouver, it is likely that most of the beads have some link to HBC sources.

determination and any color differences. In doing so, the comparison of the same type of bead from another site.

### **The Cathlapotle Assemblage**

The Cathlapotle Site (45CL1) includes the remains of a plankhouse village and is located on the Ridgefield Wildlife Refuge in Ridgefield, Washington. The beads in this study were recovered from excavations of House 1 and House 4 and their related midden and activity areas (Ames et al. 1999). The Cathlapotle assemblage consists of 704 glass beads comprising 68 varieties. There are 33 varieties of drawn beads and 35

varieties of wound beads. Manufacturing techniques for glass beads have been discussed exhaustively elsewhere by Kidd and Kidd (1970), Karklins (1984, 1985), Ross (1990) and Spector (1976) among others. However, an understanding of manufacturing techniques is integral to understanding bead classification. Brief summaries of the primary manufacturing techniques are provided before each bead section. There is also a short discussion of bead damage and preservation as comments on these processes are also included in the bead tables in **Appendix A**. All listed tables numbers that begin with the letter **A**, will be found in **Appendix A**. Bead preservation was determined through visual inspection. Differential bead preservation characteristics are not part of the classificatory scheme but are added as comments because they often change bead color and texture. Furthermore, certain bead varieties appear to preserve differentially. Broken beads of each variety are listed in the discussion of that variety. Documenting preservation characteristics and breakage enables differential preservation to be compared across diverse sites. Since differential preservation can change bead color, it is important to note the type of deterioration and any color differences. In doing so, the comparison of the same type of bead from another site can be made even if that bead lacks the same kind and degree of deterioration. It is also important in term of answering questions in the context of site formation processes. For example, are broken beads more frequently recovered from midden contexts indicating intentional disposal rather than loss? Does advanced bead deterioration indicate more acidic sediments or unstable components in the glass itself?

### **Bead Preservation**

Glass is not a chemically stable component and is affected by soil composition, temperature and moisture. The condition of excavated beads is dependent upon both the nature of the soil and the chemical composition of the glass. There are several types of damage noted in the two study assemblages. Bead damage and preservation comments are noted in the Diaphaneity, Luster and Patina section of the bead tables. Three types of damage and poor preservation were noted. The description of each damage type was summarized from Biete (2000).

- 1) Delamination/iridescence: A thin film has formed over the entire bead. The film can be pearl-like and peel off the outer layers of the bead, somewhat like the skin of an onion. Alternately, a bead that appears undamaged at the time of excavation develops an iridescent film caused by the rapid dehydration of the glass accelerated by excavation and exposure to oxygen.
- 2) Infiltration: The body of the bead is infiltrated by soil, water and other substances causing cracking and discoloration. Porous beads, those with many air bubbles in the glass, are most prone to this kind of damage.
- 3) Leaching/devitrification: A process defined as a total breakdown of the chemicals in the glass caused by the action of ground water. "Soluble sodium (Na) and potassium (K) alkali have been leached out of the glass leaving just the so-called silicon (Si) structure" (Biete 2000:6). In essence, the glass has devitrified or broken down chemically to the silicate sand that

is its primary element. Devitrified beads may retain their shape but are friable and powdery. They either do not retain their color at all or the color is profoundly changed from the original chroma.

### **Bead Manufacturing: Techniques, Nomenclature and Characteristics** **Drawn Beads (n = 447)**

Drawn beads, also known as 'cane' or 'hollow-cane' beads were manufactured using either a single (monochrome) or double (polychrome) layer of glass. Drawn beads often make up the most significant manufacturing class of beads in Pacific Northwest archaeological sites (Ross, 1990). At Cathalpotle, 63.3% of the glass bead assemblage are drawn beads. This process was accomplished by gathering globs of molten glass at the end of a rod or "pontil". Perforations were then formed by the introduction of an air bubble into the glob by folding, stretching or blowing. The glob was then reheated to a semi-plastic state and another opposing pontil was attached. The rapidly cooling glob of glass was then stretched in between the two pontils by pulling them in opposing directions. Women, or more often young boys, were employed in this phase of the process in which they were required to run quickly across factory floors stretching the glob of glass into a long hollow tube or "cane". Polychrome or multicolored drawn beads were created by two methods. The first method involved layering a contrasting coat of glass over the first or core layer before stretching. The second method was a fortuitous creation of double layer beads formed by the cooling of the glass itself. Layers of certain glasses cooled from the outside in to form darker or duller layers lightening in chroma as the cooling moved inward.

Glass canes were sometimes also molded before stretching by laying a semi-plastic glob of glass on a marbleboard. A wooden paddle was then used to create multiple flat sides (Spector 1976:21). This shape was retained when the glass was stretched into a cane. After the finished cane had completely cooled, it was cut or broken into lengths of the desired size. These sizes are purported to be relatively uniform as the completed beads were poured through sieves of different gauges to sort and separate sizes (Bussolin 1847:71-72). The resulting cut or broken beads were either left with angular ends, or were finished by one of several methods. The beads were either placed in a heated, revolving barrel filled with sand or ash, a method known as hot-tumbling, to create a smoother, more rounded appearance or hand-ground on the outer edges to create facets. As a final step, the beads were sometimes "agitated in bags of bran to produce a polished surface" (Spector 1976:21). Drawn beads tend to be cylindrical in shape and can be decorated with ground facets or inlaid with stripes of a contrasting color.

### **Wound Beads (n = 257)**

Beads of wound manufacture make up 37.7% of the Cathlapotle assemblage. Wound beads were manufactured singly as opposed to the mass-manufacture of drawn beads. They were more labor-intensive and therefore, generally more expensive. Known as "wire-laid", "wire-wound" or "mandrel-wound", the manufacturing process involved the use of drawn glass canes broken into small segments. The segments were reheated in either a furnace or by a glass-blower's lamp ("lamp-wound"), then

wrapped around a mandrel or wire. The glass on the wire was then twirled in the heat until a bead of the desired size and shape was formed. Wound beads come in a wider variety of shapes than drawn beads do because of the freeform method of manufacture. They tend, for the most part, to be spherical, ovoidal and ellipsoidal in shape although they can range to conical and roughly cylindrical. The perforations in wound beads are usually smaller than the perforation in drawn beads because they correspond to the size of the mandrel or wire.

Glass of different colors was sometimes added to the glass already on the mandrel to form polychrome beads. Insets of contrasting glass could be pressed into the semi-molten bead to form designs. Generally, fancy beads, those with inlays or flower designs, were manufactured using a glassblower's lamp enabling more control over the design process. These lamp-wound beads were quite costly and therefore not extensively used for the North American fur trade.

Wound beads manufactured in Europe were generally too expensive to be widely used as trade items in the New World. To circumvent this expense, British traders obtained most of their wound bead stock from China where it could be purchased more cheaply. This not only made sense from an economic standpoint but from a merchandising one as well. There was already an established trade in sea otter pelts in China, and British traders had been doing business in Canton since before the 1800s.

### Drawn Bead Varieties

#### Monochrome Beads with Cut Ends

#### **Table A1.1** Undecorated Cylindrical Beads (n = 11)

This bead type includes eleven specimens. Only one of the specimens corresponds to the Fort Vancouver collection. FOVA 1066 is translucent green in color. CAT 48 is transparent blue and of a variety popularly called “bugle beads”.

This bead variety came in a wide range of colors and is thought to have been manufactured in Bohemia (Woodward 1965:12). Bugle beads were popular with Euroamerican women as embroidery beads during the mid 1800s (Woodward 1965:11). This bead specimen displays breakage at both ends so the exact length could not be determined. It is therefore designated as incomplete in **Table A1.1**.

CAT 39 (n = 2) is also broken at both ends. It is similar to CAT 48 but can be differentiated by its color. Both specimens are deteriorated and covered by a thick, whitish patina.

CAT 76 (n = 6) is a transparent purplish blue. Some of the specimens display an iridescent patina that is consistent with other transparent blue bead varieties. This seems to be a chemical reaction common to transparent blue glass at both Meier and Cathlapotle. Glass was colored dark to light blue by varying the amount of cobalt oxide added. Darker blue glass at both sites appears to be more reactive to the soils. Some specimens of this variety appear to be hot-tumbled but the majority have unfinished ends. FOVA 1006 is represented by a single bead half.

## Monochrome Beads with Cut Ends

**Table A1.2** Subtype D/MM4CDf: Beads with four rows of ground facets (n = 3)

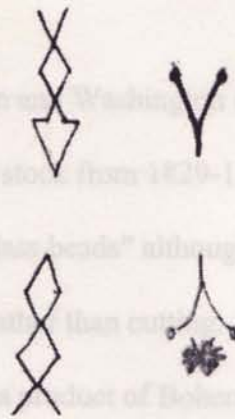
This category includes three varieties, one specimen in each variety. The three beads have no representative specimens at Fort Vancouver. These beads were manufactured by grinding four rows of facets, two at each opposing end of the bead, on a cut glass cane already molded with seven to eight sides. Beads of this type were molded using either paddles or marvers. Alternately, they were mandrel pressed or Prosser molded. The latter two methods of manufacture employ a two-sided mold between which semi-plastic glass is pressed into shape. Both processes leave visible marks. Mandrel pressed beads have a conical perforation, smaller and more ragged on one end, and a larger perforation with a negative cone surrounding it on the other (Moura 1991:22). The facets are sometimes irregular and a seam is often visible around the median of the bead. This seam could be obliterated with hand polishing and this was often the case on more expensive beads. Prosser molded beads have a porous appearance and a slight bulging around the circumference.

CAT 77 has 35 flat surfaces consisting of seven molded sides and two rows of seven ground facets at each end. CAT 78 and CAT 211 have 40 flat surfaces consisting of eight molded sides and two rows of eight ground facets at each end. No mold marks are visible on any of the three specimens and the perforations are uniformly even. The facets on CAT 77 and 78 have a slightly rippled appearance that is produced by the cooling of the glass. CAT 211 is an elongated octagonal bead. The lips of the perforation are broken on one end and well rounded and finished on the other. This finish was probably hand polished after being broken or cut from the

original cane. The ground corner facets contribute to the rounded appearance. The facet junctions on the main portion of the bead are crumbled while the end facet junctions are mostly intact. The crumbled body facets are most likely a result of abrasion or perhaps use from necklace wear. The end facets are not perfectly uniform which is indicative of hand grinding. This bead was once decorated with gilt or goldleaf designs that have totally eroded away leaving only etched shadows. Each long body facet had one of two patterns on each alternating facet (see **Figure 4**). The patterns appear to have been floral in design. A longitudinal band of gilt dividing the surface into two equal parts bisected each decorated long facet. The most similar varieties at Fort Vancouver have seven molded sides and 28 ground facets for a total of 35 flat surfaces. Ross states that both seven sided Fort Vancouver varieties were recovered "from the site of the Indian Trade store and missionary store, and may represent an American, rather than HBC import"(Ross 1990:38). CAT 77 was recovered from an excavation unit located in sheet midden outside of house walls. CAT 78 was recovered from an excavation unit at the center of House 1.

7.1 mm (L) and 2) large, 6.4-9.6 mm(D) x 4.4-8.8 mm (L.) (Ross 1990:36). He states that in general, the smaller size corresponds to six-sided beads while the larger size corresponds to those with seven sides. All specimens recovered from Cathlamet fall within the smaller size range.

These two bead varieties represent the group of beads that are both historically and still popularly called "Russian Beads". They are purported to have been introduced into Alaska by Russian fur traders in the early 1700s and are associated



**Figure 4** Shadow Etchings on Long Facets of CAT 211

#### Monochrome Beads with Chopped Ends

#### **Table A1.3** Subtype D/MM2CDf: Beads with Two Rows of Ground Facets (n = 14)

There are two varieties of this bead recovered from Cathlapotle, both corresponding to Fort Vancouver types. FOVA 1067 is a colorless bead with six molded sides and two rows of ground corner facets. FOVA 1002 is a purplish blue, transparent bead with six molded sides and two rows of ground corner facets. Ross (1990) identifies only two statistically valid archaeological sizes for this bead type within the Fort Vancouver collection. The first is 1) small, 4.68-6.8 mm (D) x 3.57-7.1 mm (L) and 2) large, 6.4-9.6 mm (D) x 4.4-8.8 mm (L) (Ross 1990:36). He states that in general, the smaller size corresponds to six-sided beads while the larger size corresponds to those with seven sides. All specimens recovered from Cathlapotle fall within the smaller size range.

These two bead varieties represent the group of beads that are both historically and still popularly called "Russian Beads". They are purported to have been introduced into Alaska by Russian fur traders in the early 1700s and are associated

with early coastal sites in Oregon and Washington (Woodward 1965). These beads were part of the Fort Vancouver stock from 1829-1860 and were probably listed on the shipping manifests as "cut-glass beads" although the manufacturing process involves grinding and molding rather than cutting. They were not of Russian manufacture but are most likely a product of Bohemia or Venice. Bohemia seems the more plausible candidate as glass factories in Gablonz were producing ornate, faceted beads for European consumption from the second half of the seventeenth century onward (Jargstorf 1993:8).

#### Monochrome Beads with a Hot-Tumbled Finish

##### **Table A1.4** Undecorated, Cylindrical Beads (n = 220)

Drawn beads comprise over half of the total Cathlapotle assemblage. This was not unexpected as drawn beads were mass-produced as opposed to wound beads that were produced singly. Drawn beads are the most common types of beads found in mid to late 19<sup>th</sup> century assemblages. Monochrome beads with hot-tumbled finishes were the most common types of beads recovered at Fort Vancouver representing 69.2% of the total assemblage (Ross 1990:42). There are nine varieties of this class in the Cathlapotle assemblage making up 32% of the total assemblage. All of the beads varieties correspond to Fort Vancouver varieties. The most common bead of this type at Cathlapotle is FOVA 1003. It is an opaque white bead represented by 119 specimens with a mean diameter of 3.69 mm and a mean length of 2.46 mm. This is slightly outside the upper limits of the size populations recorded for the Fort

Vancouver collection, possibly indicating that this variety may not have been acquired from Fort Vancouver. The second most common variety is FOVA 1063 comprising 81 specimens. This bluish-green bead was being manufactured in Murano and Venice, Italy as early as the 1700s. There is some color variation among the specimens in this variety, likely the result of poor preservation. This differential preservation appears common to the glass in this bead variety. This is evidenced not only by discoloration but also by pitting, cracking and partial devitrification. Darby (1995:185) suggests that this color variation may be a result of this variety "being purchased at different times and from different sources". Ross contends that "presumably this variety was composed of numerous historic blue varieties but there is no method available to subdivide this variety into more refined groupings" (Ross 1976:709). FOVA 1081 is represented by five well-preserved specimens of opaque dark blue glass, with no signs of deterioration. FOVA 1074 is represented by five complete transparent blue specimens. All specimens of this variety are well preserved and without patina or discoloration of any kind. FOVA 1042 comprises four specimens. One bead of this variety is broken but crossmends with another half recovered from an adjacent excavation unit. FOVA 1027 is represented by two specimens. One of these transparent red beads was recovered by breaking apart the dirt cleaned from the perforation of a larger bead. The bead is very small, measuring scarcely over two millimeters in diameter. It is unlikely that it would have been recovered at all by normal screening through either 1/8" or 1/4" mesh screens. The other bead of this miniscule size was recovered through fine-mesh water screening.

Differential recovery of beads as a recovery bias has been discussed previously in

**Chapter 3.** FOVA 1060 is a colorless bead represented by two complete specimens.

FOVA 1061 is a single transparent green bead. FOVA 1051 is represented by a single specimen, solid opaque red in color similar to FOVA 1038 but without the green core.

Polychrome Beads with Cut Ends

**Table A1.5** Undecorated, Cylindrical Beads (n = 1)

FOVA 1024 is represented by a two specimens. This is an opaque white bead covered by a thin colorless layer. The interior layer is very porous with many air bubbles. Only four specimens of this variety were recovered from Fort Vancouver with diameter measurements ranging from 6.1 mm to 12.1 mm and length measurements from 7.5 mm to 25.7 mm (Ross 1990:39). Both ends of the Cathlapotle specimens have been broken. With the Fort Vancouver specimens varying so widely in length measurements, it is impossible to extrapolate the length of the Cathlapotle specimen before breakage. Both beads are in poor condition and is severely soil-stained.

Polychrome Beads with a Hot-Tumbled Finish

**Table A1.6** Drawn, Undecorated, Cylindrical Beads (n = 167)

The most common variety within this class is FOVA 1040, an opaque white on white double-layer bead. Visually, this bead is similar to FOVA 1003, however there are differences in availability between the two bead varieties at Fort Vancouver which

make them temporally sensitive. FOVA 1040 was reported by Ross (1990) to be seven times as common as FOVA 1003 in the Indian Trade Store (1829-1843-44). In the later trade store, 1844-1852, FOVA 1040 was only four times as common as FOVA 1003. This suggests that the double-layer white bead was being replaced by the single layer white bead by the mid 1830s to early 1850s. This gradual substitution probably has something to do with a change in suppliers. At Cathlapotle, the ratio of FOVA 1003 to FOVA 1040 is approximately 1.1:1. This ratio corresponds to the site being continually occupied until 1836. FOVA 1003 are only slightly more common than FOVA 1040 and the substitution was likely well underway by the time the bulk of these beads entered the site. (1990:45). *In the Pacific Northwest, Cornaline d'Allep*

The second bead variety in this category is CAT 1. Again, this bead is visually similar to both FOVA 1040 and FOVA 1003. It is an opaque white bead with a thin, colorless outer layer. This variety was assigned a CAT prefix because it was not identified in the Fort Vancouver collection. This variety is present at Fort Vancouver, but was classified as single-layer white bead, FOVA 1003. The thin, colorless veneer is difficult to see and required the use of a microscope to identify. Beads of this variety have been identified by Brain (1977) as part of the Tunica Treasure bead assemblage in Louisiana. He places the time of their introduction on the East Coast as the early 1600s and their place of origin as Venice (Brain 1977:105). The last bead variety in this category is FOVA 1038. This is a triple layer bead known as "Cornaline d' Allepo" or "Hudson's Bay Bead" although it is unlikely that the Hudson's Bay Company was responsible for its introduction. The layers consist of an inner core of

transparent dark green under a layer of opaque brick red covered with a thin colorless veneer of glass. Two size populations were identified at Cathlapotle. The first has a mean diameter of 3.36 mm and a length of 3.02 mm. The second has a mean diameter of 5.51 mm and a length of 7.09 mm. The second size is larger than either of the two size populations identified at Fort Vancouver. This discrepancy in size between the two collections is not surprising as this style of bead was produced for over three centuries in Holland, Italy and Czechoslovakia (Dubin 1987). Cornaline d' Allepo beads come in disparate shapes and sizes. They consist of double or triple layers of glass and are "commonly associated with Native American sites during the early to mid nineteenth century" (Ross 1990:45). In the Pacific Northwest, Cornaline d' Allepos with opaque exteriors and dark green inner cores are associated with pre-1800 sites (Moura 1991, Woodward 1965). Additionally, some of the specimens of this variety have longitudinal black stripes on the exterior. Woodard states that this variation is usually found on seventeenth century sites (Woodward 1965:20). On closer examination of this bead variety recovered from the two study sites and from Fort Vancouver, it is clear that this striped variation is a fortuitous rather than intentional embellishment. In some cases, the opaque brick red layer has separated beneath the colorless outer layer revealing the dark core. The green is quite dark when not held up to a light source and is often perceived as black. While this is not an intentional variation it still may have value as a temporal marker if more of these "striped" beads are indeed found on seventeenth century sites. This variation may be associated with a specific place or time of manufacture.

Polychrome Beads with Cut Ends

**Table A1.7** Drawn, Decorated Cylindrical Beads (n = 2)

There are two specimens in this category. The first, CAT 69, consists of half of a striped bugle bead, a type that is sometimes referred to as a "candy-cane bead". This bead was probably manufactured in Holland (vanderSleen 1973:108-112). The complete length was not measurable since both ends were broken, but the incomplete length is over 8 mm. It is classified as having a cut finish because glass canes of this length are rarely hot-tumbled although they may be finished by grinding facets on the ends. The second specimen consists of only a small fragment. This is a four layer fragment of the outer edge of a "Chevron bead". It is likely the same bead as FOVA 1039, recovered from Fort Vancouver (Ross 1990:39). Chevron beads are also called "rosette" and "star beads" (vanderSleen 1973:26). Ross states that it was "manufactured by alternately pushing a gather of glass of one color into a twelve pointed star mold, then covering it with a layer of glass of a second color and later, a third. Complex straight stripes were then laid onto the gather. Next, the entire mass was drawn into a hollow cane" (Ross 1990:40). Since only one four-layer fragment is present, it is impossible to state with absolute certainty that this fragment is of the same variety as FOVA 1039. However, the red and white layers of the fragment match the Munsell chroma designations from the single specimen recovered at Fort Vancouver. This bead fragment was recovered from a storage pit within House 4. Since the rest of the bead was not recovered, it is likely that it was being disposed of

rather than heirloomed. The occupants of Cathlapotle appear to have used and reused pits for both storage and refuse disposal (Ames et al. 1999).

Polychrome Beads with Cut Ends and Two Rows of Ground Facets

**Table A1.8** Drawn, Decorated Cylindrical Beads (n = 7)

Only one variety of this bead class was recovered from Cathlapotle. Ross (1990, 1976) suggests that double-layer beads in which the inner layer was of the same hue as the outer, but of a slightly differing chroma or color value, was a “fortuitous” rather than an intentional result. Fortuitous layers “appear to have been produced naturally when certain types of glass cooled from the inside out” (Ross 1990:38). FOVA 1034 is a double-layer dark purple over a slightly lighter purple core. This is a compound version of the “Russian” or “Ambassador” bead. This bead has as long history as a trade bead not only in North America but also in Africa where it was used in the slave trade. Ascher and Fairbanks (1971) state that “it appears in Africa around the turn of the nineteenth century.” The name ambassador bead comes from the belief that this bead type was used as a “passport for bearers of messages between tribal chiefs...The blue hexagonal is connected with the purchase of slaves in the period beginning 1800” (Ascher and Fairbanks 1971:81). Like the previously mentioned faceted beads, it is probable that these were manufactured in Bohemia and they probably date from the mid to late 19<sup>th</sup> century. The Cathlapotle specimens of this class comprise seven whole beads and one small fragment.

Polychrome Beads with Hot-Tumbled Finish and Simple to Compound Straight Stripes

**Table A1.9** Drawn, Decorated Cylindrical Beads (n = 14)

There are seven varieties in this class only one of which corresponds to a Fort Vancouver variety. FOVA 1028 is represented by a single specimen. This is an opaque white bead with four simple opaque blue stripes. CAT 16 is represented by five specimens. These are opaque white beads with four simple green stripes. CAT 72 is a transparent blue bead with erratic, opaque white striping. The striping may have been intended as three simple thick white stripes but the stripes appears to have separated during the drawing process producing an alternating single thick, three thin, two thin and a final thick white stripe. CAT 27 comprises two specimens. This is a transparent dark amber bead with six alternating, thin, orange and white stripes. CAT 64 is an opaque to translucent amber bead with four simple opaque stripes. This bead differs from CAT 27 in that it has a metallic outer coating, possibly an aventurine overlay. Aventurine decoration consists of granules of copper suspended in glass. Beads and other jewelry decorated with aventurine were also known as goldstone (Jargstorf 1991:125-134). The outer layer of this bead is too complete and deliberate to be an iridescent patina. When the bead is held to the light, it appears as a translucent dark blue. This makes it a double layer striped bead. CAT 75, represented by three complete specimens, is an opaque black bead with six to eight simple stripes. The last bead, CAT 47, is a variation of the Cornaline d' Allepo bead discussed previously. This is a triple layer bead with an inner dark green core, a brick red second layer, and a thick colorless outer layer. The second layer is decorated with

four compound stripes, each consisting of a black stripe between two white stripes. These stripes are intentionally laid, rather than a fortuitous separation of the brick-red layer. It is likely that all of the beads are of Dutch manufacture with the exception of the CAT 47. That variety is probably Venetian in origin (vanderSleen 1973, Dubin 1987).

### Wound Beads Varieties

#### Wound Monochrome Beads

**Table 2.1** Undecorated Spherical Beads (n = 196)

The most common variety in this class is FOVA 2002 containing 89 specimens. This variety is also the most archaeologically significant. The variety is composed of spherical, sky-blue beads that range from transparent to translucent, but are mostly opaque. This range in diaphaneity can be clearly seen when looking at large samples such as those from Cathlapotle and Fort Vancouver. The Cathlapotle assemblage actually displays three statistical size populations that correspond to Ross's (1990) hypothesized historic sizes. These beads were commonly known as "Canton" or "China Blue" beads because they were thought to have originated in Canton, China. In the historic record, they are referred to as Canton Beads No. 1, 2, 3, and 4 or 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> sizes (Coues 1897:753, 822). Ross has suggested that these sizes correspond to discrete size populations. This statement is based on his measurements of a glass bead assemblage from the Bullard Beach site (35CS1) on the Oregon Coast. The historic sizes according to Ross are listed in **Table 2** below. The

historic 4<sup>th</sup> size measuring 16.5 mm (D) x 14.0 mm (L) is an estimate based on 4.00 mm size intervals. A specimen of this size was not available for measurement from either the Bullard Beach or Fort Vancouver assemblages (Ross 1990:48). To determine if the FOVA 2002 specimens in the Cathlapotle assemblage corresponded to the hypothesized historic sizes, I ran a k-means cluster analysis of the diameter and length measurements using the SPSS 8.0 statistical software package. The results appear in **Table 2**. The analysis identified three size populations within the 45CL1 assemblage. The first cluster consists of a 9.25 mm (D) x 6.14 mm (L) range and fits within the range of the historic 3<sup>rd</sup> size. The second cluster, 13.02 mm (D) x 11.56 mm (L) probably corresponds to the 2<sup>nd</sup> historic size. The third cluster 3.06 mm (D) x 3.06 mm (L) is within the limits of historic 4<sup>th</sup> size. No bead approaching the historic 1<sup>st</sup> size was present in either the Fort Vancouver or Cathlapotle assemblages. Ross hypothesized that the historic 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> sizes ran from small to large. However, as discussed in the previous chapter, by 1814, smaller blue beads were the most in demand in the Lower Columbia area. Alexander Henry remarks that in 1814, the small Canton beads are “the only bead now in fashion among them. The 1<sup>st</sup> and 2<sup>nd</sup> size they will not take” (Coues 1897:719).

I suggest that the historic sizes of Canton beads ran counter to Ross's hypothesized size ranges. The 1<sup>st</sup> size was probably the largest with the 4<sup>th</sup> size being

**Table 2 Comparison of Ross's Hypothesized Historic Sizes to the 45CL1 and 35CO5 Assemblages**

| <i>Historic Size</i>          | <i>Ross's Historic Size Measurements</i>  | <i>Cathlapotle and Meier Historic Size Measurements</i>  |
|-------------------------------|---|--|
| No. 1 or 1 <sup>st</sup> Size | 3.95-4 mm (D) x 2.4-4.6 mm (L) with a mean measurement of 4.54 mm (D) x 3.65 mm (L) | With a 4.00 mm size interval, an estimate of the 1 <sup>st</sup> size based on the Cathlapotle assemblage would measure 17 mm (D) x 16 mm (L)<br>For the Meier assemblage 16 mm (D) x 14 mm (L)  |
| No. 2 or 2 <sup>nd</sup> Size | 6.3-10 mm (D) x 5.2-9.0 mm (L) with a mean measurement of 8.57 mm (D) x 7.43 mm (L) | For Cathlapotle: 13.02 mm (D) x 11.56 mm (L)<br>n = 1<br><br>For Meier: 12 mm(D) x 10 mm (L)<br>No beads of this size were recovered from Meier. These are hypothesized sizes with a 4.00 mm difference increase from the 3 <sup>rd</sup> size specimens recovered |
| No. 3 or 3 <sup>rd</sup> Size | 12.7 mm (D)<br>8.8 mm (L)   | For Cathlapotle: 9.25 mm (D) x 6.14 mm (L)<br>n =46<br><br>For Meier: 7.56 mm (D) x 5.84 mm (L)<br>n =6  |
| No. 4 or 4 <sup>th</sup> Size | 16.5 mm (D)<br>14.0 mm (L)  | For Cathlapotle :3.06 mm (D) x 4.37 mm (L)<br>n = 44<br><br>For Meier: 4.37 mm (D) x 3.15 mm (L)<br>n = 5  |

I suggest that the historic sizes of Canton beads ran counter to Ross's hypothesized size ranges. The 1<sup>st</sup> size was probably the largest with the 4<sup>th</sup> size being

the smallest. By the time Fort Vancouver was established in 1825, it is likely that the larger 1<sup>st</sup> size beads were not much in demand as trade items and therefore not being ordered as stock. This would explain the lack of a large size Canton beads at Fort Vancouver and at Cathlapotle.

FOVA 2002 also exhibits a characteristic that makes it temporally sensitive. Approximately 63% (n = 56) of the beads of this variety in the Cathlapotle assemblage exhibit a "lip" or protrusion of glass adjacent to the perforation. This "lip" was a by-product of the winding process. The presence of this protrusion suggests that they entered the site before 1830 because after that date, the protrusions were removed through a heat treating process that finished the bead.

The next most common bead is FOVA 2033 with fifty specimens. This variety of transparent blue beads is characterized by an unusually high air bubble content. The bubbles are visible when the bead is held up to the light. Forty-eight specimens of this variety were recovered from the same unit within two consecutive levels. These beads probably entered the site already strung in a fathom length, although no trace of the stringing material remains. According to Lewis and Clark, 50-70 moderate size beads would make up a fathom (Moulton 1990 [6]:472n).

CAT 280 comprising eleven specimens is a transparent sky-blue bead. This bead is likely of Chinese manufacture because of its bright color and small perforation and may be yet another variation of the "Canton" bead. Chinese beads tend to be of bright colors, highly lustrous and have small bore diameters (Francis 1994). This

variety may be one of the older beads in the Cathlapotle assemblage. Quimby (1978) states that maritime fur-traders were distributing sky-blue beads from China in the early 1700s. It is possible that this bead variety found its way into the site through early trade with coastal natives before European contact in the interior.

CAT 223 (n = 1) is a transparent green bead probably also of Chinese origin. FOVA 2005 is a transparent to translucent blue bead with very apparent winding marks and some exterior pitting. There are fourteen specimens of this variety. CAT 290 (n = 3) is a transparent dark blue bead with three specimens. All three beads of this variety are in poor condition, corroded and covered with a mossy greenish-white patina. This is a likely result of some chemical reaction between the soil and this particular dark blue glass. This result has been previously noted in other dark blue bead varieties at the site. FOVA 2006 is a dark blue opaque bead represented by four specimens. FOVA 2008 and CAT 222 are both transparent pinkish-red beads distinguished based on their chroma values and diaphaneity. FOVA 2046 is a transparent red bead represented by four specimens. FOVA 2041 is represented by two opaque white specimens. Each specimen is half of a bead. The two halves do not crossmend. Small brown specks cover the surface of the beads, a result of soil staining rather than any intentional decoration. FOVA 2052 is represented by three transparent purplish-blue beads. One bead of this variety is covered in an iridescent patina, a by-product of oxidation. FOVA 2016 is a translucent white bead represented by four specimens. CAT 207 and CAT 209 are opaque to translucent shiny blue

beads, respectively, probably also Chinese in origin. CAT 207 is represented by one specimen and CAT 209 by two specimens.

#### Wound Monochrome Beads

##### **Table A2.2** Undecorated Ellipsoidal Beads (n = 17)

There are four varieties of ellipsoidal beads within this class. All varieties correspond to Fort Vancouver varieties. FOVA 2009 is an opaque white bead that exhibits the characteristic banding marks of the winding process. The horizontal banding marks and some brown corrosion caused this variety to be mistaken for a shell bead at first glance. This was the most common variety of ellipsoidal bead at Fort Vancouver and the most common one at Cathlapotle as well. It is probable that this variety was procured from Fort Vancouver although it has a long-standing history as a trade bead elsewhere in North America. This bead variety was introduced on the East Coast between the early 18th and mid 19th centuries and has been identified as part of the Tunica Treasure bead collection in Louisiana. The Tunica Treasure dates to the late 1600s (Brain 1977:109). FOVA 2032 is a translucent red bead represented by two specimens and displaying perceptible banding marks. The vivid coloring, high luster and small perforation suggest that this bead may have been manufactured in China around 1841 (Dubin 1987). FOVA 2021 is of particular archaeological interest because of its method of coloration. Before 1860, most yellow glass was colored by adding coal which burned off during the heating process producing a dark mustard yellow color from the resulting sulfur. During the 1860s cadmium sulfide was used to

produce a bright, imperial yellow. Glass factories in Bohemia began using uranium to color glass toward the end of the 1800s. This latter method produced an almost electric yellow shade (Francis 1994:61-64). FOVA 2021 appears to have been colored with cadmium sulfide. The shade is too light to have been colored with coal sulfur and too dull to be colored with uranium. In this case, the method of coloration makes this bead temporally sensitive.

#### Wound Monochrome Beads

Table A2.4 Undecorated Conical Beads (n = 2)

#### Wound Monochrome Beads

Table A2.3 Undecorated Cylindrical Beads (n = 35)

This class is represented by nine varieties, three of which correspond to Fort Vancouver varieties. FOVA 2007 is represented by two dark blue beads. CAT 213 is a bright greenish-yellow transparent bead half. This is the last specimen of four undecorated green beads in the entire assemblage. CAT 231 is a translucent colorless bead that appears crudely manufactured. The winding marks are very apparent and the body is irregular rather than smooth. There is a whitish patina in some of the crevasses in the body. CAT 243 is similarly made. It is a translucent blue bead with some brownish to white patina clinging to the crevasses and lining the perforation. It is possible that this patina is an intentionally added kaolin clay coating that was painted on the bead perforation to prevent its sticking to the mandrel. FOVA 2013 is a highly lustrous translucent blue bead that exhibits some opaque black whorling at the distal ends, bilaterally. This appears to be a result of imperfections in the glass rather than a deliberate decoration. Minor contaminants in glass may result in unintended

#### Wound Polychrome Beads

color additions or changes. FOVA 2065 is an opaque light blue bead. There were only two beads of this variety recovered at Fort Vancouver. The 10:1 ratio between Cathlapotle and Fort Vancouver suggests that this bead may have been obtained from some source other than the HBC. CAT 222 is represented by half of a pink bead. CAT 275 is a transparent blue bead. CAT 219 consists of two translucent blue beads.

#### Pacific Northwest (Ross 1990, Woodward 1965). Only two specimens of this variety

#### Wound Monochrome Beads

##### **Table A2.4** Undecorated Conical Beads (n = 2)

Ross states that this class of bead was probably manufactured by turning the still semi-plastic glass against a mold before removal from the mandrel (Ross 1990:50). Two varieties of this class were recovered from Cathlapotle. Neither variety corresponds to a Fort Vancouver variety. CAT 220 is an opaque dark blue conical bead and CAT 221 is a translucent colorless bead. There was one opaque white conical bead recovered from Fort Vancouver.

#### Wound Monochrome Beads

##### **Table A2.5** Undecorated Toroidal Beads (n = 1)

CAT 277 is a transparent dark purple-blue "annular" or disc bead. Annular is the term for flattened doughnut shaped or disc beads. No annular beads were recovered from Fort Vancouver.

## Wound Polychrome Beads

**Table A2.6** Undecorated Spheroidal Beads (n = 1)

This class is represented by one variety corresponding to FOVA 2049. It is composed of a transparent outer layer over an opaque inner layer. This is another variation of the Cornaline d' Allepo bead. This variation, a transparent outer layer over a lighter-colored opaque core, is usually recovered from post-1800 sites in the Pacific Northwest (Ross 1990, Woodward 1965). Only two specimens of this variety were recovered from Fort Vancouver.

## Wound Polychrome Beads

**Table A2.7** Decorated Spheroidal Beads with Combined Layers (n = 2)

## Wound Polychrome Beads

**Table A2.7** Decorated Spheroidal Beads (n = 4)

This class is represented by three bead varieties that do not correspond to Fort Vancouver varieties. CAT 286 is represented by two bead halves that do not cross-mend. Opaque red and white dots have been applied to a blue background. The colored dots are set into larger white dots. This variety, along with CAT 288 which has the same colored dots on a white background, are a type of "eye-bead". These beads are manufactured and decorated by lamp-winding techniques. They are probably Venetian in origin. Eye-beads, so called because they appear to be covered with small eyes, were popular protection against the "evil-eye" in Africa and the Middle East. "The defensive strategy consists of distracting the Evil Eye by making it look at something other than your eye first....since the Evil Eye is looking for eyes, give it some harmless eyes to see. Representatives of eyes, whether dots, circles/dots or more complex motifs are commonly used for this" (Francis 1994:26). The beads are "fancy beads", popular in England in the 1700 and 1800s, but not popular as a

trade items in the Northwest. As lamp-wound beads, they were probably quite expensive.

The third variety in this class, CAT 277 is either another form of eye-bead or a flower-bead. The transparent green bead is decorated with yellow and white ovoid designs. The white areas have a smaller pink ovoid design in the center. Whether this is meant to be a more complex eye or a flower design such as a tulip is unclear.

All other varieties are assigned the appropriate Fort Vancouver variety  
Wound Polychrome Beads

**Table A2.9** Decorated Spheroidal Beads with Combed Loops (n = 2)

According to Ross, these spherical beads “were decorated by trailing molten glass onto the viscous surface. A wire was then dragged through the applique to form either a single string of combed loops around the circumference, or four longitudinal strings of combed loops (Ross 1990:51). While three varieties of this class were recorded at Fort Vancouver, none of these corresponded to the two specimens recovered from Cathlapotle. Both specimens of CAT 212 are transparent green with opaque white single string combed loop decorations around the circumference. Both specimens are represented by half of a bead. These two bead halves do not crossmend.

Monochrome Beads with Cut Ends  
**The Meier (35C05) Bead Assemblage**

The Meier Site, located near Scappoose, Oregon, contains the remnants of a single large plankhouse and its associated midden and activity areas. The house was

occupied for over 400 years. Archaeological evidence shows multiple episodes of rebuilding and repair (Ames et al 1992).

The Meier Bead assemblage consists of 49 glass beads. The beads were classified using the same system as for the Cathlapotle assemblage. If bead varieties present at Meier are unique to both Cathlapotle and Meier, they are assigned CAT prefixes. If a bead variety is unique only to the Meier site, it is assigned a MER prefix. All other varieties are assigned the appropriate Fort Vancouver variety numbers with a FOVA prefix.

There are nine varieties of drawn beads and ten varieties of wound beads in the Meier assemblage. The majority of the beads are in poor condition and almost all specimens display some kind of patina or color change. In addition, the outer layers of glass are beginning to delaminate or peel from the surface some specimens.

#### **Drawn Beads (n = 26)**

There are five varieties of drawn beads that correspond to Fort Vancouver varieties and, three varieties that correspond to Cathlapotle varieties. Two varieties are unique to the Meier site. The ratio of drawn to wound beads is approximately 1:1.

#### **Monochrome Beads with Cut Ends**

##### **Table A1.10 Undecorated Cylindrical Beads (n = 1)**

There is one bead in this category that corresponds to a Fort Vancouver variety. FOVA 1020 is another form of the bugle bead. One end is cut and smooth with the exception of some glass spalling on the distal surface adjacent to the

perforation. The other end is jagged and obviously broken. The bead is well preserved with a shiny surface and displays no patina or iridescence.

#### Monochrome Beads with Cut Ends

**Table A1.11** Subtype D/MM4CDF: Beads with four rows of ground facets (n = 1)

This category is represented by a single incomplete specimen, CAT 78.

Approximately two thirds of the bead is present, including a partial body fragment and an indentation of the perforation. The facets appear slightly uneven. The Munsell chroma values of the specimens from both the Meier and Cathlapotle sites are the same.

#### Monochrome Beads with a Hot-Tumbled Finish

**Table A1.12** Undecorated, Cylindrical Beads (n = 9)

FOVA 1063 is the most common variety in this category with nine specimens.

It is interesting to note that there are no specimens of FOVA 1003 or CAT 1 present in this assemblage. Contrary to the Cathlapotle assemblage, blue beads outnumber white bead at Meier with a ratio of approximately 4:1.

All specimens of FOVA 1063 are in poor condition. Most of the beads are pitted and have an overall whitish to gray patina. It is possible that these small blue drawn beads predate small white beads in the Pacific Northwest. The overwhelming presence of small white drawn beads at Cathlapotle compared to drawn blue beads suggests that white beads may have been a later introduction, increasing in popularity in the late historic period. This coincides with historic sources (see **Chapter 2**).

FOVA 1074/75 is a transparent blue bead. By contrast, it is well preserved and has no patina.

#### Polychrome Beads with Cut Ends

##### **Table A1.13** Drawn, Decorated Cylindrical Beads (n = 1)

There is a single specimen of this class present in the Meier assemblage. MER 1 is a drawn opaque white bead decorated with opaque green and red stripes. It is another variety of bugle bead. It is also called a "candy cane" bead because its appearance mimics multi-colored pulled sugar candy canes. The specimen is not complete. Only half of the bead lengthwise is present. There is a thin iridescent patina covering both the inner and outer surface. It is likely that this bead is of Dutch or Venetian manufacture although only a chemical analysis of the potash content in the glass can differentiate between the two manufacturing centers (vanderSleen 1973).

#### Polychrome Beads with a Hot-Tumbled Finish

##### **Table A1.14** Drawn, Undecorated Cylindrical Beads (n = 9)

There are six specimens of FOVA 1038 in the Meier assemblage. All specimens have some fortuitous striping with the exception of one bead whose outer layer is deteriorated. If these fortuitous stripes are indeed a trait of the earlier version of this bead variety, then this may have some temporal relevance between the two sites.

FOVA 1040, the double-layer white bead, is represented by three specimens. These are the only two white drawn beads recovered from Meier. As stated before,

these double layer beads appear to predate single layer white beads by 10-20 years. This coincides with archaeological evidence that Meier was occupied between AD 1400 and 1800 (Ames et al. 1992). These beads may represent evidence of earlier trade between this site and Lower Colombian peoples closer to the coast. It may also represent the beginning of trade with Euroamericans at Fort Astoria, later renamed Fort George by the British. However, since there are no definitive dates for introduction of this bead type this inference is speculative.

#### Wound Beads (n = 23)

Of the twenty-three wound beads in the Meier assemblage, five varieties correspond to Fort Vancouver varieties, one variety to the Cathlamet assemblage, and four varieties that are unique to the Meier site.

#### Wound Monochrome Beads

##### Table A3.10 Undecorated Spherical Beads (n = 16)

FOVA 2002 is the most common bead of this class in the Meier assemblage. All beads of this variety are in poor condition with flaking outer surfaces and cloudy to iridescent patinas. To be consistent, the diameter and length measurements were entered into the SPSS 4.0 statistical package and a k-means cluster was run. The first cluster analysis was run specifying the generation of three unique clusters. While

Polychrome Beads with Hot-Tumbled Finish and Simple to Compound Straight Stripes

**Table A1.15** Drawn, Decorated Cylindrical Beads (n = 4)

CAT 75 is represented by half of a bead. The bead is in fair condition and coated with an iridescent patina. MER 3 does not correspond to bead varieties at either Cathlapotle or Fort Vancouver. It is an opaque black bead with red and white stripes. This variety is in good condition without deterioration. The three specimens are composed of two distinct population sizes. The first size is under 4 mm and includes two of the three specimens. The second size is represented by only one specimen measuring over 4 mm. There is <1 mm difference in diameter but a marked variation of >6 mm in length.

**Wound Beads (n = 23)**

Of the twenty-three wound beads in the Meier assemblage, five varieties correspond to Fort Vancouver varieties, one variety to the Cathlapotle assemblage, and four varieties that are unique to the Meier site.

Wound Monochrome Beads

**Table A2.10** Undecorated Spherical Beads (n = 16)

FOVA 2002 is the most common bead of this class in the Meier assemblage. All beads of this variety are in poor condition with flaking outer surfaces and cloudy to iridescent patinas. To be consistent, the diameter and length measurements were entered into the SPSS 8.0 statistical package and a k-means cluster was run. The first cluster analysis was run specifying the generation of three unique clusters. While

### Wound Monochrome Beads

Ross (1990) specifies four historical sizes, no specimen at the Meier site approached the specified 16.5 mm. in diameter of the 1<sup>st</sup> size so a four cluster generation would have been statistically unproductive. The initial analysis resulted in three clusters size ranges with a less than 4 mm difference between cluster centers. Ross's hypothesized size ranges show a 4 mm difference between size ranges. A second cluster analysis was run specifying that only two clusters be generated. This resulted in clusters with a 4 mm difference. The first size comprised five cases with a diameter of 4.37 mm and a length of 3.15 mm. This corresponds to a hypothesized historic 4<sup>th</sup> size. The second cluster included the last six cases with a diameter of 7.56 mm and a length of 5.84 mm. This fits within the 3<sup>rd</sup> historic size. The minimum distance between cluster measurements is 7.1 mm. The results of the cluster analysis are displayed in **Table 2**. FOVA 2046 comprises three specimens. Two of the specimens covered with a whitish to iridescent patina. The third specimen is in relatively good condition and is shiny but displays some pitting, a result of the high air bubble content common to this variety. One specimen has a pronounced lip at the perforation.

FOVA 2041 is represented by one specimen, a bead half. The bead half is dull and rough in texture and displays brown speckling secondary to soil staining. FOVA 2016 is a complete bead. It is shiny without iridescence or other patina

MER 112 is represented by a single bead half. This is an example of a foil bead, probably produced in Venice. Foil beads were lump-wound beads that were manufactured by wrapping thin sheets of flattened gold, or gold leaf around heated glass bead cores. The sheets of gold were kept heated by the lamp while they were

### Wound Monochrome Beads

#### **Table A2.11** Undecorated Cylindrical Beads (n = 4)

FOVA 2065 is represented by two specimens, both with an iridescent patina covering the entire surface. MER 66 is a heavily deteriorated, transparent, colorless bead that is yellowed from the soil. MER 77 is a transparent blue bead half. It shows some pitting on the exterior and in the exposed perforation.

### Wound Polychrome Beads

#### **Table A2.12** Decorated Spheroidal Beads (n = 2)

This class is represented by two bead varieties. One variety, CAT 286, a half of an "eye-bead", corresponds to a variety from Cathlapotle. There are some slight differences in the Munsell chroma designations between the specimens at the two sites, however this is to be expected when dealing with different soils.

MER 87 is a translucent green bead with red opaque stripes spiraled throughout the body of the bead. This lamp-wound bead was probably manufactured by dragging the opaque red glass through the still viscous green glass while simultaneously twirling the bead on the wire. The red stripes are within the body of the bead rather than inlaid on the outer surface.

### Wound Polychrome Beads

#### **Table A2.13** Decorated Spheroidal Foil Beads (n = 1)

MER 112 is represented by a single bead half. This is an example of a foil bead, probably produced in Venice. Foil beads were lamp-wound beads that were manufactured by wrapping thin sheets of flattened gold, or gold leaf around heated glass bead cores. The sheets of gold were kept heated by the lamp while they were

gently pressed into the glass. The result was a gilded glass bead. MER 112 has a transparent blue glass core covered with gold and inlaid with diamond shaped dots. The dots are enameled with chips of opaque glass. The bead was produced before 1850 as the use of aventurine replaced the use of true gold in the making of these beads after this date (vanderSleen 1973:113). Adventurine decoration involved the suspension of small copper crystals within the glass itself to produce a gilt effect. This process was undoubtedly cheaper and longer lasting as the true gold coating on foil beads tends to flake and chip. The gold on MER 112 is in poor condition and has partially crumbled off.

#### **Bead Size and Color Preference**

It seems clear that from the ethnohistoric record that the most desired color of beads in the Lower Columbia region would be blue followed by white. As Lewis and Clark noted in 1805, the most desired beads were blue and of a "moderate size" (Moulton 1990). The measure of the 1<sup>st</sup> size Canton bead at 16.5 mm (D) x 14 mm (L) is roughly the size of a large grape. Thus, it follows that the smaller 3<sup>rd</sup> and 4<sup>th</sup> sizes would be considered "moderate" by Lewis and Clark. Alexander Henry, writing in 1814, was accustomed to dealing with all four sizes of beads. He would naturally regard the 3<sup>rd</sup> and 4<sup>th</sup> sizes as "small" when compared with the first two (Coues 1897:719).

If the estimates of the hypothesized historic sizes of Canton beads are correct, then by circa 1800, the most desired type of trade beads on the Lower Columbia

would have been the 3<sup>rd</sup> and 4<sup>th</sup> sizes of Canton beads. I suggest that these would be followed in popularity by FOVA 1063, the blue drawn beads and CAT 1, FOVA 1003 and FOVA 1040, the white drawn beads. The last three bead types are visually similar to the naked eye and the majority of them are not much smaller in size than the 4<sup>th</sup> size blue Canton bead.

Woodward has commented that “the colors and sizes of beads were usually dictated by the aboriginal color schemes prevalent in these regions as well as the modes of decorating either the person or garments in aboriginal times” (Woodward 1965:17). Prior to contact in the Northwest Coast region, Native Americans manufactured beads from dentalia, white clam and purple mussel shells as well as native copper, black steatite, and black and brown argillite (Ross 1997:192). According to the early historic record, the Chinook of the Lower Columbia often wore necklaces of dentalia shells and copper and decorated their garments with the same. Strings of white glass beads whether sewn on garments or worn as jewelry around the neck and wrists, would mimic white dentalia shells.

The desirability of blue beads is a more difficult concept to explain. David Thompson, a Hudson’s Bay Company trader commented in 1829, that “in the Columbia River, nothing will buy skins but Columbia River Blankets, Scarlet and Blue Cloths, Beads, Muskets, Duffil Trunks etc. These are the principal articles for the Columbia River” (Thompson 1994:123-125). Blue cloth is also mentioned as an important trade item in the journals of maritime fur traders (Beaglehole 1967, Meares 1967, Vancouver 1994) and was still a popular item on the Lower Columbia River in

the early 1800s. In terms of blues found in native materials, abalone, olivella shells and copper probably displayed bluish and purple tints. When copper is not kept scrupulously clean and polished, the resulting corrosion is often colored bluish green or turquoise blue. I suggest that since copper, blue beads and dentalia shells were wealth items and were often worn together as decoration, that they were viewed interchangeably. Since it has been established that wealth was a means to gain prestige, then dentalium, blue beads and copper became interchangeable prestige items along the Lower Columbia River in the early 1800s. I further suggest that the desirability of sky-blue beads may be linked to the corrosion on copper ornaments. Woodward (1965:17) has stated the preference for blue may have been associated with the color of the sky but it seems more plausible that the color would correspond to established prestige items manufactured of native materials.

The following table (**Table 3**) shows the color percentages of glass beads at the Cathlapotle and Meier sites. At Cathlapotle, the frequency percentage of blue beads is only slightly higher than white. At Meier, the frequency percentage of blue is much higher than that of white, while the percentage of multicolored beads is close to half of the total.

**Table 3 Bead Color Frequency at the Cathlapotle and Meier Sites**

| <i>Color</i> | <i>Cathlapotle #</i> | <i>Cathlapotle %</i> | <i>Meier #</i> | <i>Meier %</i> |
|--------------|----------------------|----------------------|----------------|----------------|
| Blue         | (n = 344)            | 49%                  | (n = 25)       | 52%            |
| White        | (n = 285)            | 40%                  | (n = 2)        | 4%             |
| Yellow       | (n = 3)              | 1%                   | (n = 2)        | 4%             |
| Green        | (n = 7)              | .4%                  |                |                |
| Red          | (n = 14)             | .9%                  | (n = 1)        | 2%             |
| Multi        | (n = 51)             | 7%                   | (n = 19)       | 40%            |
| Total        | (n = 704)            | 100%                 | (n = 49)       | 100%           |

I believe that this color discrepancy between the two sites is linked to the occupation dates of both sites. Meier (35CO5) was occupied for a period between 1400 and 1800 AD, roughly 400 years. Cathlapotle was occupied until at least until 1830, well into the historic period dominated by the Hudson's Bay Company and the fur trade. The shift in preference from blue beads almost exclusively to blue and white beads, probably took place between 1810 and 1830 according to the historic record. In addition, Meier was occupied and abandoned before the founding of Fort Vancouver. While the Cathlapotle bead assemblage seems to correspond to the bead stock available at Fort Vancouver from 1829-1860 (Ross 1990), the Meier assemblage does not. The beads that are present at all three sites, Cathlapotle, Meier and Fort Vancouver, are likely varieties that were being traded into the region from the late 1700s onward. The beads in the Meier assemblage were probably obtained from trade with coastal peoples along with olivella, dentalium, steatite, argillite and other non-local materials. Trade with early European fur trading establishments such as the Northwest Company and Fort Astoria, later renamed Fort George by the British, are also good possibilities. Given the proximity of Fort Astoria/George to the Meier site, it is the most probable source for the beads recovered there. Since little is known about the trade stock carried at Fort George, the Meier assemblage may be very informative if such a connection between the two sites can be definitively made.

## Summary

The classification of the bead assemblages from Meier and Cathlapotle will facilitate spatial and statistical analysis of bead densities at both sites. It is difficult to match excavated beads with those described in historic documents. The grouping of characteristics within the classification system enables inferences to be drawn about which types of excavated beads correspond to beads in the historic record. For example, the color and sizes of the recovered FOVA 2002 type beads from Meier and Cathlapotle may identify these beads as the historic "China" or "Canton" beads. From there, inferences can be drawn about glass beads as a wealth and prestige items if the densities of bead types are found to vary spatially within the plankhouses and their associated activity areas at the study sites. **Chapter 5** describes the methods used to identify any patterns in the spatial variation of bead types at Meier and Cathlapotle.

## Expectations

This study seeks to draw inferences about different bead types as prestige items from differential spatial distribution. From the historic record, it is impossible to delineate exactly which varieties of beads were the most valued. Bead researchers (Ross 1990, Quimby 1966, Woodward 1965) disagree on what bead variety was actually the *nit coowitack*, the "chief's bead", so desired by the Chinook. We can extrapolate from historic documents that the *nit coowitack* was blue, spherical and

## Chapter 5

### Analytical Methods

There are many methods for determining the significance of intra-site artifact distributions. I have determined that analyzing the differences between bead densities, rather than raw bead counts in facilities and in architecturally compartmentalized areas to be the most useful. This is based on the hypothesis that differentially ranked individuals would have lived in different houses as well as different areas of a single house and would have possessed different types and amounts of beads. In **Chapter 3**, I attempted to draw a correlation between beads, wealth and prestige as they pertained to status by examining ethnographic and ethnohistoric accounts from the fur trade era. If beads were indeed equated with wealth and prestige, not only in a monetary sense, but also in a social sense, then I expect that this will be revealed in the archaeological record.

### Expectations

This study seeks to draw inferences about different bead types as prestige items from differential spatial distribution. From the historic record, it is impossible to delineate exactly which varieties of beads were the more valued. Bead researchers (Ross 1990, Quimby 1966, Woodward 1965) disagree on what bead variety was actually the *tia comshuck*, the “chief’s bead” so desired by the Chinook. We can extrapolate from historic documents that the *tia comshuck* was blue, spherical and

possibly imported from China. A more general inference for the purpose of this analysis is that blue beads were the most desired and valued in the fur trade period, followed by a secondary preference for white beads. Thus, we should expect the highest densities of blue and white beads to be found in areas occupied by high-ranking individuals. These individuals would have differential ranking and access to valued European trade items and would also possess higher numbers of those items.

The ethnographic and ethnohistoric record indicates that glass beads were considered wealth and prestige items by the Chinookan peoples of the Lower Columbia River. This should be supported in the archaeological record by differential bead densities in different areas of the plankhouse. This part of the hypothesis will be tested by computing densities of beads along the plankhouse axis taking into account both arbitrary and architectural divisions.

### **Excavation Units Selected for Analysis**

In order to begin the analysis, I had to choose analytical units at both sites. Analytical units are excavation units chosen for this study based on certain criteria. Analytical units were primarily chosen if they contained beads. Secondly, I chose units based on their position within the plankhouse walls and in relationship to associated activity areas such as middens and yards. I excluded excavation units that contained no beads. My reasoning for this is that I was interested in differential bead density in different areas of the house. **Figures 7 and 8** show the position of the analytical units at Cathlapotle. A single 1 x 4 m unit from House 1 and two 1 x 4 m

units from House 4 were excluded from the study. At Meier, a single 1 x 1 m unit from within the plankhouse was excluded. All excluded units were adjacent to units that contained beads. Since unit boundaries are arbitrary divisions based on archaeological sampling methods, I felt that the units with beads that were adjacent to the excluded units were representative of the immediate area. In addition, since only forty-nine beads total were recovered from the Meier site and all but four of those were recovered from within the plankhouse, I determined that the exclusion of a single unit from within the plankhouse would not have a deleterious effect on the study.

Most of the excavation units from within the plankhouses at both sites were chosen for analysis. At Cathlapotle, I selected analytical units only from House 1 and House 4 depressions. These two depressions had been the most intensively sampled archaeologically.

After the analytical units from each site had been selected, each unit was assigned a letter code so they could be easily referred to. The units were further coded as to facility type. Facility types are activity and/or architectural areas. **Figures 7 and 8** show analytical units at the Cathlapotle site with their letter codes while **Table 11** places these units into the assigned facilities. **Figure 10** shows analytical units chosen from the Meier site and **Table 12** shows their facility assignments. Facilities assignments at both sites are discussed in the next section.

#### Meier Facilities

The following are descriptions of facilities defined at Meier and used as analytical features in this study. **Figure 10** is a depiction of the Meier site plankhouse

### Facilities and Unit Assignments at Cathlapotle and Meier Sites

Excavation units at both sites were assigned specific facility types by Kenneth Ames and Cameron Smith based on excavation field notes and feature forms (Ames et al. 2000). Facilities are defined as activity areas that denote specific human behaviors. For example, hearth facilities often include evidence of food processing and cleaning activities. These activities are hypothesized to have been performed by different ranks of individuals within the household (Ames et al. 1992, Smith 1995, Wolf 1994). The distribution of beads in these areas can be used to draw inferences about both the ranking of the people who used and occupied these areas, and about site formation processes. Secondly, analytical units were chosen based on both arbitrary and architectural separations. At Cathlapotle, House 1 is divided into four compartments. This division is evidenced in the archaeological record by the presence of wall features. These compartments are designated from north to south as House 1a, 1b, 1c, 1d (see **Figure 8**). House 1a, has not been excavated.

House 4 was not compartmentalized. For the purpose of analysis, the house was arbitrarily divided in half to test for distribution differences between the north and south. In order to compare north side to south side distributions, the north half was designated 4n and the south half 4s.

### Meier Facilities

The following are descriptions of facilities defined at Meier and used as analytical features in this study. **Figure 10** is a depiction of the Meier site plankhouse

plan specifically, but will serve as a general reference for the Northwest Coast

plankhouse architectural features discussed in this study.

### **Bench**

The bench is defined as “the earthen surface below the wooden platforms along the house walls (Ames et al., 1992:281). Archaeologically, small plank and post-molds are apparent in the hardened earth surface. Ethnographically, benches were described as being 1-2 m wide and were used as sleeping areas with storage areas underneath the planked platforms. The bench areas at Meier differ from those at Cathlapotle in that they were not much used for the under-area storage. The Meier plankhouse has distinctive pit features within the central corridor. These pits were used for storage and refuse disposal underneath the plank flooring in the center of the house, between the benches on either side.

### **Cellar**

The pits, or cellar along the central corridor of the house appear to have been excavated and re-excavated numerous times as evidenced by over-lapping pit features (Ames et al. 1992:282). The pits contain animal bone, ash, plant remains, thermal rock and large artifacts. Smith (1995:95) states that the cellar facilities at Meier can be looked at as storage and refuse facilities although the behavior that separated these two activities is unknown at this time.

### **Hearth/Periphery**

This facility is defined as the hearth area itself as well as its immediately adjacent areas. Hearth/Periphery facilities are characterized archaeologically by thermal rock, charcoal and ash. Ethnographically, the hearth zone, characterized by hearth box features, ran along the central part of the house. The number of hearth features probably depended upon the size of the house as well the number of nuclear families inhabiting it.

### **Exterior**

The exterior or "yard" at Meier is defined as areas that "are neither parts of the house nor of the midden" (Ames et al. 1992:284). The yard deposits at Meier contain cone-shaped pits and architectural features such as plank and post molds. These are hypothesized to relate to smaller structures associated with the larger plankhouse. They may also relate to activity areas such as those used for nut processing and fish-drying. This area is probably most similar to the facility defined as Sheet Midden at Cathlapotle which is discussed in the next section. The structural features are similar to those in the Deep Unit at Cathlapotle which will be described shortly.

### **Midden**

Like the Cathlapotle lobe middens, the midden at Meier represents intentional dumping of secondary refuse. It contains overlapping shallow pits on top of a silt-clay base. There is a high density of thermal rock, charcoal, faunal remains and ash

probably representing multiple hearth cleaning episodes. There is a high density of artifacts in the midden zone.

### **North, Central and South Areas**

The North, Central and South designations are arbitrary rather than being based on architectural features. Smith (Smith 1995:21) hypothesized that “the length of the house was used to physically and cognitively segregate peer groups of differing social status”. The Meier plankhouse has been divided into 10 meter analytical units representing the north, central and south areas. These areas were used by Smith (1995) to compare material correlates of production behavior within the plankhouse. In this study they will be used to compare bead density hypothesized to represent deposition by differing ranks of people while engaged in production behavior.

### **Cathlapotle Facilities**

The following are descriptions of Cathlapotle facilities defined for use in this study. They differ from the Meier facilities in that several units are combinations of facilities types.

#### **Bench or Bench/Cellar (B or BC)**

The Bench or Bench/Cellar facility at Cathlapotle differs from the Bench and Cellar facilities at Meier in that there is not a clear designation between storage and sleeping areas. The cellar facility at Meier consists of rows of pits between the Bench

and Hearth/Periphery facilities traversing the long axis at the center of the plankhouse. The Bench/Cellar facility at Cathlapotle consists of bench areas with overlapping storage pits rather than a separate bench area with a central cellar. The exceptions to the Bench/Cellar facility occur in House 4, Unit LL, which is defined only as Bench because of the lack of storage pits. Similarly, Unit FF is defined as Wall/Bench owing to the inclusion of wall trenches, corner posts and one area that contained a bench feature.

### **Wall (W)**

Wall facilities at Cathlapotle contained wall trench features and sometimes other architectural features such as post molds. This is a purely architectural facility rather than an activity area.

### **Wall/Bench/Cellar (WBC)**

This facility is a combination of Wall, and Bench/Cellar features.

### **Hearth/Periphery**

Hearth facilities at Cathlapotle occupy the central portions of House 1 and House 4. **Figure 7** shows the approximate locations of hearths within the House 1.

The Heath/Periphery facility consists of the hearth area itself and its immediate periphery. At Cathlapotle, hearths were characterized by orange and gray ash, high charcoal content, thermal rock and sometimes calcined bone fragments. A hearth

complex located in House 1d is indicated by intentional basin construction. The hearth basin was lined with fine grayish river sand. While a central hearth feature was excavated in House 4 in 1996, it was built on the ground surface rather than being built in a hearth bowl similar to those in House 4 (Ames et al 1999). The unit encompassing the hearth feature in House 4 contained only possible melted glass beads and was therefore was not chosen as an analytical unit.

### **Toft**

Toft is an additional facility not present at Meier. Toft refers to midden or trash resting against house walls. Units were only designated as Toft when this deposition was visible in the profiles (Ames et al. 2000).

### **Lobe Midden**

Lobe middens are secondary refuse aggregates as indicated by areas of intentional refuse dumping. There are lobe middens between House 1 and House 2 (**Figure 6**) as well as between House 5 and 6. The lobe midden units at Cathlapotle constitute episodes of house construction or rebuilding, as well as household refuse disposal.

### **Sheet Midden**

Sheet Midden or sheet trash is considered exterior to the houses. Rather than being compact areas of intentional dumping, sheet middens are debris fields or yard

and activity areas surrounding the house features. Sheet midden can be defined as a “low-density scatter of secondary refuse” (Wilson 1994:44). They were probably formed by both random dumping events constituting household maintenance activities and non-cultural formation processes such as flooding. Some sheet midden units include pole and peg mold features that may be indicative of drying racks. Other sheet midden units include small rock oven features.

#### **Berm (BR)**

Berm is defined as a linear feature extending north to south between Long Meadow and the easternmost row of houses (Ames et al. 1999:41). The berm was most likely formed by natural flooding episodes although house depressions are cut into its west side indicating that it was partially formed by building activities (see **Figure 6**).

#### **Bench/Cellar/Hearth/Periphery (BCHP)**

This is a mixed context facility combining partial areas of Bench/Cellar with Hearth/Periphery.

#### **Center (C)**

One unit in House 1c, Unit E, lacked any other activity or architectural features. Since it was a central unit within the house, it was designated as Center.

### **Deep Unit (DU)**

The Deep Unit is defined as sheet midden, yard and exterior in terms of an activity area but will be analyzed separately from the other facilities. The reason for this is that the sediments and cultural sequences in this unit are so complex that it does not fit into a single facility classification. This unit, Unit MM (**Figure 8**) is located slightly to the west of House 2 and south of House 4. The Deep Unit contains deposits from 3.8 m ASL to the surface that are typical of sheet midden deposits throughout the site. Below 3.8 m ASL, the unit contains beach sediments and cultural materials. It also contains evidence of large weight bearing post, pits, small hearths and numerous prehistoric and historic artifacts. This unit contains the highest density of glass beads within the site. The presence of glass beads begins at level 8, approximately 7.6-8.8 m ASL. The Deep Unit was excavated to Level 19, approximately 3-2.9 m ASL.

### **Analytical Bead Assemblage and Varieties**

The analytical bead assemblage from Cathlapotle comprised 599 glass beads from the selected excavation units. As previously stated, some units that contained beads were not selected for this study because they were not located or associated with House 1 and House 4. One hundred and five glass beads were excluded from the analytical assemblage although the complete 704 glass bead assemblage is described in **Chapter 4**. All 68 varieties of beads are represented within the analytical assemblage. The highest percentage of beads are blue followed by white. During the early 1800s, blue beads were the preferred color within the Lower Columbia region.

White beads were a secondary color preference (Coues 1897). The analytical bead assemblage from the Meier site contains 44 beads excluding those recovered from the Meier plow-zone. The highest color percentages of beads at Meier are blue beads, followed by white.

Bead densities were calculated by dividing the raw number of beads for each analytical area by the excavation volume ( $m^3$ ). **Table 13** shows the number and densities of beads in both sites as well as in the plankhouses and facility areas. The decision to convert raw bead counts to densities was made for consistency between the two study sites as well as previous studies (Banach in progress, Smith 1995).

Converting raw counts to densities controlled for discrepancies in excavation volume between analytical units. A scatterplot of total bead counts to excavation volume reveals that there is no correlation between the number of beads recovered and the volume excavated (**Figure 11**). This lack of correlation is also present in the Meier data. The lack of correlation between excavation volume and raw bead counts is expected at the Meier site because only forty-nine glass beads were recovered. At Cathlapotle, 704 glass beads were recovered. The density of prehistoric artifact classes tended to increase with volume excavated. Glass beads were the most common historic artifact class at the site. However, the majority of beads were recovered within 70 cm. of the surface. Excavations at the site often extended 2-4 m below that elevation. This produced matrix where beads were either totally absent or present only in very small numbers. Therefore, the number of beads sometimes increased, decreased or remained constant with excavation volume. This is an

inherent complication of working with the density of historic artifacts in protohistoric sites. In these sites, historic artifacts are usually recovered from higher strata.

Working with 68 different bead varieties had the potential to be confusing and counterproductive. As the number of beads within a site increases, it is likely that the value of a single bead decreases. Beads were not usually traded singly and cases of trade for a single bead within the historic record are usually the exception. Since the focus of the study was in looking at trends within and between each plankhouse, I made the decision to collapse bead varieties into fewer categories. I did this by choosing bead varieties within the study assemblage that were represented by ten or more specimens. I then collapsed or combined the varieties that were visually similar creating five new varieties.

K1 (n=218) is a combination of three varieties, CAT 1, FOVA 1003, and FOVA 1040. As discussed in **Chapter 4**, these varieties are visually similar. They are small opaque white beads, 3-5 mm in size.

K2 (n=148) contains all bead varieties that are spherical, blue and 5-10 mm in size. Attributes such as diaphaneity and chroma value were ignored for this analytical variety. The justification for this is that beyond characteristics such as “blue” “white” “small” “large” and “round”, it is difficult to equate archaeological bead types with those mentioned in the historic record. This new variety has the added benefit of containing FOVA 2002, the variety most likely to be the *tia comshuk* or “Chief’s Bead” mentioned in historic documents.

K3 (n=18) is composed of a single FOVA variety. FOVA 1038 is the Cornaline d' Allepo bead made up of a brick-red outer layer and green core.

K4 (n=65) is also composed of a single FOVA variety. FOVA 1063 is composed of blue beads usually 3-4 mm in size although there is some size variation.

K5 (n=150) consists of all other bead varieties in the analytical assemblage with less than ten specimens. This includes all colors, blue, green, red, yellow etc. and all decorated beads. Decorated beads rarely occurred in numbers greater than five.

In conjunction with simplifying the density analysis of bead varieties, the creation of new bead types facilitates color distribution analysis within the site. Higher densities of blue beads should be found in areas occupied by high-ranking individuals. Two of the new bead varieties, K2 and K4, consist entirely of blue beads. The K1 type consists entirely of white beads. K3 consists of red and green beads the Cornaline d' Allepo beads that Woodward (1965) stated were a popular and valued bead along the Lower Columbia River. K5 is comprised of beads of all colors including multi-colored and decorated beads as well as the majority of non-FOVA varieties. The majority of these non-FOVA variety beads occurred in single specimens.

While I hypothesized that high densities of common bead varieties would be the most reliable indicator of bead value as prestige items, rarity is often used as an indicator of value. It was possible that K5 type bead distribution was the most important value indicator as this type consisted of rare bead varieties. To examine the validity of this possibility, I ran a boxplot with variety (the number of bead varieties) as one variable and with Context (House 1, House 4, Lobe Midden, Sheet Midden) as

the other. In **Figure 12**, I included the Deep Unit as part of the Sheet Midden facility. In **Figure 13**, I excluded the Deep Unit as part of the Sheet Midden but listed it as a separate facility. In **Figure 12**, the sheet midden context contains the most bead varieties with an outlier extending to over 20 varieties. This outlier is driven by the Deep Unit which contained 21 different varieties, approximately 31% of the total varieties within the site. In **Figure 13**, the plots for House 1, House 4 and the Lobe Middens have not changed but the plot for Sheet Midden has been altered to reflect a Sheet Midden facility with sixteen varieties. The Deep Unit contains twenty-one varieties. Items of importance and value would be more likely recovered from within the boundaries of houses and not within lobe or sheet middens. I concluded that rarity is not an indicator of value at the Cathlapotle site. The most varieties were recovered from the Deep Unit located outside the plankhouses. As discussed previously in the definition of facilities, the Deep Unit is anomalous in terms of stratigraphy and content. The Deep Unit appears to be a secondary refuse aggregate that contains architectural features. Most of the beads recovered from this unit would have been considered expensive by European standards. The majority are in good condition and unbroken. Valued beads would have been more likely to have been recovered from within the plankhouses. The recovery of many varieties consisting of few specimens as well as multi-colored and decorated beads from the Deep Unit is unexplained. It may however reflect a preference for plain, unadorned beads.

### Visual Examination and Tests of Significance

The purpose of this study is to infer the value of glass beads as wealth and prestige markers by correlating the distribution of glass beads with social stratification within the archaeological record. To accomplish this, I looked for an uneven distribution of beads within each study site. Visual inspection of bead density, shown in **Table 13**, and in **Figures 14-25** indicates some areas of uneven distribution within both sites. This trend is not necessarily reflected in the distribution of analytical bead types. The next sections discuss the distributions of glass beads and the chi-square tests of significance used to evaluate uneven distributions. Results of these tests will be presented in **Chapter 6**.

### Chi-Square Tests of Significance

To determine if observed differences were statistically significant, I generated a series of chi-square tests of significance. Only raw counts rather than densities can be used in chi-square tests. I derived expected values based on the average density of all excavation units and the total number of beads at Cathlapotle assuming an even distribution between analytical units. Chi-square testing also requires that the number used be greater than or equal to five (Drennan 1996). This requirement did not present a problem at the Cathlapotle site where all analytical units contained greater than five beads. However, I was unable to use a standard chi-square test to analyze excavation units at Meier since no units contained five or more beads per m<sup>3</sup>. For the Meier site, I

used the Keith Kintigh's (1998) method of chi-square testing which allows data of less than five to be used.

Running chi-square tests with expected values derived from the average density from each site separately did not prove useful. An alternate approach to generating expected values was suggested by K. Ames (pers. comm.). This second approach involved calculating the pooled mean bead density for all excavation units and all beads at Meier and Cathlapotle together and using this figure to generate expected values. Expected values were generated in this way for the Cathlapotle site and each facility area within that site. A second set of chi-square tests was run. The second set of chi-square tests in which the numbers expected were derived from pooled Cathlapotle and Meier site densities, did yield some significant results. These results will be discussed in **Chapter 6**.

The densities were then coded by color and pattern. Analytical units coded with patterns represent areas of low density that contain three or less beads per cubic meter. Solid colored areas contain greater than three to greater than 10 beads per cubic meter. This mapping was done for both House 1 and House 4 at the Cathlapotle site (Figure 14-35). Mapping densities in this way for the Meier site was not productive in a visual sense. Since all analytical units at Meier contained less than one bead per m<sup>3</sup>, plotting these densities on a map produced identical patterning in each unit across the house. To determine areas of uneven distribution at Meier, I examined the densities displayed in Table 13.

## Chapter 6

### Results of Significance Testing and Analysis of Bead Distribution

Significance tests evaluate the likelihood that observed differences in data are simply a result of random processes. For this study, observed differences in the distribution of glass beads are compared to distributions that might be expected if the observed densities were generated by chance alone. The observed differences and the results of significance testing are discussed below.

### Observed Differences in Glass Bead Distribution

Visual examinations of glass bead distributions at the Meier and Cathlapotle sites display some general trends. To better visualize and illustrate these trends, I plotted the glass bead density of each analytical unit on a map of each plankhouse. The densities were then coded by color and pattern. Analytical units coded with patterns represent areas of low density that contain three or less beads per cubic meter. Solid colored areas contain greater than three to greater than 10 beads per cubic meter. This mapping was done for both House 1 and House 4 at the Cathlapotle site (**Figure 14-25**). Mapping densities in this way for the Meier site was not productive in a visual sense. Since all analytical units at Meier contained less than one bead per  $m^3$ , plotting these densities on a map produced identical patterning in each unit across the plankhouse. To determine areas of uneven distribution at Meier, I examined the densities displayed in **Table 13**.

**Figures 14 and 15** show the density of all beads in House 1 and House 4 at the Cathlapotle site. In general, bead density is higher in the southern area of each plankhouse. At the Meier site, bead density is slightly higher by .2 beads per  $m^3$  in the southern portion of the plankhouse. There are .48 beads per  $m^3$  in the north and .51 beads per  $m^3$  in the south. In House 1 at Cathlapotle, bead density seems to increase in analytical units containing hearths. There is a high density cluster ( $>5-10$  beads per  $m^3$ ) in House 1d in the area of two small hearths.

The density of all glass beads at both sites is higher in the interior of the plankhouse than on the exterior in middens and yards. This was expected if glass beads were indeed wealth and prestige items as suggested by the ethnohistoric record. This finding also supports the hypothesis that beads were items of value and not routinely disposed of.

I next looked for uneven distributions in analytical bead types throughout the three plankhouses. The majority of analytical bead varieties display a consistent low-density scatter across the plankhouses (**Figures 14-25**). There are some exceptions to this. K1 type beads have a higher density in House 1d. While the density of K3 type beads is low to nonexistent throughout House 1, there are more K3 type beads present in Hearth/Periphery facilities in House 1b and 1c in the northern portion of House 1. In House 1d, K3 type beads are present in Wall facilities and the Sheet Midden to the west of the house. House 4 displays a relatively even density of K5 type beads, 1-3 beads per  $m^3$ , across the plankhouse. With the exception of K1 type beads, the Meier plankhouse contains an even distribution of analytical bead densities in the northern portion of the house. K2, K3, K4 and K5 type beads are evenly distributed at .12

beads per  $m^3$  for each analytical bead type in the north. K2 and K5 type beads are denser in the center of the Meier plankhouse than in either the North or South areas.

In terms of bead density in facilities areas, beads are denser in the Hearth/Periphery facility at the Meier site than in any of the other facilities. The Hearth/Periphery facility contains .83 bead per  $m^3$ , the Cellar facility .24 beads per  $m^3$  and the Bench facility .05 beads per  $m^3$ . At Cathlapotle, the highest density of beads was found to be in the Wall facility at 5.24 beads per  $m^3$ . This was followed by the Bench facility which contained 4.14 beads per  $m^3$  and a combination of Bench/Cellar facilities that contained 4.00 beads per  $m^3$ . The Hearth/Periphery facility at Cathlapotle contained only 2.92 beads per  $m^3$ .

Analytical bead types at the Meier site appear to follow the general distribution of beads at Meier with the highest density of all analytical bead types found within the Hearth/Periphery and Cellar facilities. At Cathlapotle, analytical bead types also show the same density distribution displayed by beads in general. The density of analytical bead types is higher in the Wall and Bench/Cellar facilities. There were no K2 or K3 types in the Lobe Midden or Toft facilities. K2 and K3 type beads also display very low densities in the Center facility.

### General Trends

While the bead distributions discussed above do not display very robust patterning in terms of uneven densities at either study site, there seem to be some general trends in evidence:

1) Glass bead density is higher within plankhouse walls than in exterior units at either site.

2) Glass bead density is higher in the southern portions of all plankhouses than in the north or center areas.

3) All glass beads are denser in Hearth/Periphery facilities at the Meier site. Glass beads are most dense in the Wall and Bench/Cellar facilities at Cathlapotle.

4) Analytical bead types display relatively little difference in distributions across the study sites. The exception to this is K1 type beads in House 1d at Cathlapotle.

In order to answer questions concerning bead distribution between and within sites and to see if the apparent trends delineated above were statistically significant, a series of chi-square tests was generated. While pooling the total excavation volumes and number of beads from both sites to derive expected values produced some significant results, there were many insignificant results as well. In the next section, only the significant chi-square tests will be discussed. Significant results from both Meier and Cathlapotle sites are displayed in **Tables 4 to 8**. These tables are located at the end of the chapter.

#### **Tests of Significance for Observed Differences between Study Sites**

**Table 13** displays the density of glass beads at each site. The density of beads at the Meier site is .32 per  $m^3$ , while at Cathlapotle the density is 3.11 per  $m^3$ . A chi-square test was run to see if this discrepancy was statistically significant. The result

appears in **Table 4**, Test 1. The chi-square or  $\chi^2$  value is significant at both the .05 and .01 probability levels. The bead density is significantly uneven between the two sites. This result was expected and the explanations for it are obvious. The Meier site is much smaller and contains only a single plankhouse whereas the Cathlapotle site contains at least six house depressions. Fewer people occupied the Meier site for a shorter length of time. It is estimated that the Meier plankhouse may have contained 8-11 nuclear families and their slaves (Ames et al. 1992). The Meier site was occupied for approximately 400 years and abandoned circa 1800. The Cathlapotle site was occupied for at least 500 years, a length of time that extended further into the historic period probably until at least 1830. Cathlapotle was a viable village with a high population estimate at 900 people when the first site of Fort Vancouver was established in 1824 (Hajda 1984). The close proximity and access to glass beads and other European trade items at Fort Vancouver likely had a profound influence on the number and types of glass beads that entered the Cathlapotle site. The significant chi-square result, while having little to do with addressing the value of glass beads at either site, is important in terms of site comparison.

**Table 4**, Test 2, displays the results of a chi-square test generated to see if bead densities were unevenly distributed between the three plankhouses in the study. Again, a significant result was anticipated, as the difference in densities between the three plankhouses was so large. The test was run to illustrate this difference. The significant result can again be explained by occupation chronology.

### Significance Tests of Observed Differences in Bead Density between Analytical Areas

Significance tests were generated to test the differences in bead distribution between areas within each plankhouse. In review, the Meier site plankhouse was arbitrarily divided into 10 m areas designated North, Central and South (Smith 1995). House 1 at Cathlapotle was compartmentalized by wall features. The compartmentalized areas were designated from north to south as 1b, 1c and 1d. Cathlapotle House 4 was arbitrarily divided into north and south halves designated 4n and 4s.

At Cathlapotle, differences in bead distribution in House 1 areas were not significant. There was a significant result for observed differences in House 4 (**Table 4, Test 4**). There are more beads than expected in the south half of House 4. At Meier, a chi-square test was run using Keith Kintagh's (1998) method for significance testing of data with small numbers. This method allows for the use of whole numbers less than five. Density figures at Meier for all analytical units were  $<1$  bead per  $m^3$ . Chi-square tests of significance at Meier use raw numbers rather than densities. **Table 5, Test 1** shows that beads are significantly unevenly distributed between the North, Central and South areas of the plankhouse. Although the number of beads does not vary greatly from what was expected in the north, there are significantly fewer beads than expected in the Center and South. **Table 6** displays the observed and expected figures and the differences between the two. Differences between observed and

expected numbers that represent fewer beads present than expected are denoted by brackets {}.

### **Significance Tests of Observed Differences in Bead Density between Plankhouses at Cathlapotle**

The next chi-square test was generated to test for uneven distribution of beads between House 1 and House 4 at Cathlapotle. **Table 13** shows that there is a higher density of beads in House 1 than in House 4. House 1 has a glass bead density of 3.86 beads per m<sup>3</sup> and House 4 contains a density of 2.62 beads per m<sup>3</sup>. This difference is significant at both .05 and .01 probabilities (**Table 4** Test 3). There are more beads than expected in House 1 and significantly fewer than expected in House 4. This result may be related to plankhouse size. House 4 is smaller than House 1 and likely housed fewer families. Fewer people inhabiting the house may equate with fewer beads deposited in the archaeological record. Since this study is concerned with the social value of glass beads, an alternative inference might be that House 4 was occupied by individuals of lower rank and prestige than those inhabiting House 1. Hajda (1984) states that villages were often composed of chiefs and their collateral kin. Those closely related to the village chief may have lived in the same house as the chief. Those individuals more distantly related may have inhabited surrounding houses. Given this hypothesis, the alternative inference might be that the smaller House 4 was occupied by a less closely related relative of the village chief.

### **Tests of Significance for Observed Differences in Bead Density by Facility Types**

Facility type designations were discussed in depth in **Chapter 5**. In brief, facility designations are given to activity and/or architectural areas at each site. If beads were wealth and prestige items and different ranks of individuals were involved in different production activities within the plankhouse, dissimilar densities of beads should be present in activity areas.

The results in **Table 5**, Test 2 for the Meier site show that there are significantly more beads than expected in the Hearth/Periphery facility and fewer than expected in the Bench, Cellar and Exterior facilities. The differences between observed and expected numbers for Meier facilities are displayed in **Table 6**. There are no significant results for differences in facilities at the Cathlapotle site.

### **Tests of Significance for Observed Differences in Analytical Bead Types in both Sites**

Observed differences in analytical bead type distribution were tested in both sites. **Table 5**, Test 3 shows the results of the significance testing at the Meier site. While beads were unevenly distributed by analytical type in the North, Central and South areas of the plankhouse, they were not significantly unevenly distributed by facilities. **Table 7** shows the differences in observed and expected numbers of analytical types in Meier facilities. There are more K1 types than expected in the North and fewer than expected in the Central and South areas. There are fewer K2 type beads than expected in the North, many more than expected in the Center and fewer than expected in the South area. K3 type beads are slightly higher than

expected in the North, fewer in the Center and much less than expected in the South. K4 type beads are higher in number than expected in the North and fewer than expected in the Center and South areas. K5 type beads are fewer than expected in the North and Center and approximately equal to what was expected in the South.

Chi-square testing of the densities of analytical bead types at Cathlapotle indicates that only K1 type beads are significantly unevenly distributed. There are higher densities of K1 type beads in House 1 than in House 4. In House 4, there are higher densities of K1 type beads than expected in 4s than in 4n. The last two significant results for Cathlapotle reflect the significant results for all beads in general. All beads were significantly unevenly distributed between House 1 and House 4 and again between the north and south halves of House 4 designated 4n and 4s. K1 beads comprise the highest number of analytical beads ( $n = 218$ ). To determine if the significant chi-square results were being driven by this particular analytical bead variety, a third set of chi-square tests were run for Cathlapotle House 1 and House 4. The expected values for this third set of significance tests was derived from bead densities exclusive of K1 type beads. The chi-square test generated with K1 type beads excluded produced no significant results. The distributions of beads between House 1 and House 4 and between areas in House 4 are not significantly uneven. Chi-square tests using the densities of all beads had been significant previously. It is clear now that those significant results had been driven by a single analytical bead variety, K1.

## Analyses

In this section, the results presented above and in the tables at the end of this chapter are discussed in the context of the formal hypothesis. Are the glass bead distributions displayed in **Figures 14-25** along with the results of the significance tests enough evidence to conclude that glass beads were wealth and prestige items along the Columbia River during the fur trade period 1790-1850?

Ames et al. (1992) have suggested that the plankhouse would have been segregated into living sections by the status and ranking of the occupants. Elites would have occupied the northern end of the house with commoners occupying the center and slaves in the south. Wolf (1994), Smith (1995) and Davis (1998) found that there were some spatial differences in the distribution of lithic and bone tools and groundstone items within the Meier plankhouse. However, these differences could not be associated solely with social distinctions such status and ranking or even with different types of production behavior. In terms of the analysis of glass bead distributions at Cathlapotle and Meier, the Meier site is the more interesting. There are significant uneven distributions of beads between the North, Central and South areas. The Central area contains the lowest distribution of beads. This area is hypothesized have been occupied by commoners. The North and South areas have a virtually even distribution. If elites occupying the north portion of the house had differential access to glass beads, the almost equivalent density of beads in the south might be a result of slaves performing the tasks of beading garments and stringing beads. The analysis of glass bead distribution by facility at Meier shows that the

highest numbers of beads are in the Hearth/Periphery facility. Hearth areas within plankhouses were dynamic spaces subject to regular use and cleaning. Beads found in the Hearth/Periphery facility are likely items lost during use in this area. The low number of glass beads in the Cellar facility of the plankhouse may indicate that beads were not being stored or discarded. The beads recovered from the cellar were most likely lost through cracks in the plankhouse floor. Glass beads recovered from the Bench facility at Meier may suggest that beads or beaded articles were stored in these areas. While analytical bead types display significant uneven distribution at Meier, these results tell us little about which type of bead was the most valued. What can be inferred from the range of bead colors recovered from Meier is that blue beads were the most popular in the early contact period. Interestingly enough, the highest numbers of blue beads were recovered from the Central area of the plankhouse. This includes analytical K2 type beads which at the Meier site are composed almost entirely of FOVA 2002, the "chief's bead". The Center area also contains the highest number of K5 type beads, the majority of which are blue. This does not fit the expected distribution pattern that was hypothesized at the beginning of this thesis that elites occupied the north end of the plankhouse with commoners and slaves in the center and south respectively. Nor does it support ethnographic evidence that blue beads were the most valued. If the plankhouse at Meier was segregated by the rank of the individuals who lived there then the highest number of blue beads should have been recovered from the north end and the lowest number recovered from the south. If we assume that the distribution of beads reflects ranking differences within the

Meier plankhouse, then the gradient would have to be reversed with elites occupying the southern to central areas of the house. This pattern of high densities of glass beads found in the south end of the plankhouse is repeated in both House 1 and House 4 at Cathlapotle. *the presence of K1 type beads which seem to be ubiquitous in all areas of*

*the site* Is there archaeological evidence for glass beads as wealth items at the Cathlapotle site? According to the ethnohistoric record, during 1800 to 1830 blue beads were the most desired and valued. At Cathlapotle, blue beads are only slightly more common than white beads. At Meier, the ratio of blue to white beads is approximately 12:1. At Cathlapotle, the ratio of blue to white beads is 1:1.2. In terms of intra-site variation, both plankhouses have higher densities of beads in the south than in the north. However, only House 4 has significantly more beads in the south than is predicted by chance. **Figure 16** and **17** show high density clusters of K1 and K2 analytical bead types in two units in House 1. The cluster of K1 type beads in House 1d can be examined within the framework of site formation processes. The cultural processes responsible for bead deposition within the plankhouse usually consist of the loss or abandonment of beads or strings of beads, beads shed from damaged beaded garments or accessories, beads dropped or broken during the beading process and beads cached or stored for future use (Clark 1996:144). There is no evidence for the caching of beads at Cathlapotle. The cluster of K1 type beads is likely the result of a single episode of deposition of either a beaded garment or accessory. K1 type beads are more likely to be sewn on objects rather than strung. The cluster of three to five K2 type beads (**Figure 16**) is probably the result of the loss

of a string of beads. With the exception of the two analytical bead types mentioned above the Cathlapotle site displays a relatively homogenous low density of glass beads across the site. Significant results of chi-square testing within the site can be explained by the presence of K1 type beads which seem to be ubiquitous in all areas of the site. The significant results can be negated by the removal of K1 type bead densities.

In contrast to the ethnohistoric record then, the archaeological record at Meier and Cathlapotle does not support the hypothesis that beads were wealth and prestige items along the Lower Columbia River in the early to mid 1800s. Glass beads are significantly unevenly distributed at the Meier site but the sample size is small and the distribution does not match the predicted pattern along the axis of the plankhouse. At Cathlapotle, glass beads appear to be randomly distributed across the two plankhouses in the study. One piece of archaeological evidence that seems to support the hypothesis that beads were wealth items is that beads are denser within the plankhouses at both sites than on the exterior. As stated previously, valued items are more likely to be recovered from within house walls than in surrounding exterior areas. Glass beads are denser within plankhouse areas than in middens, yards, tofts or berms. This suggests that beads were not being intentionally disposed of. The exception to this is the Deep Unit at Cathlapotle located in the exterior area south of House 4. The significance of this unit will be discussed in the section entitled **Site Formation Processes** in the next chapter. The presence of beads in sheet middens

and yards is likely a result of loss rather than discard as indicated by the low density of beads in these areas.

It is clear that rather than supporting the historic record, archaeological evidence for glass beads as wealth items along the Lower Columbia River is contradictory. Can this apparent contradiction be reconciled? Since differences in inter-site comparison appear to be driven by chronology, I explored temporal differences in an attempt to answer this question. Chronology, site formation processes and alternate uses for glass bead interpretation will be discussed in the next chapter.

Table 6 Differences in Observed and Expected Numbers  
Of All Beads in Meter Facilities

| Area   | Observed | Expected | Difference |
|--------|----------|----------|------------|
| H/P    | 18       | 7.3      | 10.7       |
| Beach  | 6        | 12.4     | (6.4)      |
| Cellar | 11       | 15       | (4)        |
| Est.   | 7        | 15.7     | (8.7)      |

Table 7 Differences in Observed and Expected Numbers  
Of All Beads in Meter Analytical Areas

| Area    | Observed | Expected | Difference |
|---------|----------|----------|------------|
| North   | 16       | 16.2     | (.2)       |
| Central | 2        | 9        | (7)        |
| South   | 22       | 14.8     | 7.2        |

**Table 4 Results of Significant Chi-Square Tests for Cathlapotle 45CL1**

| <i>Significant Chi-Square Results</i> | $X^2$  | <i>Critical Value @ .05</i> | <i>Critical Value @ .10</i> | <i>Degrees of Freedom (df)</i> |
|---------------------------------------|--------|-----------------------------|-----------------------------|--------------------------------|
| 1.Meier:Cathlapotle                   | 362.32 | 3.84                        | 2.71                        | 1                              |
| 2.Meier:Cath Houses                   | 155.8  | 5.99                        | 4.61                        | 2                              |
| 3.Cath H1:H4                          | 16.64  | 3.84                        | 2.71                        | 1                              |
| 4.Cath House 4                        | 15.35  | 3.84                        | 2.71                        | 1                              |
| 5. Cath H1:H4 K1                      | 6.73   | 3.84                        | 2.71                        | 1                              |
| 6.Cath House 4 K1                     | 9.67   | 3.84                        | 2.71                        | 1                              |

**Table 5 Significant Results of Chi-Square Tests at the Meier Site 35CO5**

| <i>Significant Chi-Square Results</i> | $X^2$ | <i>Critical Value @ .05</i> | <i>Critical Value @ .01</i> | <i>Degrees of Freedom (df)</i> |
|---------------------------------------|-------|-----------------------------|-----------------------------|--------------------------------|
| 1.Meier:House Area                    | 26.31 | 9.49                        | 13.28                       | 4                              |
| 2.Meier:Facilities                    | 20.36 | 12.59                       | 16.81                       | 6                              |
| 3.Meier:Ktypes Area                   | 20.36 | 9.49                        | 13.28                       | 4                              |

**Table 6 Differences in Observed and Expected Numbers Of All Beads in Meier Facilities**

| <i>Area</i>   | <i>Observed</i> | <i>Expected</i> | <i>Difference</i> |
|---------------|-----------------|-----------------|-------------------|
| <b>H/P</b>    | 18              | 7.3             | <b>10.7</b>       |
| <b>Bench</b>  | 6               | 12.4            | <b>{6.4}</b>      |
| <b>Cellar</b> | 11              | 15              | <b>{4}</b>        |
| <b>Ext.</b>   | 7               | 15.7            | <b>{8.7}</b>      |

**Table 7 Differences in Observed and Expected Numbers Of All Beads in Meier Analytical Areas**

| <i>Area</i>    | <i>Observed</i> | <i>Expected</i> | <i>Difference</i> |
|----------------|-----------------|-----------------|-------------------|
| <b>North</b>   | 16              | 16.2            | <b>{2}</b>        |
| <b>Central</b> | 2               | 9               | <b>{7}</b>        |
| <b>South</b>   | 22              | 14.8            | <b>7.2</b>        |

## Chapter 7

## Discussion and Conclusions

**Table 8 Differences in Observed and Expected Numbers of Analytical Bead Types in Meier North, Central and South Areas**

|   | O<br>K1 | E<br>K1 | D<br>K1 | O<br>K2 | E<br>K2 | D<br>K2 | O<br>K3 | E<br>K3 | D<br>K3 | O<br>K4 | E<br>K4 | D<br>K4 | O<br>K5 | E<br>K5 | D<br>K5 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| N | 2       | 0.8     | 1.92    | 4       | 5.3     | {1.3}   | 4       | 3.2     | 0.8     | 4       | 2.4     | 1.6     | 4       | 6.1     | {2.1}   |
| C | 0       | 0.5     | {0.5}   | 7       | 2.9     | 4.1     | 3       | 1.8     | 1.2     | 1       | 1.4     | {.4}    | 6       | 3.4     | 2.6     |
| S | 0       | 0.7     | {0.7}   | 2       | 4.8     | {2.8}   | 1       | 3.0     | {.2}    | 1       | 2.2     | {1.2}   | 5       | 5.5     | 0.5     |

## Site Chronology

The abundance or paucity of glass beads at the two study sites was at least partially linked to chronology. Protohistoric sites that have occupations periods that do not extend far into the fur trade era will contain fewer beads. Occupations at the Meier site likely continued through the first 10 to 20 years of the early historic period on the Northwest Coast, approximately 1790-1810. The site was abandoned before the fur trade reached its full potential on the Lower Columbia River. Moura (1991) states that early sites with occupations that include the date range of 1790-1810 will exhibit a preponderance of lithic tools but few glass beads. "Adornments will mostly be shell, bone, brass and copper ..." (1991:24). This characterizes the Meier site assemblage well (see Figures NNI and OOI, Appendix B). The assemblage contains dentalia and dentalia shell ornaments as well as copper. There are few historic artifacts. The dentalia is of low quality. The dentalia shells are no more than one or two centimeters in length. Length is the measure by which dentalia shells were valued and longer shells were the more valuable (Stearns 1887:316). The low incidence of glass

## Chapter 7

### Discussion and Conclusions

To attempt to reconcile the differences between the historic and archaeological records, archaeological evidence for site chronology and site formation processes was examined.

#### Site Chronology

The abundance or paucity of glass beads at the two study sites is at least partially linked to chronology. Protohistoric sites that have occupation periods that do not endure far into the fur trade era will contain fewer beads. Occupation at the Meier site likely continued through the first 10 to 20 years of the early historic period on the Northwest Coast, approximately 1790-1810. The site was abandoned before the fur trade reached its full potential on the Lower Columbia River. Moura (1991) states that early sites with occupations that include the date range of 1790-1810 will exhibit a preponderance of lithic tools but few glass beads. "Adornments will mostly be shell, bone, brass and copper ...." (1991:24). This characterizes the Meier site assemblage well (see **Figures NNI and OOI, Appendix B**). The assemblage contains olivella and dentalia shell ornaments as well as copper. There are few historic artifacts. The dentalium is of low quality. The dentalia shells are no more than one or two centimeters in length. Length is the measure by which dentalia shells were valued and longer shells were the more valuable (Stearns 1887:316). The low incidence of glass

beads within the site is likely reflective of its early occupation. The major fur trading companies in the area were most active from 1810 to 1870 (Mackie 1997). The glass beads at the Meier site probably came from long-distance trade with peoples at the mouth of the Columbia River and from limited contact with Europeans. As stated in **Chapter 4**, some of the beads may have been carried as stock by Fort Astoria, or the Pacific Fur Company. Unfortunately, there is no method to verify that the beads at the Meier site came from either of those sources.

Cathlapotle is more representative of a site occupied for longer during the fur trade period. The bulk of glass beads probably entered the site very rapidly after Fort Vancouver was established in 1824. Seed beads are defined as those beads 2 mm and under (Ross 1991, Moura 1991). Because of changes in manufacturing technologies, seed beads do not become commonplace in either historic or protohistoric sites until after 1826. There are only two seed beads in the Cathlapotle assemblage.

The simple explanation for the lack of differential bead distribution at Cathlapotle is that glass beads simply became commonplace in a very short time period. When prestige goods begin to become common and easy to obtain, elites must either replace them with other articles or somehow remove them from circulation. According to Schulting (1995), one way to do this is to remove prestige goods from circulation in the form of burial goods or through the willful destruction of the items. Since we have no evidence from burials in the area of Cathlapotle, removal of beads in the form of grave goods could not be ascertained. There is also no direct evidence for the willful destruction of beads.

In 1830, the Wapato Valley was struck by repeated episodes of malaria which appeared in the area of Fort Vancouver (Boyd 1990). These epidemics continued until 1835 and devastated the local Chinook population. By this time, Cathlapotle appears to have been abandoned. The devaluation of glass beads may have been a result of their overabundance as well as the effects of malarial epidemics on indigenous populations.

There is evidence (Swan 1857) that Cathlapotle was reoccupied in the 1840s by a family of Cowlitz Indians. The two specimens of FOVA 2021 (**Figure yy, Appendix B**) recovered from the site could not have been deposited there before 1840 and may be evidence of subsequent occupation and reuse of the site after its primary abandonment circa 1830.

### Site Formation Processes

Site formation processes may provide clues to the value of glass beads at each site. As stated before, glass beads within the archaeological record at both sites are generally found within the confines of plankhouse walls. While this in itself may not indicate that beads were wealth items, it does appear to suggest that glass beads held some value and were not being routinely disposed of in secondary refuse aggregates such as middens or tofts.

There is a high density of beads in the Hearth/Periphery facility at Meier. At Cathlapotle, densities of beads around the Hearth/Periphery may be indicative of the disposal of secondary refuse in the context of floor sweepings. They may also be

indicative of bead loss during use. The beads recovered from within the hearth features at Cathlapotle are so melted that it is impossible to tell if they were whole or broken when they were deposited. Broken beads were unlikely to be reused or recycled and might very well have ended up as floor sweepings. Melted beads were recovered from these Hearth/Periphery facilities at Cathlapotle (see **Figure MMI, Appendix B**) in House 1 and House 4. Whether these melted beads are representative of bead devaluation or the processes of loss and non-retrieval is not known. However, no melted beads have been recovered from the Meier site. It is likely that the high density of beads found in the Meier Hearth/Periphery area indicates that they were being lost during use. At Cathlapotle, there is one incidence of high bead density in the Hearth/Periphery in House 1 that can be linked to a single episode of deposition. The glass beads recovered from the Meier Hearth/Periphery are different varieties and sizes and may represent multiple episodes of bead stringing or the beading of garments or accessories. If glass beads had begun to be devalued while the Cathlapotle site was still occupied during 1820-1830, then glass beads deposited in the Hearth/Periphery as floor sweepings may support this devaluation. In House 1, complete unburned beads are found in the same context with melted beads. In House 4, only melted beads are found in the hearth area without other complete or identifiable beads. At Meier, no melted beads were recovered. Floor sweepings may have contained broken or unusable beads. Glass beads may have been devalued when they were broken but the melted beads recovered cannot be identified as to variety or completeness.

archaeological and historic record. While examining the historic record using the archaeological distribution of glass beads did not prove conclusive, there are other

High densities of beads in bench and wall facilities suggest that beads are lost items. Schiffer (1972) describes areas where items are easily lost but not easily recovered from as "artifact traps". Bench, Cellar and Wall facilities probably fit the definition of artifact traps. Additionally, there is no evidence for the caching of beads for later use at Cathlapotle or at Meier. No caches suggest that beads are loss or debris items.

The Deep Unit thus far has been treated as a separate facility. It is interesting in terms of bead content. The beads from the Deep Unit are, for the most part, complete and in good condition. This unit also contains the highest number of non-FOVA bead varieties in the site. Ames et al. (1999:43) suggest that while the upper 70 cm of the Deep Unit are characteristic of sheet midden the unit may be overlying the remnants of a buried house. How this might have affected the deposition of beads and the number of unique bead types deposited in the Deep Unit is unknown. All of the beads were recovered from within the upper 70 cm of the unit. The bead content of the Deep Unit may be related to the occupation of House 4 or to the occupation of an earlier structure in the area. At this point, the information from this unit is not yet understood well enough to draw any inferences.

Site chronology offers some inferences to explain the lack of correlation between the historic and archaeological records. Site formation processes may support some of the inferences drawn by the examination of occupation chronologies at the Meier and Cathlapotle sites but neither approach truly reconciles the archaeological and historic record. While examining the historic record using the archaeological distribution of glass beads did not prove conclusive, there are other

were so few beads present at Meier that it was difficult to compare types by level.

uses for glass bead data from protohistoric sites that may yield other information. As Spector (1976) and Moura (1991) have suggested, the interpretive potential of glass beads has been underused. The next section discusses some ways in which glass beads have been used as chronological indicators at the Meier and Cathlapotle sites.

### **The Interpretive Potential of Glass Beads: Contact and Chronology**

Glass beads from the Cathlapotle site have been used to delineate pre-contact from contact strata within the site. This method should work at other protohistoric sites as well. Glass beads and metal items should be among the earliest European goods to enter a prehistoric site. The lowest level in which glass beads appear will probably date closely to the time of European contact. At the Cathlapotle site, units were excavated in arbitrary 10, 15 or 20 cm levels. **Figure 5** shows the frequency of historic artifacts by level in Unit M at Cathlapotle. Unit M is located in House 1d and contained the highest density of glass beads within that plankhouse. The lowest level that glass beads appear in is Level 8 and from that point beads continue to be present until Level 1. Levels 4, 5 and 6 appear to contain the bulk of the glass beads. A radiocarbon date obtained from Level 5, 5.49 m ASL, within this unit yielded a date range of AD 1721-1785. It is likely that some glass beads and metal may have begun entering the site before 1790 from trade with coastal peoples. It is worthwhile to note that examination of the vertical distribution of glass beads produced no variation in bead types over time. The dimension of time was defined by excavation level. There

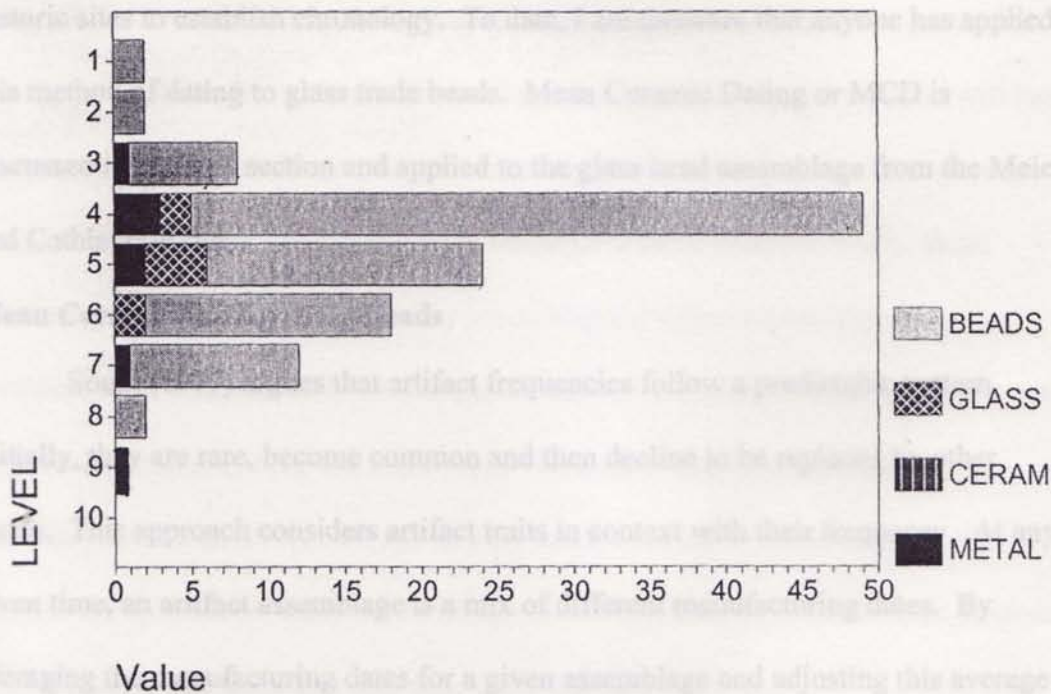
second exception is a cluster of forty-eight K2 type beads in Unit MM shown in

were so few beads present at Meier that it was difficult to compare types by level.

At Cathlapotle, glass beads were the ubiquitous historic artifact and rarely clustered by type within any level. There are two exceptions to this. The first has already been discussed in the section

## 45CL1 Historic Artifact Frequency

UNIT: N159-160/W87-91



**Figure 5** Bargraph of Historic Artifact Frequency Level in Unit M, Cathlapotle

entitled **Site Formation Processes**. K1 type beads, the analytical type composed of FOVA 1040, FOVA 1003 and CAT 1 cluster in Level 4 of Unit M, House 1. The second exception is a cluster of forty-eight K2 type beads in Unit MM shown in

**Figure 8.** The second cluster was recovered from Levels 3 and 4 of the Deep Unit.

This cluster is composed solely of FOVA 2005 variety beads which are included as part of the K2 analytical variety. Again, this is likely a case of the one time deposition of a single string of homogenous beads.

The bargraph above is a useful method for separating pre contact from contact strata at protohistoric sites. In terms of dating sites using glass trade beads, I used the following method of mean ceramic dating (South 1977). This method is often used in historic sites to establish chronology. To date, I am unaware that anyone has applied this method of dating to glass trade beads. Mean Ceramic Dating or MCD is discussed in the next section and applied to the glass bead assemblage from the Meier and Cathlapotle sites.

#### **Mean Ceramic Dating using Beads**

South (1977) argues that artifact frequencies follow a predictable pattern. Initially, they are rare, become common and then decline to be replaced by other forms. This approach considers artifact traits in context with their frequency. At any given time, an artifact assemblage is a mix of different manufacturing dates. By averaging the manufacturing dates for a given assemblage and adjusting this average by frequency, a standard occupation date can be obtained. The more frequently occurring types of artifacts will have a greater influence upon the final date. In essence, this means that the dates of low frequency artifacts will have less of an impact on the mean calculated date of the site.

The median manufacture date is the middle date of a range in which each bead type was manufactured. As Barber (1994:166) states when discussing the mean ceramic date "a median date is the date

The use of the mean ceramic dating or MCD in the analysis of glass beads has several advantages over impressionistic dating methods. First, it summarizes the age of the deposit in a single date (Barber 1994:167). Secondly, it allows for the higher frequencies of certain bead types to have a greater effect on the overall date and the intrusive lower frequencies to have a lesser effect. There are drawbacks to this method. An episode of deposition of a single bead type, a string of beads for example, can push the average date in the direction of the manufacture date of that particular bead type. Another limitation is that bead specimens from very old varieties will have a greater effect in a small sample. In a large sample, the effects of one or two early beads will be overwhelmed by the large numbers of more common types. Bead assemblages have often been dated by examining the entire assemblage and pronouncing it either an early or later period collection (Darby 1995). Using the mean ceramic formula may offer the opportunity for more precise dating by taking into consideration the entire assemblage or only beads from a specific area in the site. Despite the drawbacks, using the mean ceramic dating technique should also produce a more precise and replicable date than impressionistic dating.

#### **Methods for Mean Ceramic Dating Using Beads**

The first step to calculating a date using the mean ceramic dating formula is to formulate the median date for each bead type. The median manufacture date is the middle date of a range in which each bead type was manufactured. As Barber (1994:166) states when discussing the mean ceramic date "a median date is the date

before which half the vessels of that type were manufactured and after which half were manufactured.” To calculate median manufacture dates for glass beads, the chronological information from beads recovered from dated contexts was used. These contexts include Fort Nisqually, Fort Okanogan, Fort Spokane and Fort Vancouver. Not all bead varieties could be dated. **Table 9** displays the median manufacture dates for dateable beads at the Meier Site. The method for calculating the mean ceramic or bead date is taken from South (1977) and Barber (1994):

- 1) multiply each type by the median manufacture date for that type
- 2) add the products together
- 3) divide that sum by the sum of frequencies each individual type

**Table 9 Median Manufacture Dates for the Meier Site**

| <i>Bead Type and Frequency</i> | <i>Date or Date Range</i> | <i>Median Date</i> |
|--------------------------------|---------------------------|--------------------|
| MER 112      1                 | 1790-1800                 | 1795               |
| MER 87        1                | 1790-1800                 | 1795               |
| FOVA 2002    11                | 1790-1829                 | 1810               |
| FOVA 1038    6                 | 1800-1845                 | 1823               |
| FOVA 1063    7                 | 1810-1840                 | 1825               |
| FOVA 1040    3                 | 1800-1845                 | 1823               |
| CAT 286       1                | 1790-1800                 | 1795               |

Using the information above, the calculations for the mean bead date for the Meier

site are as follows:

$$\begin{aligned}
 &1 \times 1795 = 1795 \\
 &1 \times 1795 = 1795 \\
 &11 \times 1810 = 19910 \\
 &6 \times 1823 = 10938 \\
 &7 \times 1825 = 12775 \\
 &3 \times 1823 = 5469 \\
 &1 \times 1795 = 1795 \\
 &\text{Sum} = 54477/30 = \mathbf{1815.9}
 \end{aligned}$$

The mean bead date for the Meier site is 1816. **Table 10** displays information for the calculation of the mean bead date at Cathlapotle.

**Table 10 Median Manufacture Dates for the Cathlapotle Site**

| Bead Type and Frequency | Date or Date Range | Median Date |
|-------------------------|--------------------|-------------|
| FOVA 2021 2             | 1840-1860          | 1795        |
| FOVA 1003 121           | 1844-1860          | 1852        |
| FOVA 2002 89            | 1790-1829          | 1810        |
| FOVA 1038 18            | 1800-1845          | 1823        |
| FOVA 1063 76            | 1810-1840          | 1825        |
| FOVA 1040 110           | 1800-1845          | 1823        |
| CAT 288 1               | 1790-1800          | 1795        |
| CAT 722 1               | 1790-1800          | 1795        |
| FOVA 2049 1             | 1820-1860          | 1840        |
| FOVA 2009 10            | 1800-1830          | 1815        |
| FOVA 2065 27            | 1829-1860          | 1845        |
| FOVA 1067 7             | 1840-1860          | 1850        |
| CAT 286 2               | 1790-1800          | 1795        |

The calculations of the mean bead date for the Cathlapotle site are shown below:

$$1 \times 1795 = 1795$$

$$121 \times 1852 = 224092$$

$$89 \times 1810 = 161090$$

$$18 \times 1823 = 32814$$

$$76 \times 1825 = 140752$$

$$110 \times 1823 = 200530$$

$$1 \times 1795 = 1795$$

$$1 \times 1795 = 1795$$

$$1 \times 1840 = 1840$$

$$10 \times 1815 = 18150$$

$$27 \times 1845 = 49815$$

$$7 \times 1850 = 12950$$

$$2 \times 1795 = 3590$$

$$\text{Sum} = 852803/465 = 1833.9$$

The mean bead date for the Cathlapotle site is 1834.

The calculation of the mean bead date is a productive method of addressing chronology in protohistoric sites. As more research is completed, more bead manufacturing dates may become available and these can be used to generate a more precise date. Although the calculated Meier date extends occupation at the site farther into the fur trade period than the archaeological evidence has suggested, it is still consistent with the hypothesis that Meier was abandoned sometime in the early 1800s. The date for Cathlapotle suggests that the site was occupied until at least 1834.

### **Summary and Conclusion**

This study has demonstrated the interpretive potential of glass beads in protohistoric sites and has contributed to the identification and classification of glass trade beads within the Northwest Coast Region and along the Lower Columbia. The study has also suggested several methods for using glass beads as chronological indicators in protohistoric sites within the region. While the results of this study have not conclusively shown that glass beads were wealth and prestige items along the Lower Columbia River during the early fur trade period as suggested by the historic record, they have shown that there are further analytical uses for glass beads. Glass beads can be used to delineate post contact from contact strata as well as to establish chronologies.

In addition, the use of a bead typology for classification will allow glass bead assemblages from other sites throughout the Northwest Coast region to be compared with those from the Cathlapotle and Meier sites. It is hoped that these comparisons

will assist in the development of a bead chronology for glass trade beads recovered in Northwest archaeological sites.

Figure 6 Location of House and Hidden Features at Cambridge 45CT5

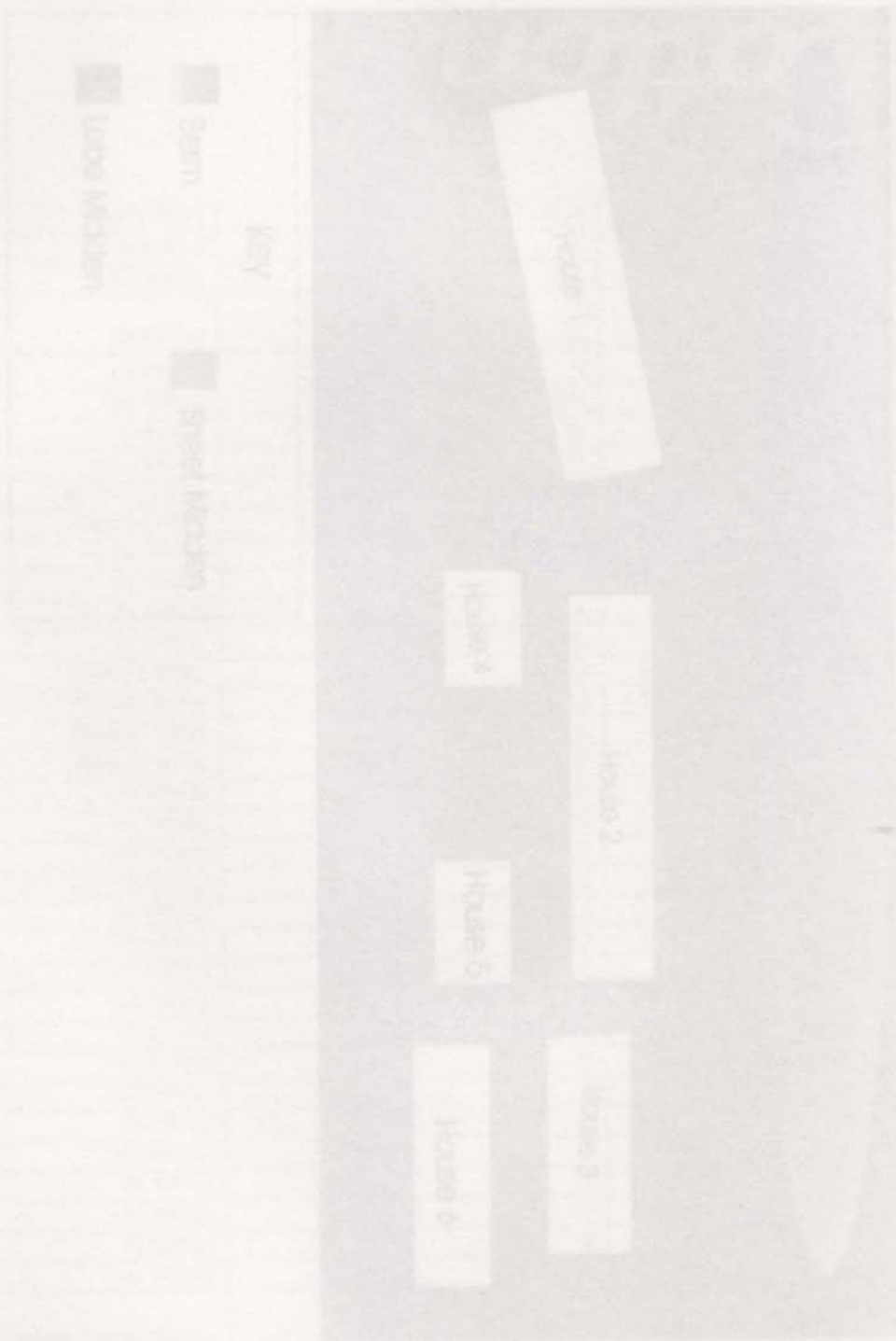
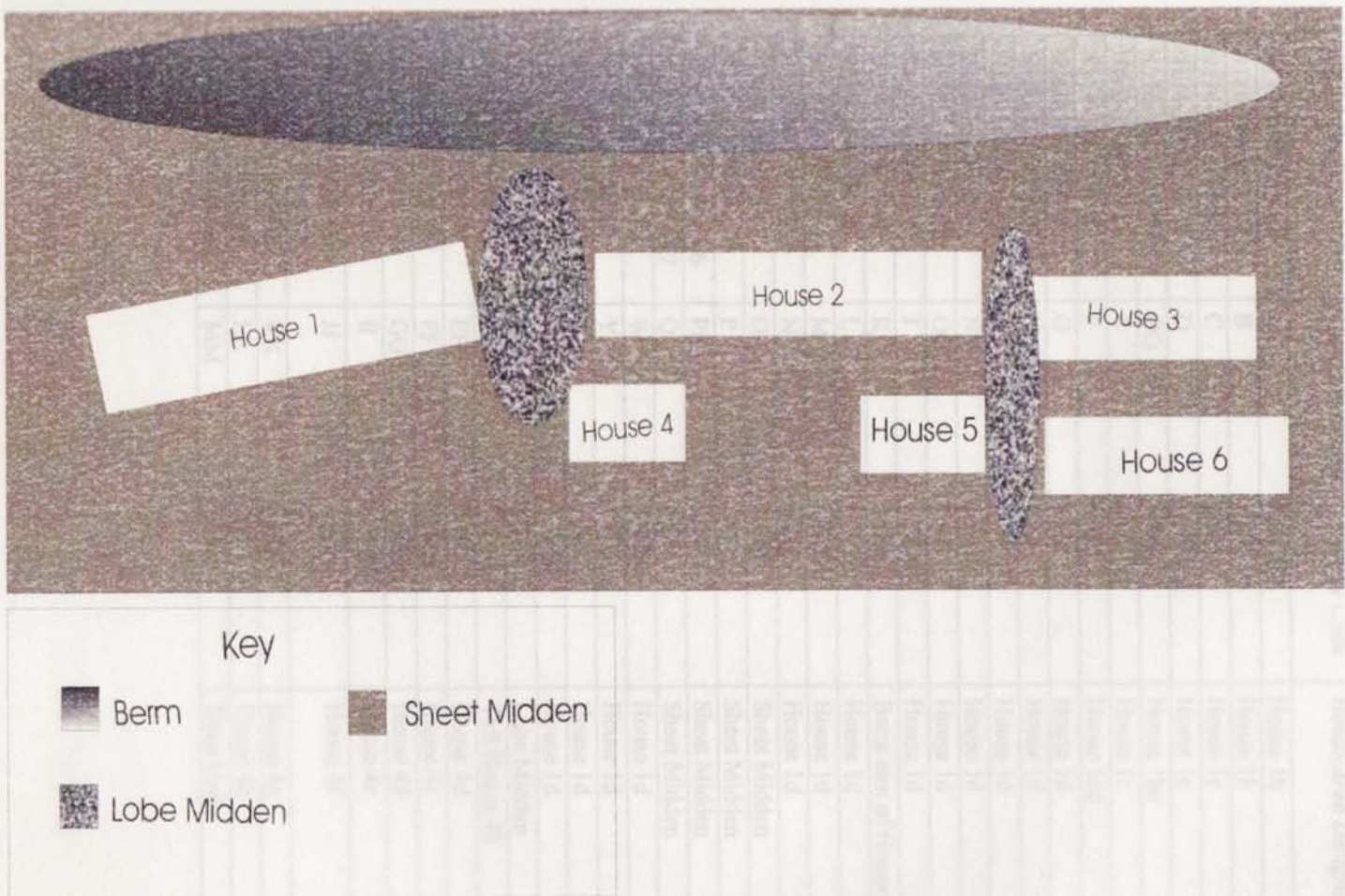


Figure 6 Location of House and Midden Features at Cathlapotle 45CL5



**Table 11 Cathlapotle Analytical Codes, Facilities and Contexts**

| <i>45CL1 Analytical Unit</i> | <i>Unit Letter Code</i> | <i>Facility Code</i> | <i>House/Area Designation</i> |
|------------------------------|-------------------------|----------------------|-------------------------------|
| N180-182/W88-90              | A                       | BCHP                 | House 1b                      |
| N180-182/W90-92              | B                       | HP                   | House 1b                      |
| N174-176/W90-92              | C                       | HP                   | House 1c                      |
| N174-176/W88-90              | D                       | HP                   | House 1c                      |
| N176-180/W88-89              | QQ                      | WBC                  | House 1bc                     |
| N168-172/W88-89              | E                       | C                    | House 1c                      |
| N164-168/W88-89              | F                       | HP                   | House 1cd                     |
| N160-164/W87-90              | G                       | HP                   | House 1d                      |
| N160-164/W88-89              | H                       | HP                   | House 1d                      |
| N160-162/W84-86              | I                       | W                    | House 1d                      |
| N155-157/W90-92              | NN                      | BC                   | House 1d                      |
| N157-159/W90-92              | OO                      | BC                   | House 1d                      |
| N160-162/W90-92              | J                       | BC                   | House 1d                      |
| N159-160/W79-83              | K                       | BR                   | Berm east of House 1          |
| N159-160/W83-87              | L                       | WBC                  | House 1d                      |
| N159-160/W87-91              | M                       | BCHP                 | House 1d                      |
| N159-160/W91-95              | N                       | WBC                  | House 1d                      |
| N159-160/W95-99              | O                       | SM                   | Sheet Midden                  |
| N159-160/W99-103             | P                       | SM                   | Sheet Midden                  |
| N161-163/W104-106            | PP                      | SM                   | Sheet Midden                  |
| N159-160/W103-107            | Q                       | SM                   | Sheet Midden                  |
| N155-157/W84-86              | W                       | WBC                  | House 1d                      |
| N151-153/W86-88              | Y                       | HP                   | House 1d                      |
| N149-151/W84-86              | Z                       | BC                   | House 1d                      |
| N147-149/W86-88              | AA                      | WBC                  | House 1d                      |
| N138-140/W86-88              | BB                      | LM                   | Lobe Midden                   |
| N136-138/W94-96              | CC                      | T                    | Toft House 4b                 |
| N132-134/W96-98              | EE                      | W                    | House 4d                      |
| N134-136/W99-101             | FF                      | WB                   | House 4c                      |
| N132-134/W99-101             | GG                      | WBC                  | House 4d                      |
| N128-130/W99-101             | II                      | WBC                  | House 4e                      |
| N128-130/W96-98              | JJ                      | HP                   | House 4f                      |
| N129-130/W96-98              |                         |                      |                               |
| N124-126/W96-98              | KK                      | HP                   | House 4g                      |
| N120-122/W96-98              | LL                      | B                    | House 4h                      |
| N107-109/W98-100             | MM                      | DU                   | Deep Unit                     |

**Table 12 Meier Unit Codes and Facilities**

|              | <i>Hearth Periphery</i> | <i>Cellar</i>   | <i>Bench</i> | <i>Exterior</i> |
|--------------|-------------------------|-----------------|--------------|-----------------|
| North        | E, F                    | H, J, I         | D            |                 |
| Central      | N                       | K, O            |              |                 |
| South        | S, Y                    | R, X, Z, H2, L2 | Q, A2, G2    |                 |
| Nil-Exterior |                         |                 |              | Q2, G, J2, K2   |



Figure 7 House 1 Analytical Units at Cathlapolle

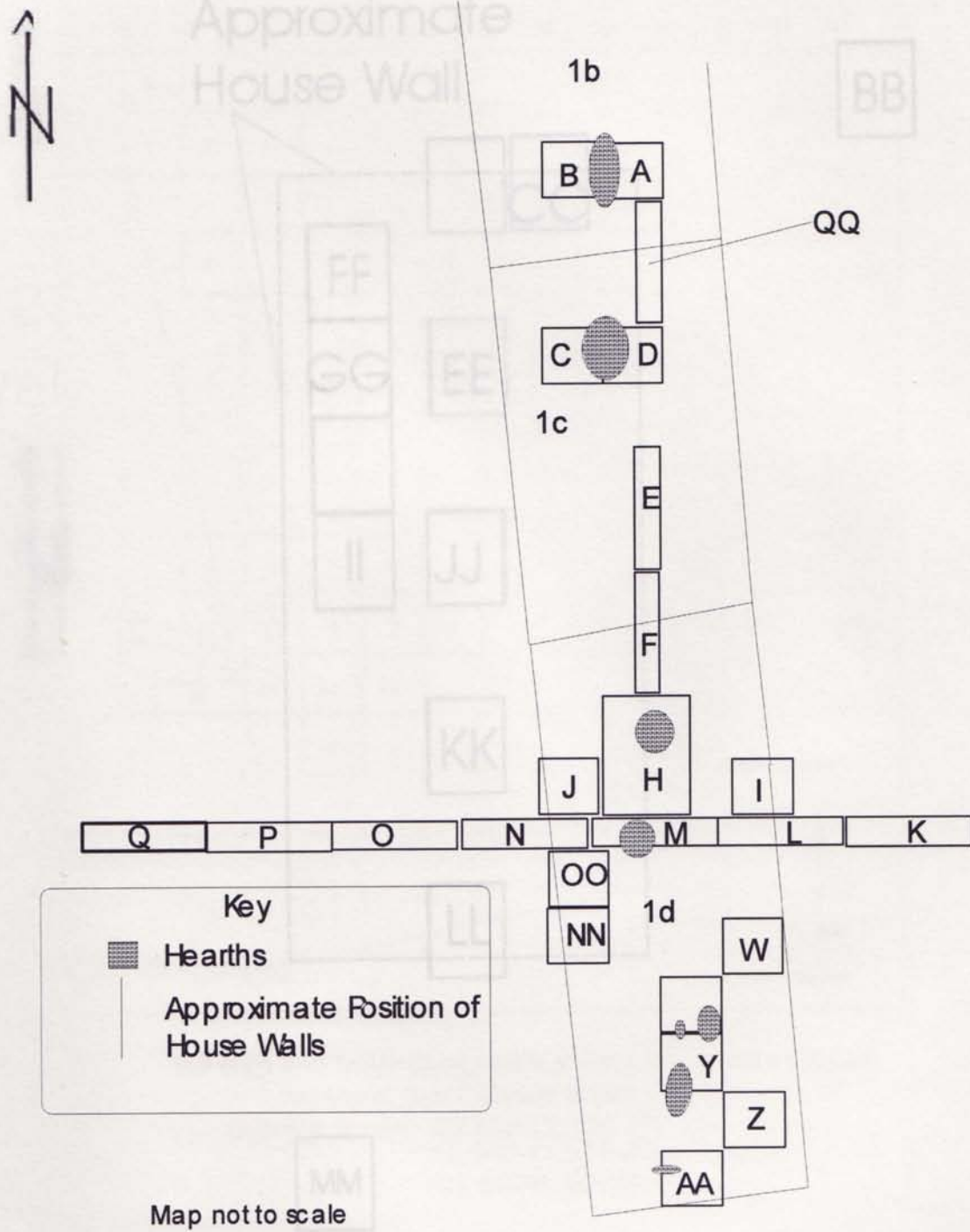
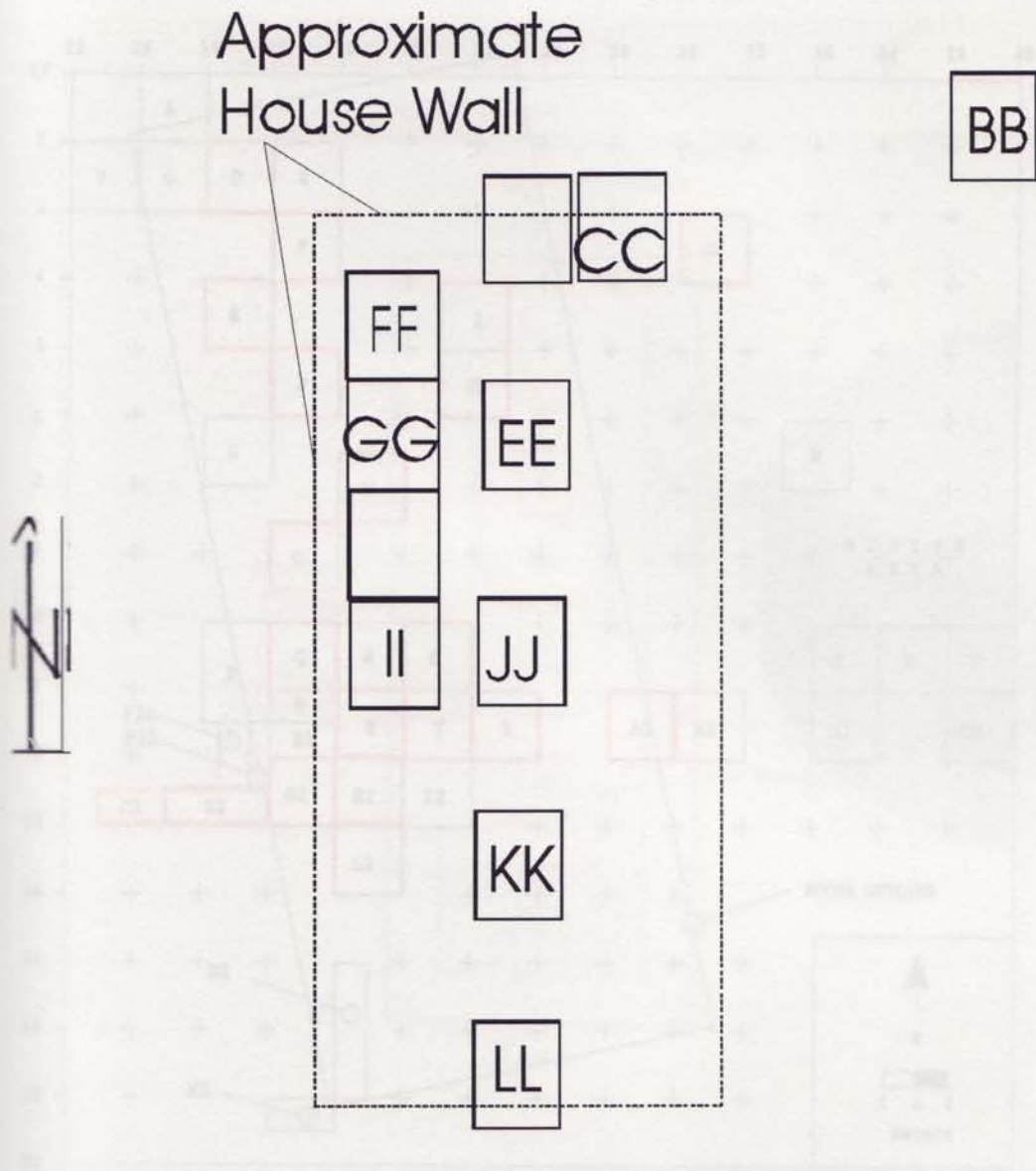


Figure 7 House 1 Analytical Units at Cathlapotle



26 Map and Letter Designation of Excavation Unit at 35C05

Analytical Units Outlined in Red

Units Not Shown: Q2 (30-32, E30-32)

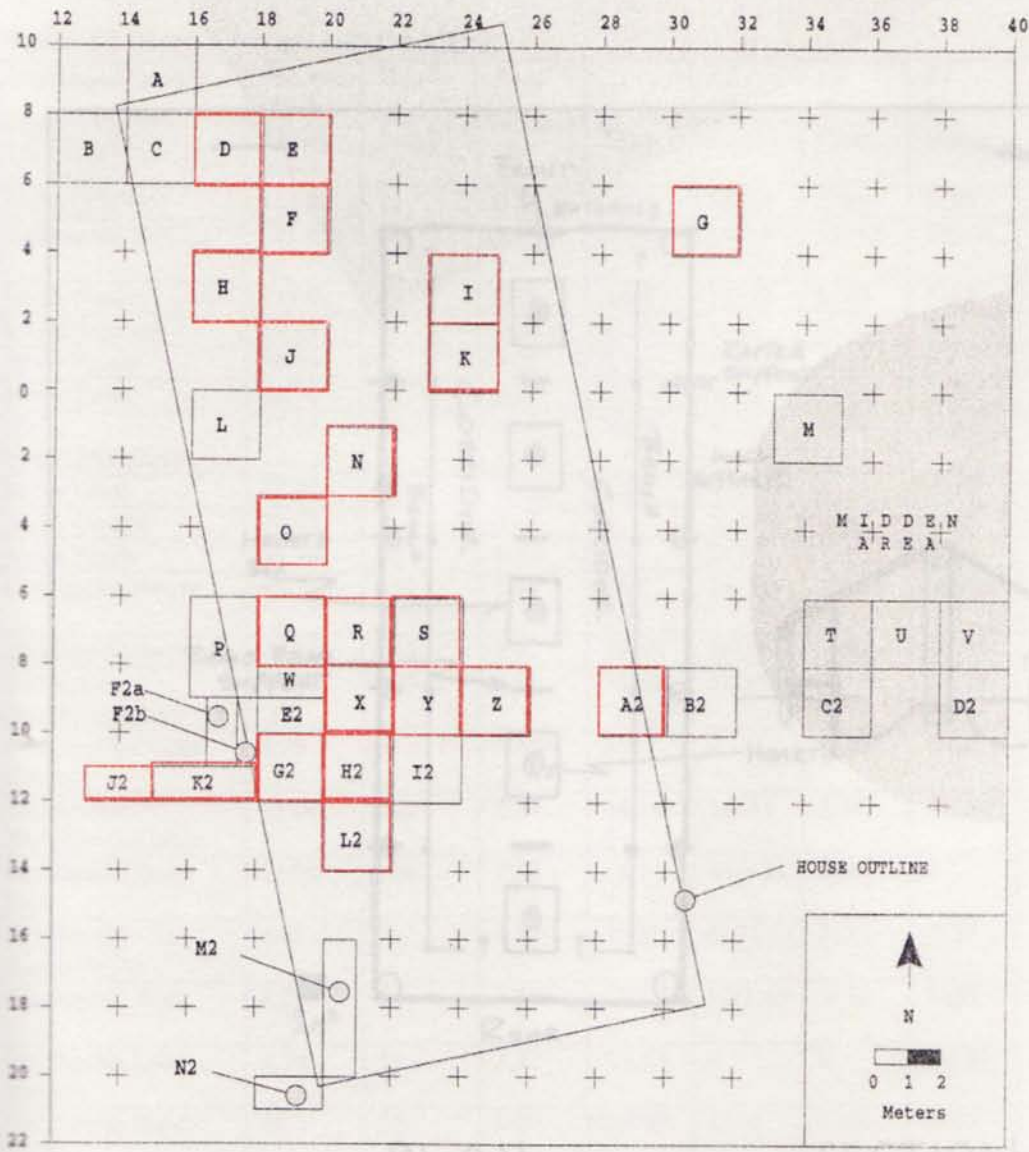
R2 (40-42, E15-20)

Q2 (2-10, E8-10)

MM

Figure 9. Mear Site Analytical Units

Figure 8 House 4 Analytical Units at Cathlapotle



Site Map and Letter Designation of Excavation Unit at 35C05  
Analytical Units Outlined In Red

Units Not Shown: O2 (s30-32, E30-32)  
P2 (s40-41, E15-20)  
Q2 (s2-N0, EB-10)

Figure 9 Meier Site Analytical Units

Table 13 Bead Number and Densities

| Site/House/Facility | Excavated | Total  | Bead   | K1    | K2    | K3    | K4    | K5    |
|---------------------|-----------|--------|--------|-------|-------|-------|-------|-------|
| Meier (35CO5)       | 154.50    | 12.04  | 2.24   | 7.05  | 20.13 |       |       |       |
| Catapulta (35CL1)   | 241.259   | 42.65  | 12.08  | 70.34 | 100.7 |       |       |       |
| Meier House         | 119.91    | 17.17  | 6.05   | 7.05  | 17.13 |       |       |       |
| Meier Exterior      | 19.14     | 0      | 0      | 0     | 2.10  |       |       |       |
| Meier Bench         | 36.44     | 0      | 0.02   | 0     | 0     |       |       |       |
| Meier Cellar        | 46.35     | 2.25   | 0.04   | 11.26 |       |       |       |       |
| Meier               | 21.61     | 2.09   | 3.34   | 4.27  |       |       |       |       |
| Heath/Porsperry     |           |        |        |       |       |       |       |       |
| Meier North         | 33.07     | 27.12  | 0.12   | 4.12  |       |       |       |       |
| Meier Central       |           | 0      | 0.08   | 0.17  |       |       |       |       |
| Meier South         |           |        |        |       |       |       |       |       |
| Catapulta House 1   |           | 14.45  | 12.08  | 12.91 |       |       |       |       |
| Catapulta House     |           |        |        |       |       |       |       |       |
| Catapulta           |           |        |        |       |       |       |       |       |
| Heath/Porsperry     |           |        |        |       |       |       |       |       |
| Catapulta Comm      | 4.97      |        |        |       |       |       |       |       |
| House 1             |           |        |        |       |       |       |       |       |
| Catapulta           | 41.66     | 14.45  | 16.78  | 3.07  | 15.34 | 28.63 |       |       |
| Wall Bench/Cellar   |           |        |        |       |       |       |       |       |
| Catapulta Dump      | 13.68     | 18.11  | 443.24 | 27.15 | 0     | 282.0 |       |       |
| Unit                |           |        |        |       |       |       |       |       |
| Catapulta           | 4.01      | 42.75  | 3.37   | 7.87  | 124.5 |       |       |       |
| Bench/Cellar        |           |        |        |       |       |       |       |       |
| Catapulta Wall      | 8.5       | 121.46 | 12.12  | 7.25  | 91.89 |       |       |       |
| Catapulta Lobe      | 4.74      | 11     | 2.32   | 51.05 | 0     | 61.27 | 0.1   |       |
| Meier               |           |        |        |       |       |       |       |       |
| Catapulta Street    | 28.5      | 57     | 1.90   | 20.28 | 5.15  | 1.04  | 5.19  | 11.13 |
| Meier               |           |        |        |       |       |       |       |       |
| Catapulta Top       | 4.75      | 0      | 0.04   | 0     | 0.31  |       |       |       |
| Catapulta Bench     | 4.11      | 12     | 4.34   | 3.02  | 4.07  | 0     | 3.48  | 81.35 |
| Catapulta House 1   | 4.75      | 0      | 0.05   | 0.05  | 15.31 | 61.18 | 120.2 |       |
| House 7a            | 9.30      | 23     | 3.37   | 15.29 | 6.61  | 3.30  | 6.61  |       |
| House 7C            | 11.15     | 46     | 3.64   | 20.3  | 0.71  | 2.16  | 11.87 |       |
| House 7D            | 64.62     | 251    | 4.11   | 11.07 | 73.07 | 6.10  | 33.34 | 60.98 |
| House 4a            | 19.12     | 34     | 1.78   | 5.26  | 13.44 | 2.10  | 12.68 | 19.73 |
| House 4b            | 18.3      | 72     | 3.95   | 20.1  | 13.71 | 1.05  | 11.60 | 28.05 |

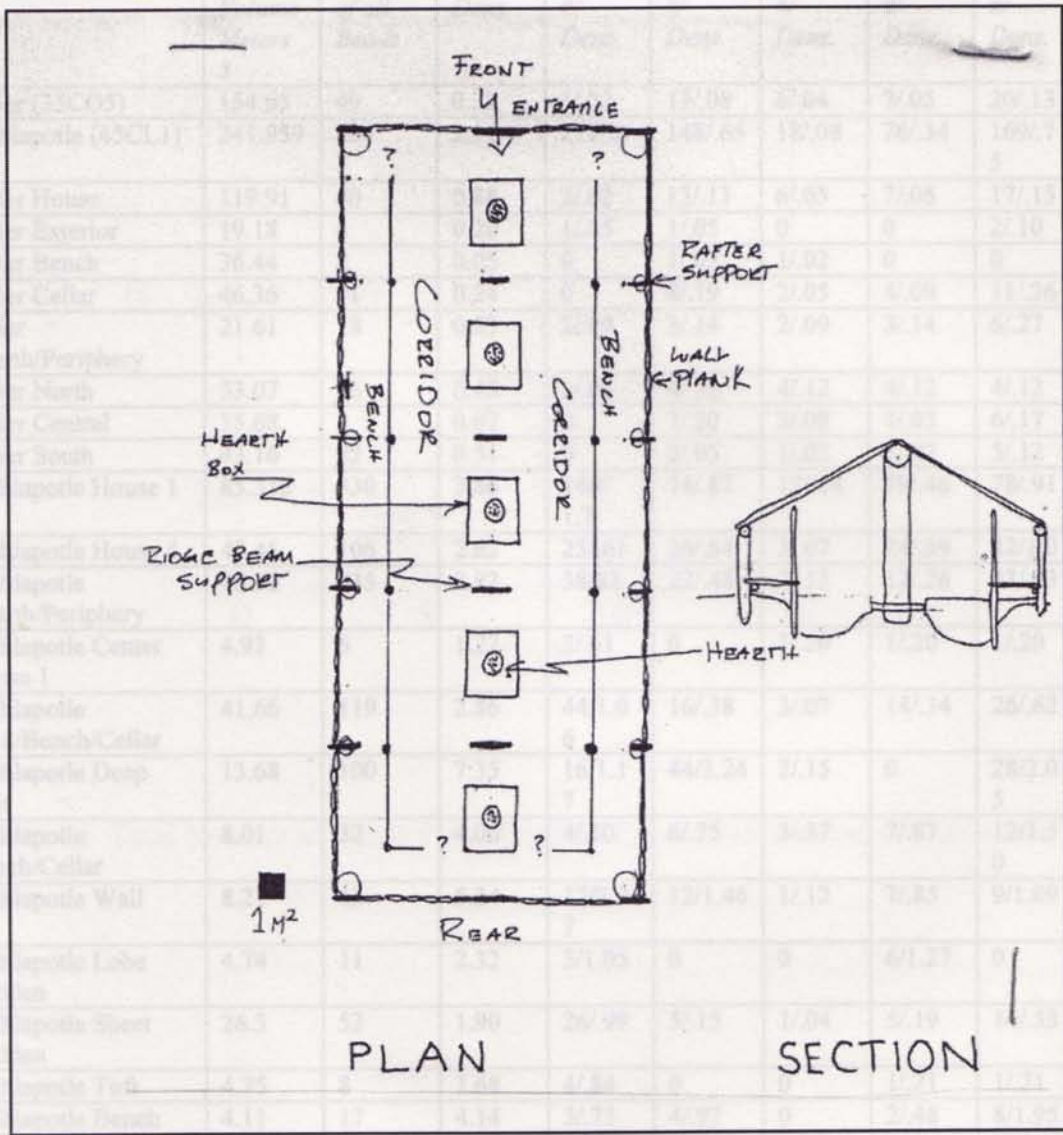
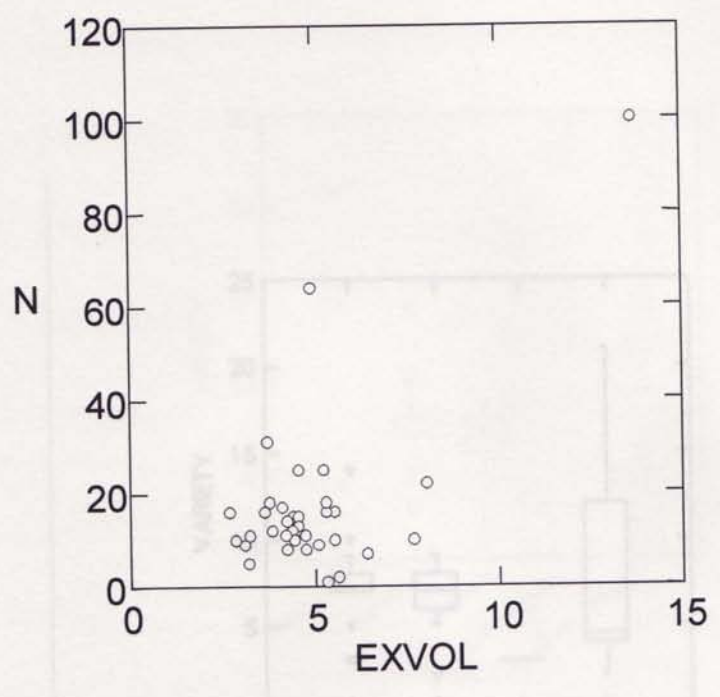


Figure 10 Plan of Meier (35CO5) Plankhouse by K. Ames

**Table 13** Bead Number and Densities

| <i>Site/House/Facility</i>      | <i>Excavated Volume Meters<sup>3</sup></i> | <i>Total# of all Beads</i> | <i>Bead Dens.</i> | <i>K1 #/ Dens.</i> | <i>K2 #/ Dens.</i> | <i>K3 #/ Dens.</i> | <i>K4 #/ Dens.</i> | <i>K5 #/ Dens.</i> |
|---------------------------------|--|----------------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Meier (35CO5)                   | 154.65                                     | 49                         | 0.32              | 3/.02              | 13/.08             | 6/.04              | 7/.05              | 20/.13             |
| Cathlapotle (45CL1)             | 241.959                                    | 704                        | 2.91              | 218/.9             | 148/.65            | 18/.08             | 76/.34             | 169/.75            |
| Meier House                     | 119.91                                     | 40                         | 0.38              | 2/.02              | 13/.11             | 6/.05              | 7/.06              | 17/.15             |
| Meier Exterior                  | 19.18                                      | 4                          | 0.20              | 1/.05              | 1/.05              | 0                  | 0                  | 2/.10              |
| Meier Bench                     | 36.44                                      | 2                          | 0.05              | 0                  | 1/.02              | 1/.02              | 0                  | 0                  |
| Meier Cellar                    | 46.36                                      | 11                         | 0.24              | 0                  | 8/.19              | 2/.05              | 4/.09              | 11/.26             |
| Meier Hearth/Periphery          | 21.61                                      | 18                         | 0.83              | 2/.09              | 3/.14              | 2/.09              | 3/.14              | 6/.27              |
| Meier North                     | 33.07                                      | 16                         | 0.48              | 2/.06              | 4/.12              | 4/.12              | 4/.12              | 4/.12              |
| Meier Central                   | 35.68                                      | 2                          | 0.07              | 0                  | 7/.20              | 3/.08              | 1/.03              | 6/.17              |
| Meier South                     | 43.16                                      | 22                         | 0.51              | 0                  | 2/.05              | 1/.02              | 1/.02              | 5/.12              |
| Cathlapotle House 1             | 85.316                                     | 330                        | 3.86              | 146/1.7            | 74/.87             | 12/.14             | 39/.46             | 78/.91             |
| Cathlapotle House 4             | 40.45                                      | 106                        | 2.62              | 25/.61             | 26/.64             | 3/.07              | 24/.59             | 42/1.0             |
| Cathlapotle Hearth/Periphery    | 46.30                                      | 135                        | 2.92              | 38/82              | 22/.48             | 7/.15              | 12/.26             | 43/.93             |
| Cathlapotle Center House 1      | 4.93                                       | 6                          | 1.22              | 3/.61              | 0                  | 1/.20              | 1/.20              | 1/.20              |
| Cathlapotle Wall/Bench/Cellar   | 41.66                                      | 119                        | 2.86              | 44/1.06            | 16/.38             | 3/.07              | 14/.34             | 26/.62             |
| Cathlapotle Deep Unit           | 13.68                                      | 100                        | 7.35              | 16/1.17            | 44/3.24            | 2/.15              | 0                  | 28/2.05            |
| Cathlapotle Bench/Cellar        | 8.01                                       | 32                         | 4.00              | 4/.50              | 6/.75              | 3/.37              | 7/.87              | 12/1.50            |
| Cathlapotle Wall                | 8.21                                       | 43                         | 5.24              | 17/2.07            | 12/1.46            | 1/.12              | 7/.85              | 9/1.09             |
| Cathlapotle Lobe Midden         | 4.74                                       | 11                         | 2.32              | 5/1.05             | 0                  | 0                  | 6/1.27             | 0                  |
| Cathlapotle Sheet Midden        | 26.3                                       | 52                         | 1.90              | 26/.99             | 5/.15              | 1/.04              | 5/.19              | 14/.53             |
| Cathlapotle Toft                | 4.75                                       | 8                          | 1.68              | 4/.84              | 0                  | 0                  | 1/.21              | 1/.21              |
| Cathlapotle Bench               | 4.11                                       | 17                         | 4.14              | 3/.73              | 4/.97              | 0                  | 2/.48              | 8/1.95             |
| Cathlapotle House 1 and House 4 | 125.75                                     | 438                        | 3.47              | 171/2.             | 100/1.5            | 15/.21             | 63/1.0             | 120/2              |
| House 1B                        | 9.55                                       | 33                         | 3.33              | 13/1.31            | 12/1.21            | 6/.61              | 3/.30              | 6/.61              |
| House 1C                        | 11.15                                      | 46                         | 3.64              | 22/1.7             | 9/.71              | 2/.16              | 2/.16              | 11/.87             |
| House 1D                        | 64.62                                      | 251                        | 4.11              | 111/1.82           | 53/.87             | 6/.10              | 33/.54             | 60/.98             |
| House 4n                        | 19.12                                      | 34                         | 1.78              | 5/.26              | 13/.68             | 2/.10              | 13/.68             | 14/.73             |
| House 4s                        | 18.3                                       | 72                         | 3.93              | 20/1.1             | 13/.71             | 1/.05              | 11/.60             | 28/.05             |



**Figure 11** Total Number of Beads Plotted against Excavation Volume at Cathlapotle

*Figure 12* Boxplot of Bead Variety by Context with the Deep Unit included as Sherd Midden

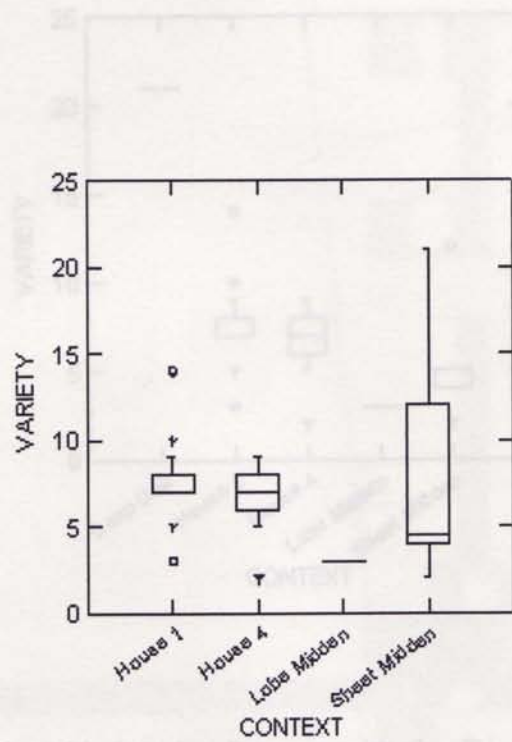
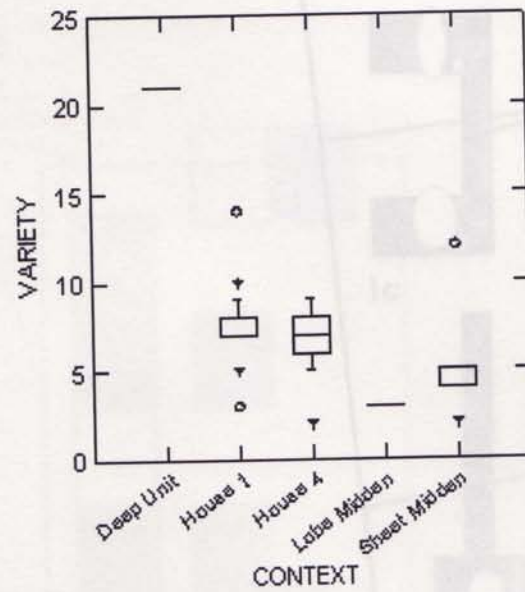
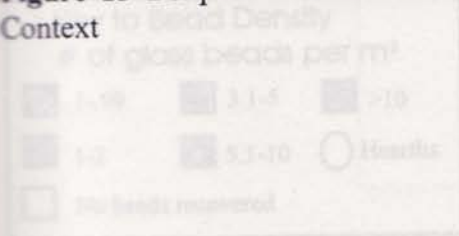


Figure 13 Boxplot of Bead Variety by Context with the Deep Unit as a Separate Context

**Figure 12** Boxplot of Bead Variety by Context with the Deep Unit included as Sheet Midden



**Figure 13** Boxplot of Bead Variety by Context with the Deep Unit as a Separate Context



**Figure 14** Bead Density Cahoonville House 1

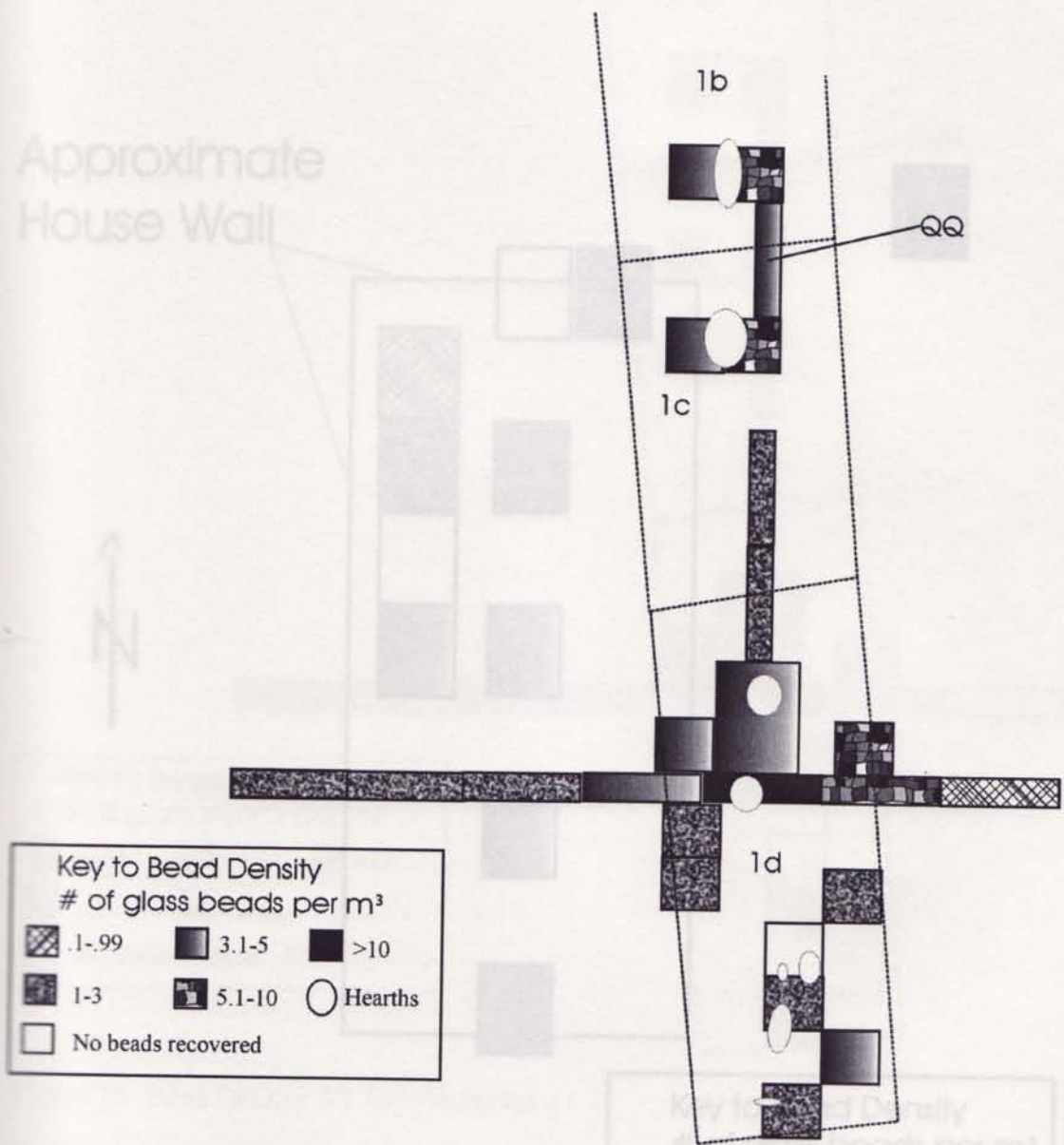
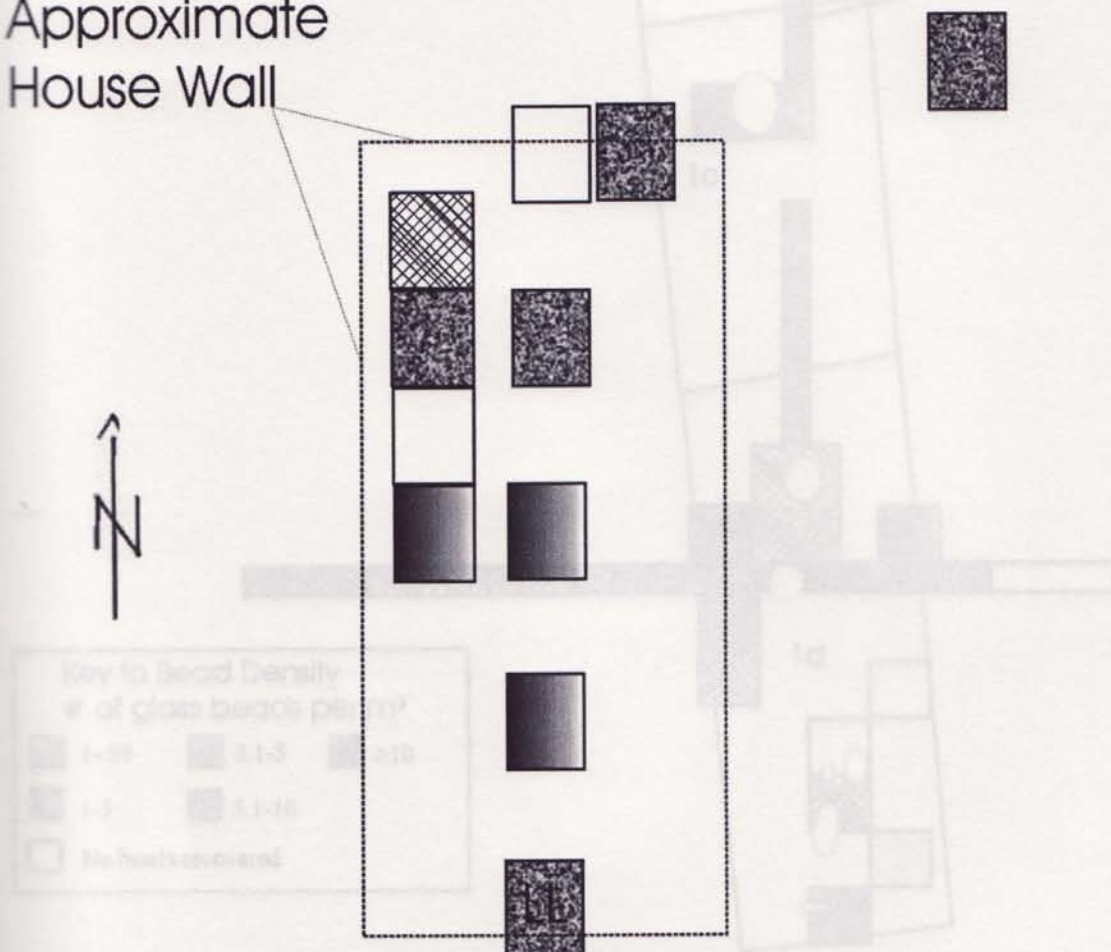


Figure 14 Bead Density Cathlapotle House 1

Figure 15 Bead Density House 4

Approximate House Wall



Key to Bead Density  
# of glass beads per m<sup>3</sup>

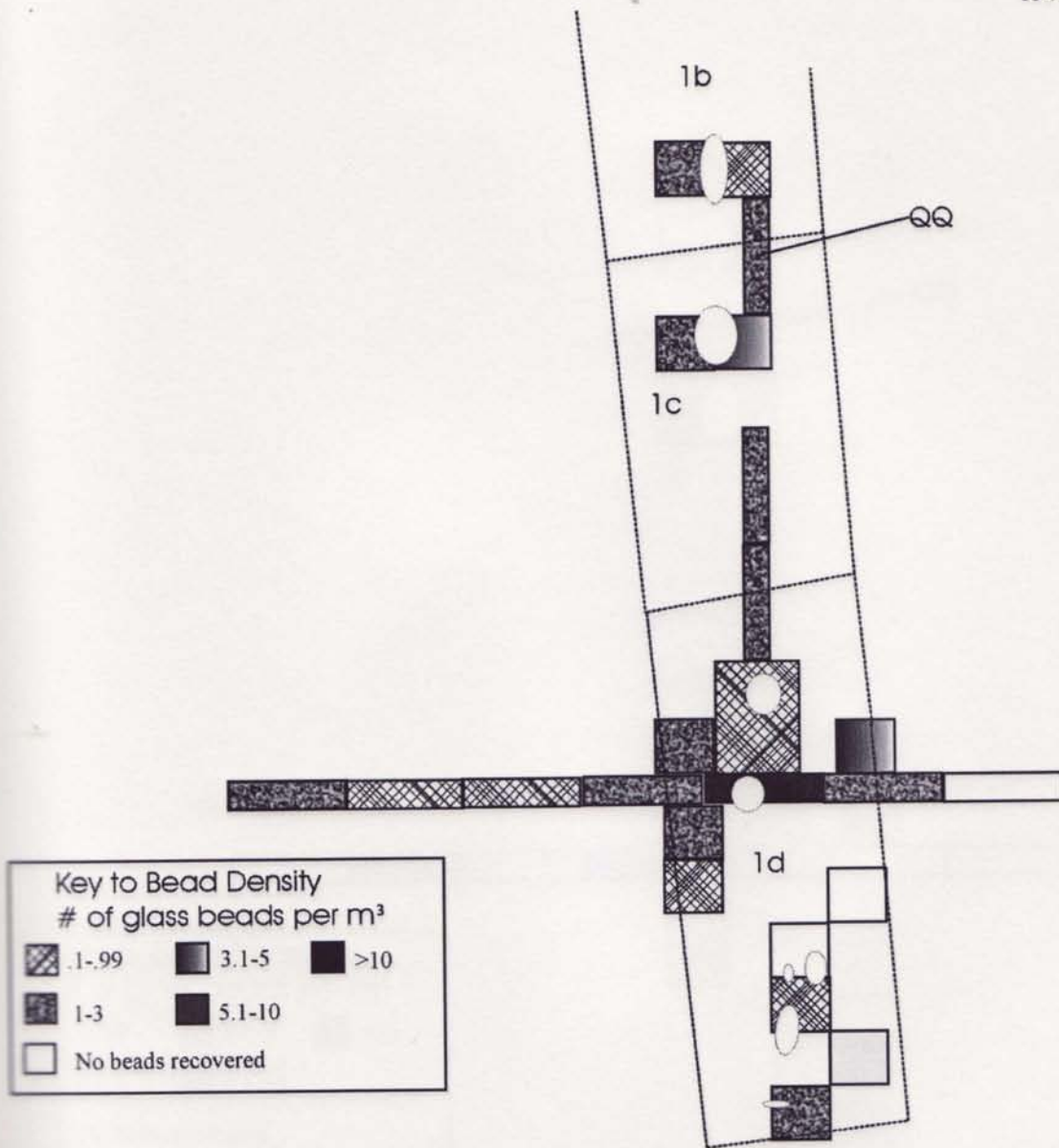
|                    |                  |               |
|--------------------|------------------|---------------|
| [Cross-hatch]      | [Light Gray]     | [Medium Gray] |
| 1-.99              | 3.1-5            | >10           |
| [Dark Gray]        | [Very Dark Gray] | [Black]       |
| 1-3                | 5.1-10           |               |
| [White]            |                  |               |
| No beads recovered |                  |               |

Figure 16 Bead Density K1 Type in House 1

Key to Bead Density  
# of glass beads per m<sup>3</sup>

|                    |                  |               |
|--------------------|------------------|---------------|
| [Cross-hatch]      | [Light Gray]     | [Medium Gray] |
| .1-.99             | 3.1-5            | >10           |
| [Dark Gray]        | [Very Dark Gray] | [Black]       |
| 1-3                | 5.1-10           |               |
| [White]            |                  |               |
| No beads recovered |                  |               |

Figure 15 Bead Density House 4



**Figure 16** Bead Density K1 Type in House 1

Figure 17 Bead Density K2 type Beads in House 1

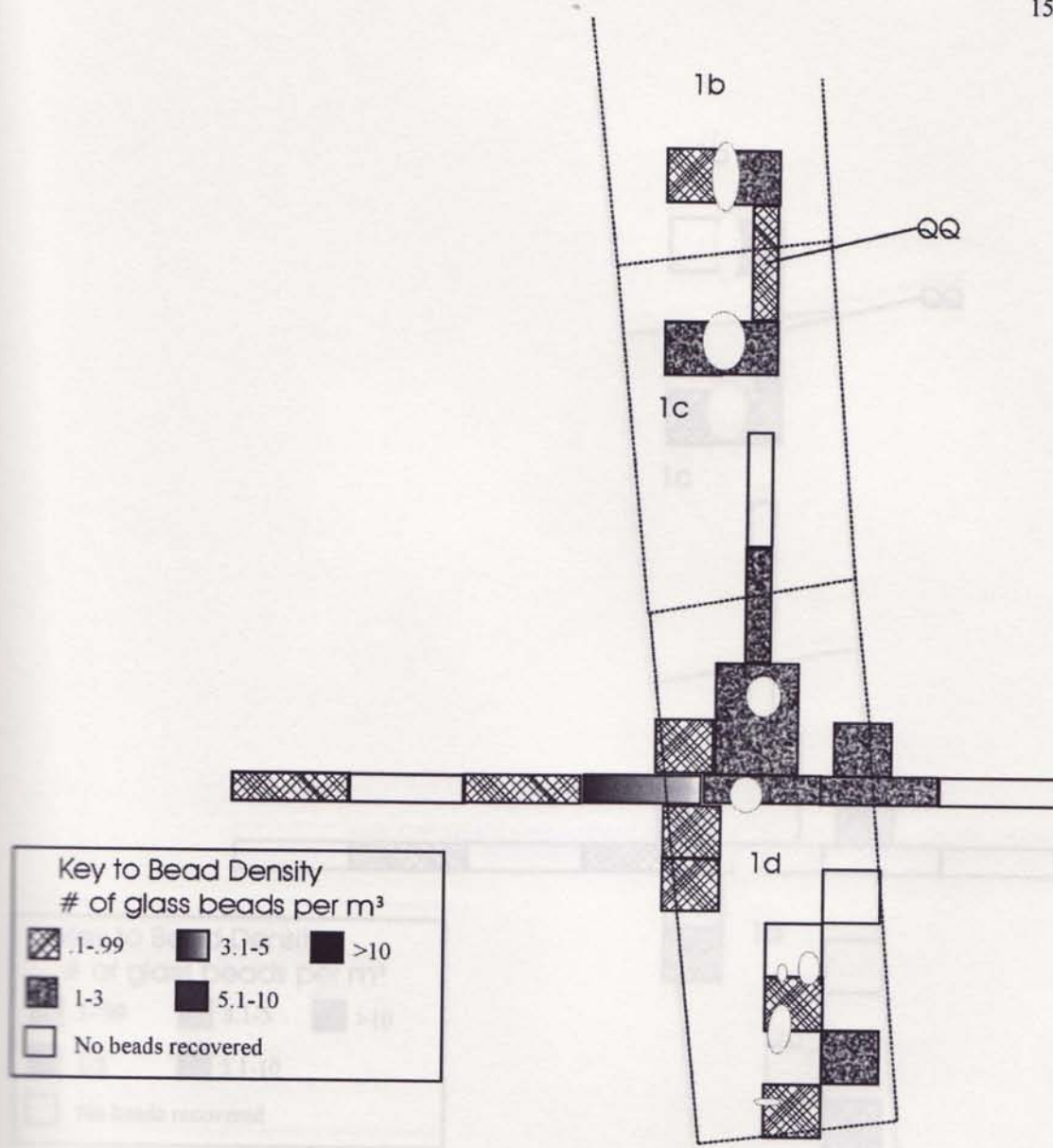
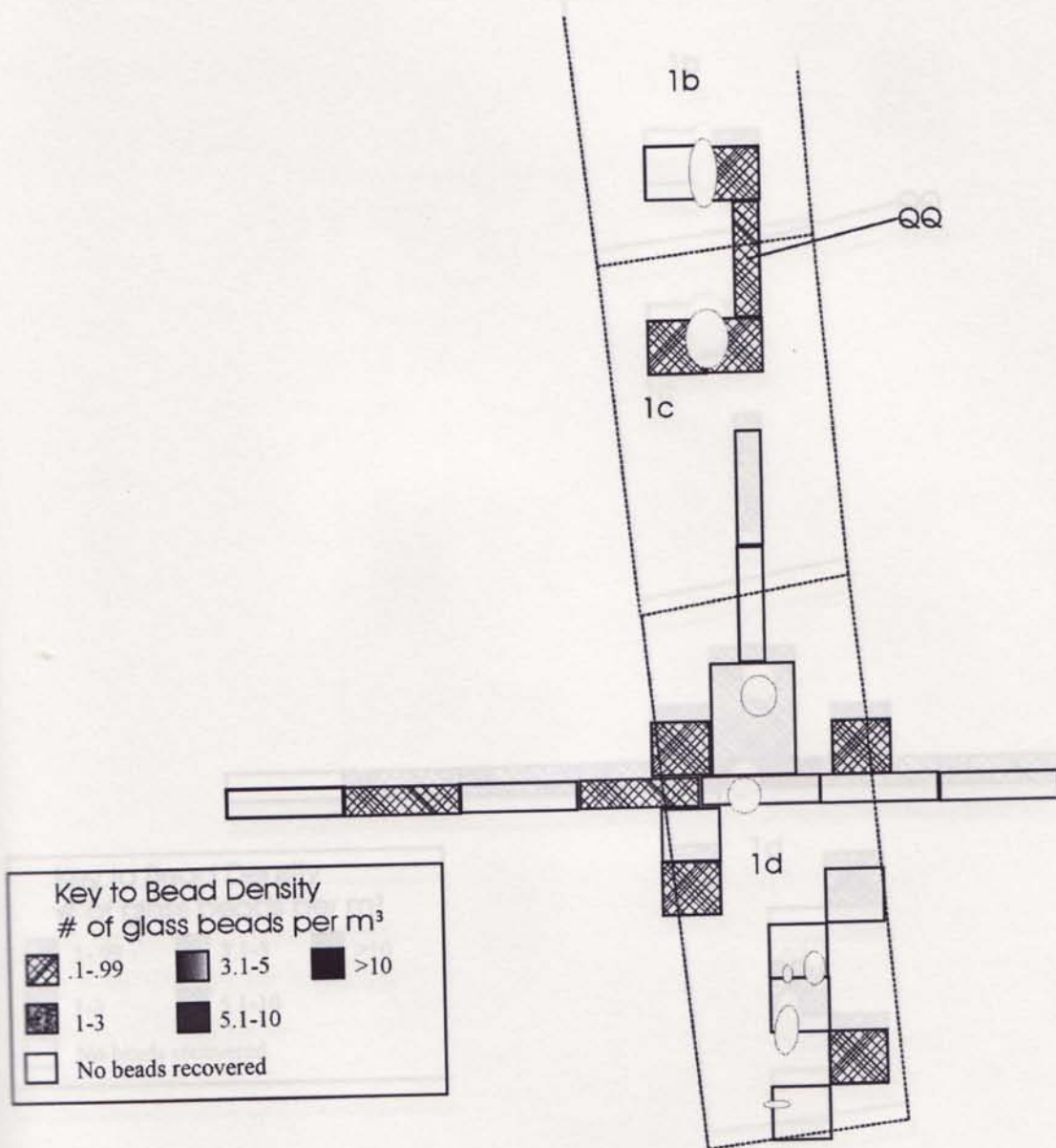


Figure 17 Bead Density K2 type Beads in House 1

Figure 18 Density of K3 type Beads in House 1



**Figure 18** Density of K3 type Beads in House 1

Figure 19 Density of K4 type Beads in House 1

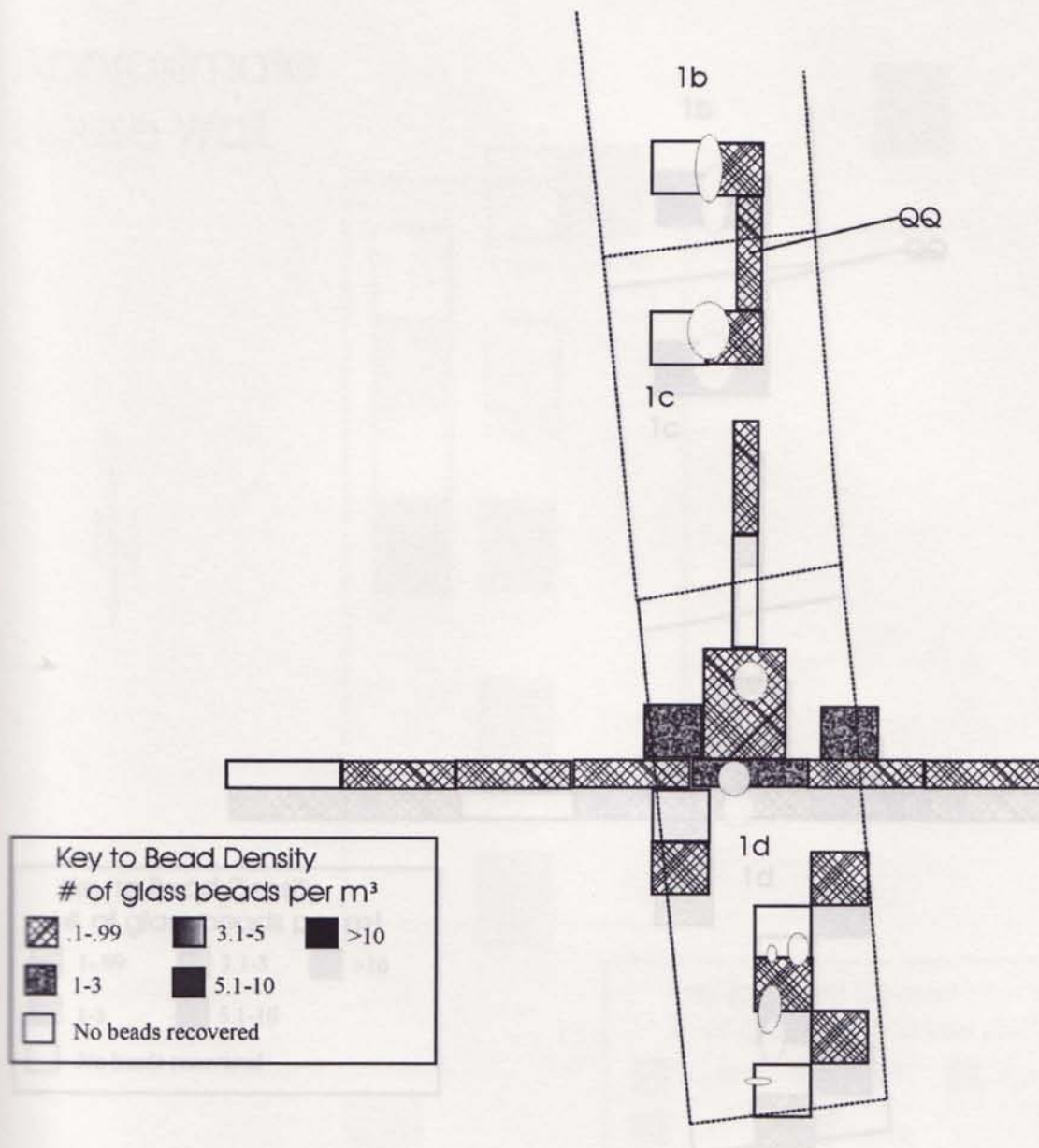


Figure 19 Density of K4 type Beads in House 1

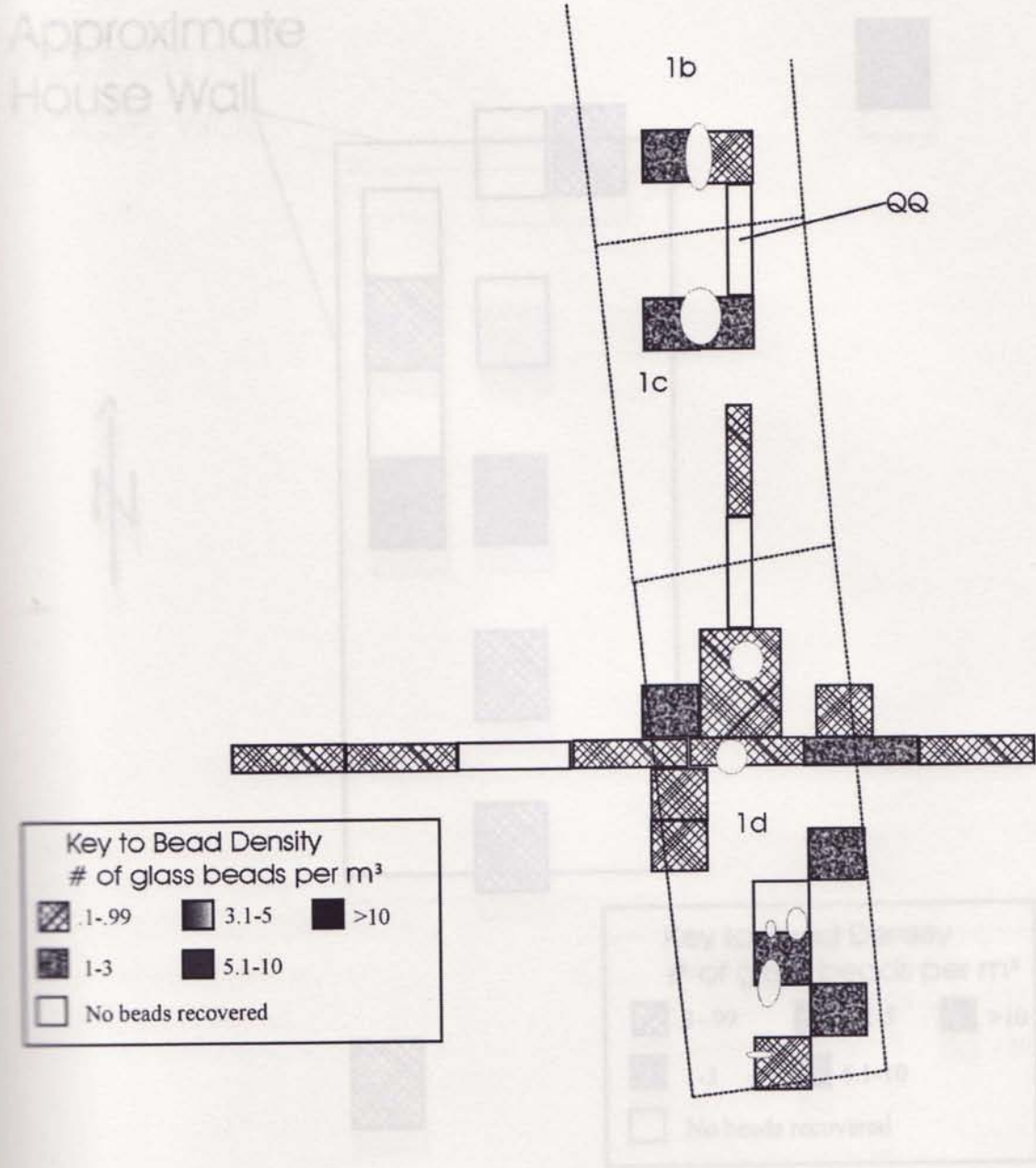


Figure 20 Density of K5 type Beads in House 1

Figure 21 Density of K1 type Beads in House 4

Approximate  
House Wall

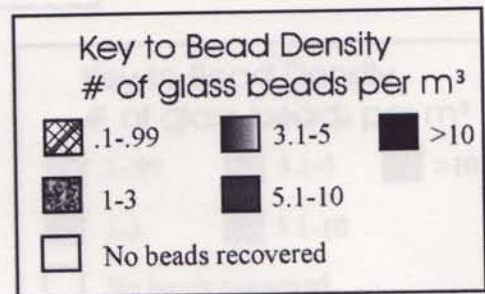
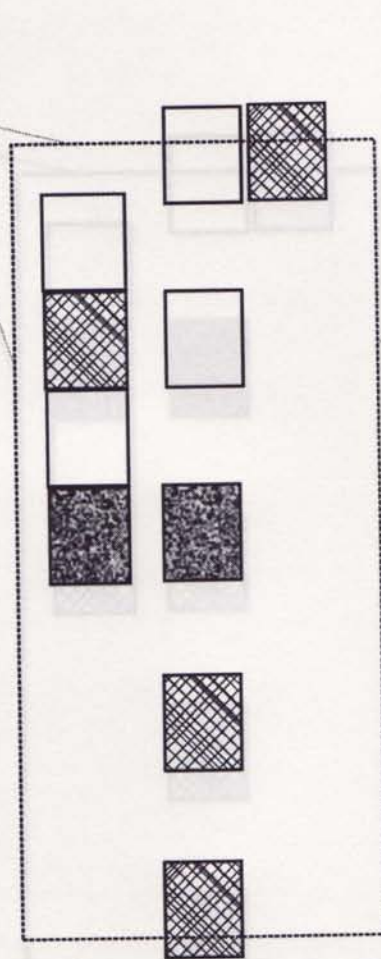
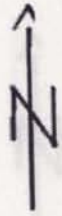


Figure 21 Density of K1 type Beads in House 4

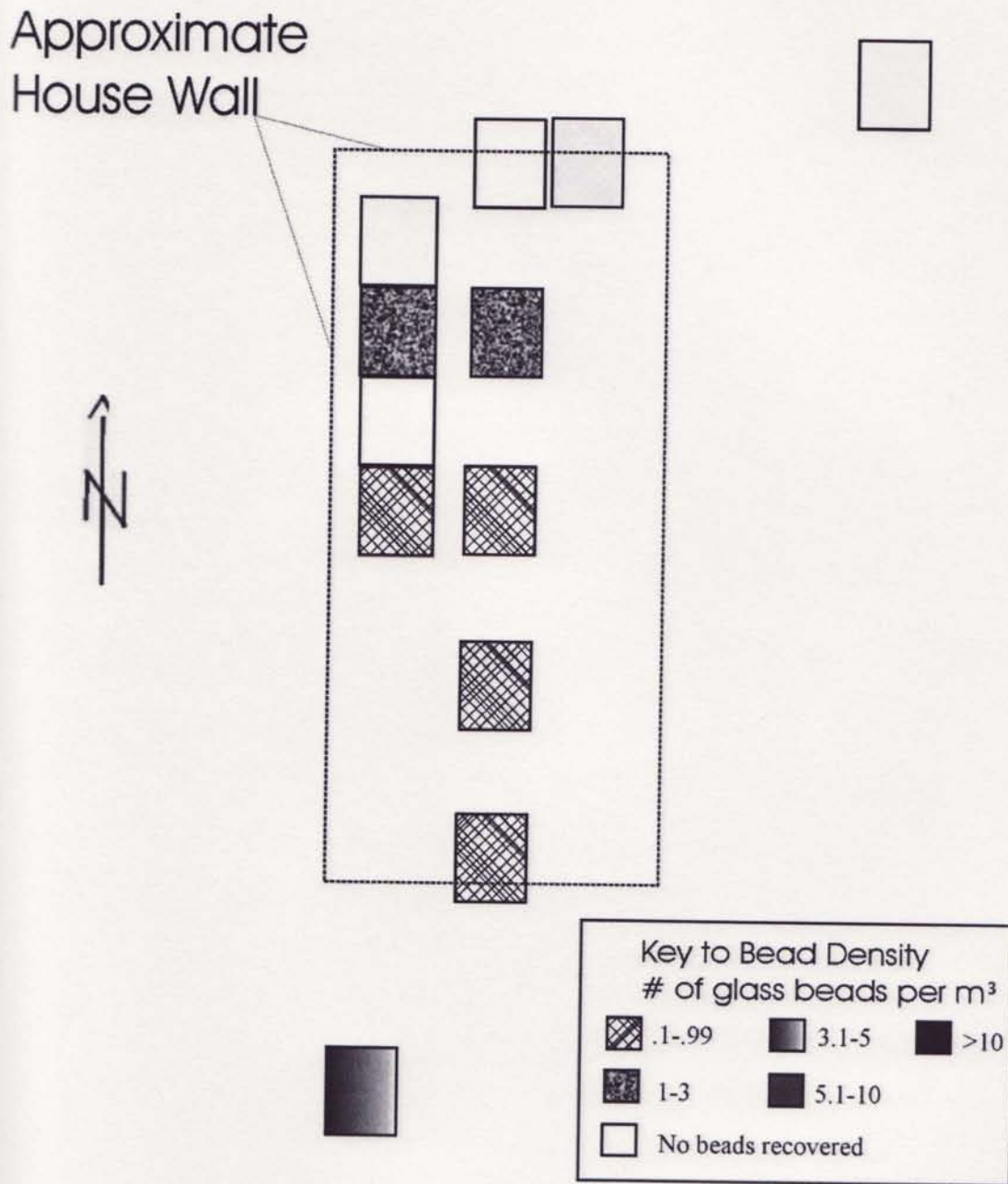


Figure 22 Density of K2 type Beads in House 4

Approximate  
House Wall

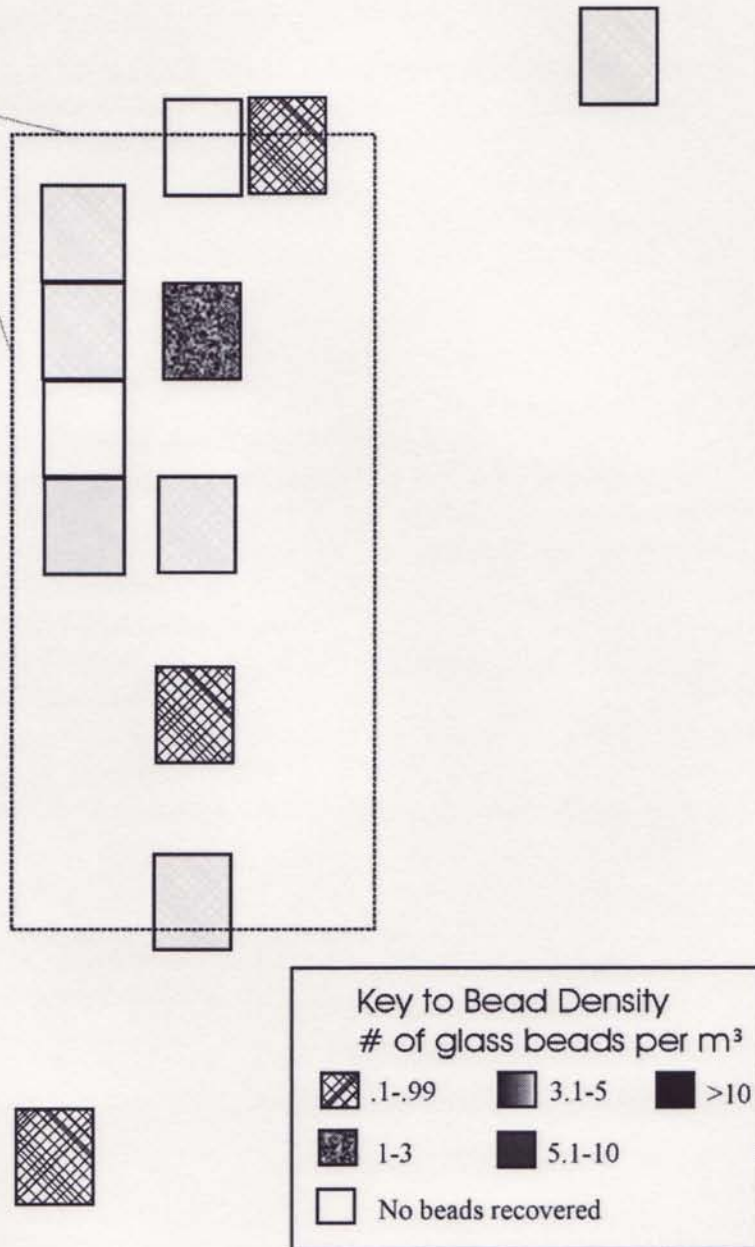
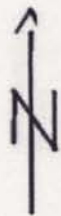


Figure 23 Density of K3 type Beads in House 4

Approximate  
House Wall

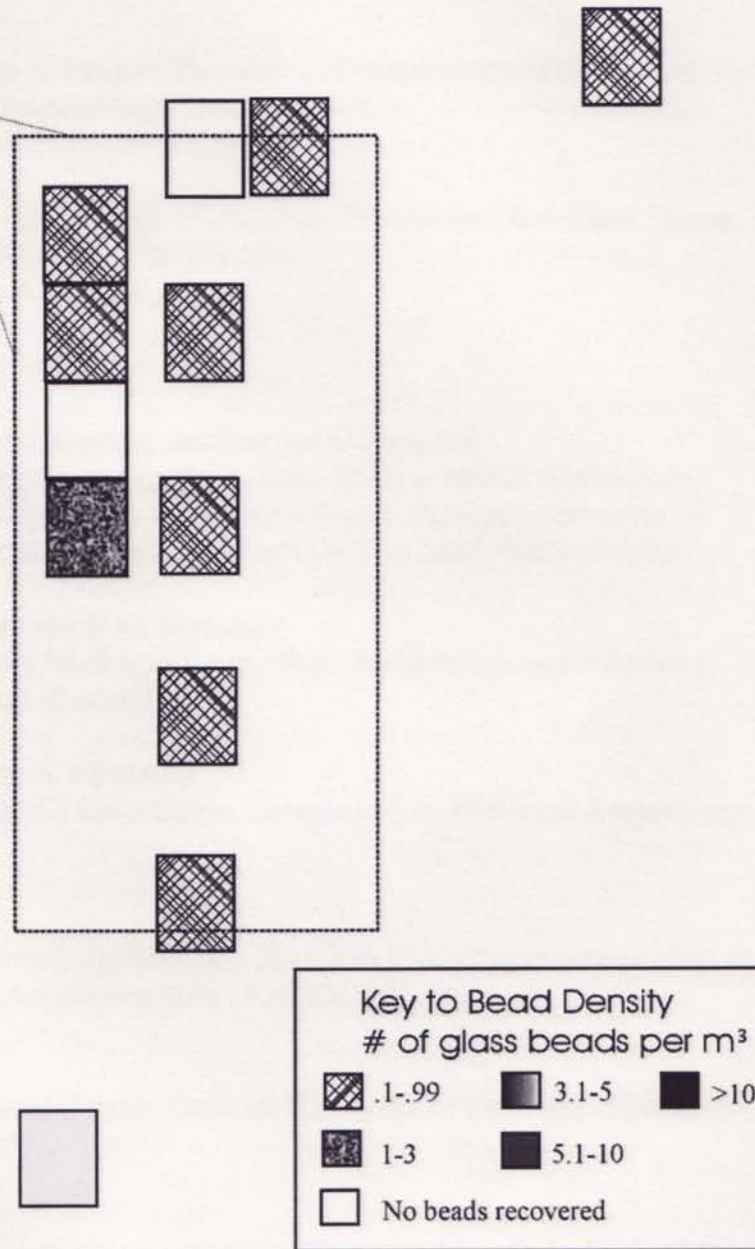
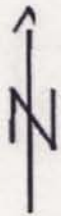


Figure 23 Density of K3 type Beads in House 4

Figure 24 Density of K4 type Beads in House 4

Approximate House Wall

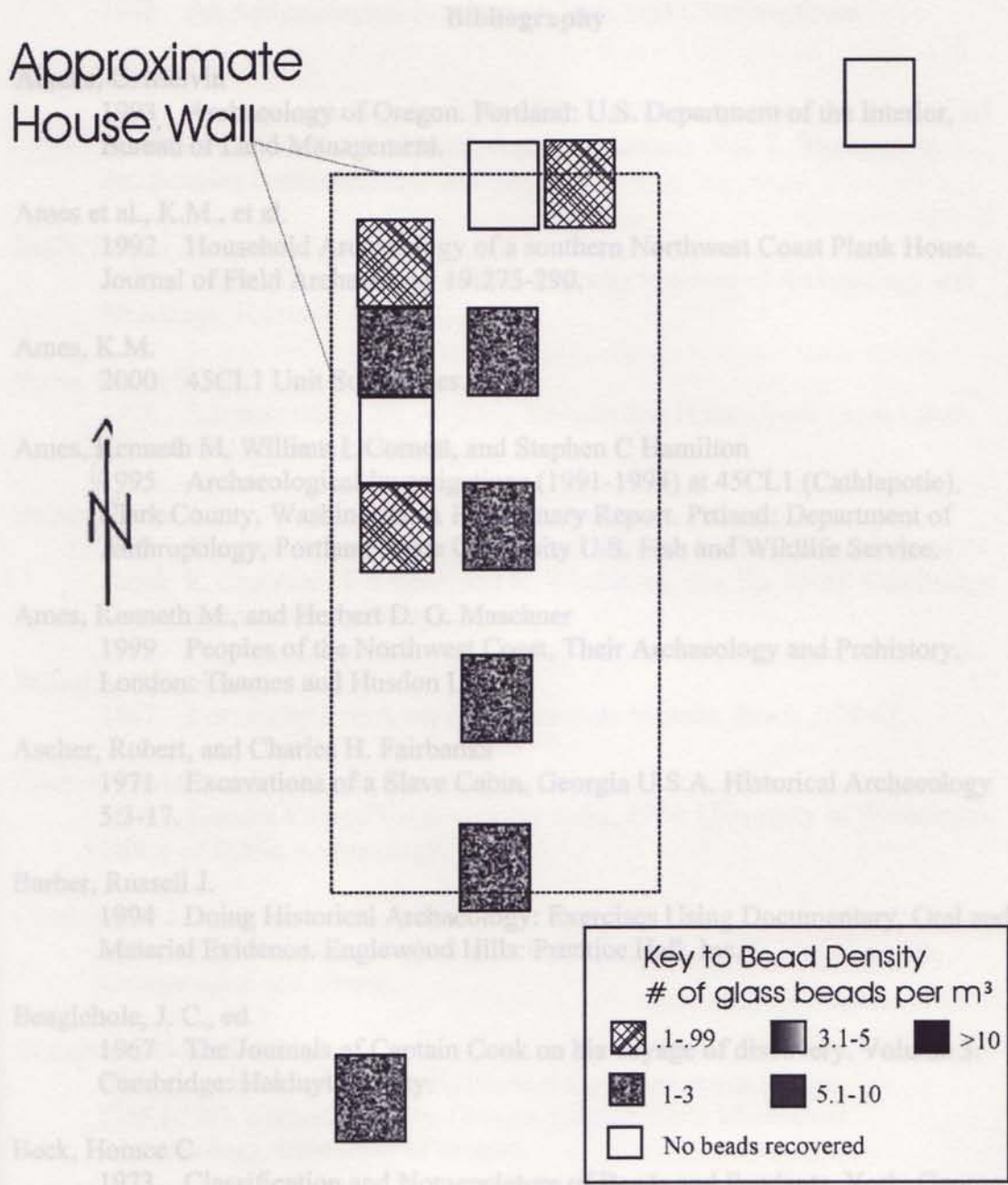


Figure 25 Density of K5 type Beads in House 4

## Bibliography

Aikens, C. Melvin

1993 Archaeology of Oregon. Portland: U.S. Department of the Interior, Bureau of Land Management.

Ames et al., K.M., et al.

1992 Household Archaeology of a southern Northwest Coast Plank House. *Journal of Field Archaeology* 19:275-290.

Ames, K.M.

2000 45CL1 Unit Summaries.

Ames, Kenneth M, William L Cornett, and Stephen C Hamilton

1995 Archaeological Investigations (1991-1994) at 45CL1 (Cathlapotle), Clark County, Washington: A Preliminary Report. Portland: Department of Anthropology, Portland State University U.S. Fish and Wildlife Service.

Ames, Kenneth M., and Herbert D. G. Maschner

1999 Peoples of the Northwest Coast, Their Archaeology and Prehistory. London: Thames and Hudson Ltd.

Ascher, Robert, and Charles H. Fairbanks

1971 Excavations of a Slave Cabin, Georgia U.S.A. *Historical Archaeology* 5:3-17.

Barber, Russell J.

1994 Doing Historical Archaeology: Exercises Using Documentary, Oral and Material Evidence. Englewood Hills: Prentice Hall, Inc.

Beaglehole, J. C., ed.

1967 The Journals of Captain Cook on his voyage of discovery. Volume 3. Cambridge: Hakluyt Society.

Beck, Horace C

1973 Classification and Nomenclature of Beads and Pendants. York: George Shumway Publisher.

Biete, Jana L

2000 Conservation of The Daugmale Castle-Mound Beads, Latvia: The Bead Society.

- Binford, Lewis R.  
1972 *An Archaeological Perspective*. New York: Seminar Press.
- Boyd, Robert T.  
1990 Demographic History, 1774-1874. *In* Northwest Coast. W. Suttles, ed. Pp. 135-148. *Handbook of North American Indians*, Vol. 7. Washington: Smithsonian Institution.
- Brain, Jeffrey P.  
1977 *Tunica Treasure*. Cambridge: Peabody Museum of Archaeology and Ethnology, Harvard University.
- Brose, David S.  
1970 Summer Island III: An Early Historic Site in the Upper Great Lakes. *Historical Archaeology* 4:3-33.
- Brown, James A.  
1981 The Search for Rank in Prehistoric Burials. *In* *The Archaeology of Death*. R. Chapman, I. Kinnes, and K. Randsborg, eds. Pp. 25-37. Cambridge: Cambridge University Press.
- Bussolin, Dominique  
1847 Les celebres verrieres de Venise et de Murano. *Beads* 2:29-67.
- Chance, David, and Jennifer V. Chance  
1976 *Kanaka Village/Vancouver Barracks, 1974*: University of Washington Office of Public Archaeology.
- Charlston, R.J.  
1984 *English Glass and glass used in England circa 400-1940*. London: George Allen and Unwin.
- Cheatham, Richard, et al.  
1995 *Archaeological Investigations at the Bezuksewas Village Site (35KL778), Klamath County, Oregon*. Eugene: State Museum of Anthropology, University of Oregon.
- Clark, A. Mcfadyen  
1996 *Who Lived in this House? A study of Koyukuk River Semisubterranean Houses*. Hull: Canadian Museum of Civilization.

- Coues, Elliot, ed.  
1897 *New Light on the Early History of the Greater Northwest: The Manuscript Journals of Alexander Henry and David Thompson, 1799-1814. Volume 2.* New York: Francis P. Harper.
- Darby, Melissa Cole  
1995 *Bead Analysis. In Archaeological Investigations at the Besuksewas Village Site (35KL778), Klamath County, Oregon.* Eugene: State Museum of Anthropology, University of Oregon.
- Davis, Deborah  
1998 *Bone Tool Technology: measurements of curation and the spatial distribution of bone and antler artifacts from a Pacific Northwest Coast plankhouse site.* Unpublished M. A. Thesis, Portland State University.
- Dean, Jonathan R.  
1995 "Uses of the Past" on the Northwest Coast: The Russian American Company and Tlingit Nobility, 1825-1867. *Ethnohistory* 42(2):265-299.
- Drennan, Robert D.  
1996 *Statistics for Archaeologists: A Commonsense Approach.* New York, London: Plenum Press.
- Drucker, Philip  
1965 *Cultures of the North Pacific Coast.* New York: Chandler Publishing Company.
- Dubin, Lois Sherr  
1987 *The History of Beads: from 30,000 B.C. to the Present.* New York: Harry N. Abrams.
- Ellis, David V.  
n.d. *Untitled Manuscript Report on the 1984 Willamette Associates' investigations in the Meier site locality: Laboratory of Archaeology and Anthropology, Portland State University.*
- Erickson, Joan Mowat  
1969 *The Universal Bead.* New York: W. W. Norton and Company Inc.
- Fadden, Christine  
1991 *Meier Site Trade Beads.* Portland: Portland State University.

- Fehon, Jacqueline R., and Sandra C. Sholtz  
1978 A conceptual framework for the study of artifact loss. *American Antiquity* 43:271-273.
- Franchere, Gabriel  
1968 *A Voyage to the Northwest Coast of America*. New York: The Citadel Press.
- Francis, Peter J  
1994 *Beads of the World*. Atglen: Schiffer Publishing Ltd.
- Gamble, Lynn H., Phillip L. Walker, and Glenn S. Russelt  
2001 An Integrative Approach to Mortuary Analysis: Social and Symbolic Dimensions of Chumash Burial Practices. *American Antiquity* 66(2):185-212.
- Gibbs, George  
1877 Tribes of Western Washington and Northwestern Oregon. In *Contributions to American Ethnology*, Vol. 1: Department of the Interior.
- Gibson, James R.  
1992 *Otter Skins, Boston Ships and China Goods*. Seattle: University of Washington Press.
- Goffer, Zvi  
1980 *Archaeological Chemistry A Sourcebook on the Applications of Chemistry to Archaeology*. New York: John Wiley and Sons.
- Gough, Barry M  
1992 *The Northwest Coast: British Navigation, Trade, and Discoveries to 1812*. Vancouver, BC: UBC Press.
- Hajda, Yvonne P.  
1984 *Regional Social Organization in the Greater Lower Columbia 1792-1830*. Ph.d dissertation.  
1990 *Shell Game A True Account of Beads and Money in North America*.
- Hamilton, S.C.  
1994 *Technological Organization and Sedentism: Expedient Core Reduction, Stockpiling and Toll Curation at the Meier Site (35C05)*. Masters, Portland State University.
- Hobler, Philip M  
1986 *Measures of the Acculturative Response to Trade on the Central Coast of British Columbia*. *Historical Archaeology* 20(2).

- Hoffman, J.J., and Lester A. Ross  
1975 Fort Vancouver Excavations IX, Indian Trade Store. Vancouver: M.S. on file at Fort Vancouver National Historic Site.
- Hume, Ivor Noel  
1790 A Guide to Artifacts of Colonial America. New York: Alfred A. Knopf.
- Jargstorf, Sibylle  
1991 Glass in Jewelry: Hidden Artistry in Glass. Atglen: Schiffer Publishing Ltd.
- Jargstorf, Sibylle  
1993 Baubles, Buttons, and Beads, the Heritage of Bohemia. Atglen: Schiffer Publishing Ltd.
- Kardas, Susan  
1971 "The People Bought This and the Clatsop Became Rich." A view of Nineteenth Century Fur Trade Relationships on the Lower Columbia Between Chinookan Speakers, Whites, and Kanakas. Ph.D, Bryn Mawr.
- Karklins, Karliss  
1985 Glass Beads, The 19th Century Levin Catalogue and Venetian Bead Book and Guide to Description of Glass Beads: National Historic Parks and Sites Branch, Parks Canada.
- Mackie, Richard Somerset  
1997 Trading Beyond the Mountains: The British Fur Trade on the Pacific 1793-1843. Vancouver, BC: UBC Press.
- Mainfort, Robert C.  
1985 Wealth, Space, and Status in a Historic Indian Cemetery. *American Antiquity* 50(3):55-579.
- Martien, Jerry  
1996 Shell Game A True Account of Beads and Money in North America. San Francisco: Mercury House.
- Maschner, H.D.G.  
1991 The Emergence of Cultural Complexity on the northern Northwest Coast. *Antiquity* 65(6):924-934.
- McFeat, Tom, ed.  
1966 Indians of the North Pacific Coast. Volume 25. Ottawa: Carleton University Press.

- Meares, John  
 1967 *Voyages Made in the Years 1788 and 1789 from China to the Northwest Coast of America*. New York: Da Capo Press.
- Merk, Frederick, ed.  
 1931 *Fur Trade and Empire, George Simpson's Journal 1824-1825*. Cambridge: Harvard University Press.
- Miller, George L.  
 1991 A Revised Set of CC Index Values for Classification and Economic Scaling of English Ceramics from 1787 to 1880. *Historical Archaeology* 25(1):1-25.
- Mitchell, D., and L. Donald  
 1988 Archaeology and the Study of the Northwest Coast Economies. In *Prehistoric Economies of the Northwest Coast*. Pp. 293-351, Vol. Research in Economic Anthropology. Supplement 3. Greenwich: JAI Press, Inc.
- Moulton, G. E.  
 1990 *The Journals of the Lewis and Clark Expedition, Vol. 6 and 7*. University of Nebraska Press, Lincoln and London
- Moura, Guy F  
 1991 Washington Glass Trade Bead Chronology. *Archaeology in Washington* 3:17-25.
- Munsell Book of Color  
 1998 *The Munsell Book of Color*. New Windsor: Greyttag-McBeth a Division of Kollmoregen Instruments Corporation.
- Ogden, Peter Skene  
 1933 *Traits of American Indian Life*. Fairfield: Ye Galleon Press.
- O'Shea, John M  
 1984 *Mortuary Variability: An Archaeological Investigation*. Orlando, Florida: Academic Press.
- Pettigrew, Richard M.  
 1981 *Prehistoric Culture Sequences in the Portland Basin of the Lower Columbia River Valley*. Eugene: University of Oregon.
- Plummer, Katherine  
 1991 *The Shogun's Reluctant Ambassadors: Japanese Sea Drifters in the North Pacific*. Portland: Oregon Historical Society.

Quimby, George

1966 *Indian Culture and European Trade Goods*. Madison: University of Wisconsin Press.

1978 *Trade Beads and Sunken Ships*. In *Archaeological Essays in honor of Irving B. Rouse* R.C. Dannel, ed. *Studies in Anthropology*, Vol. 2. The Hague, Paris, New York: Mouton Publishers.

Ray, Arthur J

1978 *History and Archaeology of the Northern Fur Trade*. *American Antiquity* 43(1):26-35.

Ray, Verne F

1938 *Lower Chinook Ethnographic Notes*. Pp. 29-165. Seattle: University of Washington Publications in Anthropology 7.

Ross, Alexander

1904 (1849) *Adventures of the First Settlers on the Oregon or Columbia River*. In *Early Western Travels*. R.G. Thwaites, ed, Vol. 7. Cleveland: Arthur H. Clark Co.

Ross, Lester A

1976 *A Historical Investigation of the Goods Imported and Manufactured by the Hudson's Bay Company*: US Department of the Interior, National Park Service.

1990 *Trade Beads from the Hudson's Bay Company Fort Vancouver (1829-60)*, Vancouver, Washington. *Beads* 2:29-67.

1997 *Glass and Ceramic Trade Beads from the Native Alaskan Neighborhood*. In *The Native Alaskan Neighborhood: A Multiethnic Community at Colony Ross*. K.G. Lightfoot, A.M. Schiff, and T.A. Wake, eds, Vol. 2:55. Berkely, California: University of California, Archaeological Research Facility.

Ruby, Robert H., and John A. Brown

1976 *The Chinook Indians, Traders of the Lower Columbia*. Norman: University of Oklahoma Press.

Sahlins, Marshall

1972 *Stone Age Economics*. New York: Aldine de Gruyter.

- Schiffer, Michael B.  
 1976 Behavioral Archaeology. New York: Academic Press Inc.  
 1987 Formation Processes of the Archaeological Record. Albuquerque: University of New Mexico Press.
- Schulting, Rick J.  
 1995 Variability and Status Differentiation on the Columbia-Fraser Plateau. Burnaby: Archaeology Press, Simon Fraser University.
- Silverstein, Michael  
 1990 Chinookans of the Lower Columbia. *In* Northwest Coast. W. Suttles, ed. Pp. 533-546. Handbook of North American Indians, Vol. 7. Washington: Smithsonian Institution.
- Simeone, William E.  
 1995 Rifles, Blankets & Beads. Norman and London: University of Oklahoma Press.
- Singleton, T.A., ed.  
 1985 The Archaeology of Slavery and Plantation Life. Orlando, Florida: Academic Press.
- Smith, Cameron McPherson  
 1995 Investigation of Social Stratification within a Southern Northwest Coast Aboriginal Plankhouse via Use-wear and Spatial Distribution of Chipped Lithic Artifacts. MA, Portland State University.
- Sobel, Elizabeth  
 1997 The Role of Euroamerican Metal in Native Status Systems of the Lower Columbia River Valley. *In* Northwest Anthropological Conference.
- South, Stanley J.  
 1977 Method and Theory in Historical Archaeology. New York: Academic Press.
- Speck, Gordon  
 1954 Northwest Exploration. Portland: Binfords and Mort.
- Spector, Janet D.  
 1976 The Interpretive Potential of Glass Trade Beads in Historic Archaeology. *Historical Archaeology* 10:17-26.

- Spencer-Wood, Suzanne M  
 1987 Introduction. *In* Consumer Choice in Historic Archaeology. S.M. Spencer-Wood, ed. New York: Plenum Press.
- Stearns, Robert E.C.  
 1887 Wampum and Dentalium: A Study of Native American Shell Money. Hummelstown: Tucquan Publishing.
- Steele, Harvey W  
 1979 The Stock of the European Sale Shop at Fort Vancouver 1829-1860. Northwest Anthropological Research Notes 13(2):215-230.
- Stenger, Alison T  
 1995 Native American Usage of Foreign Objects During the Early Contact Period: Archaeological and Historical Evidence of Change in the Northwest. MA, California State University Dominguez Hills.
- Stine, Linda France, Melanie A Cabak, and Mark D Groover  
 1996 Blue Beads as African-American Cultural Symbols. *Historical Archaeology* 30(3):49-75.
- Swan, James G  
 1857 Three Years Residence in Washington Territory. New York: Harper and Brothers Publishers.
- Thompson, David  
 1994 Columbia Journals. Seattle: University of Washington Press.
- Vancouver, George  
 1994 A Voyage of Discovery to the North Pacific Ocean and Round the World, 1791-1795. Volume 2. London: The Hakluyt Society.
- vanderSleen, W.G.N.  
 1973 A Handbook on Beads. York Pennsylvania: George Shumway Publisher.
- Vaughan, Thomas, ed.  
 1971 Paul Kane The Columbia Wanderer Sketches, Paintings and Comment, 1846-1847. Portland: Oregon Historical Society.
- Vibert, Elizabeth  
 1997 Traders' Tales. Norman: University of Oklahoma Press.

Walker, Alexander

1982 *An Account of a Voyage to the North West Coast of America in 1785 & 1786*. Seattle: University of Washington Press.

Wilk, R R, and W L Rathje

1982 Household Archaeology. *American Behavioral Scientist* 25(6):631-640.

Wilson, Douglas C.

1994 Identification and Assessment of Secondary Refuse Aggregates. *Journal of Archaeological Method and Theory* 1(1):41-63.

Wolf, J.W.

1994 *The Spatial Distribution of Ground Stone Tools as a Marker of Status Differentials in a Chinookan Plank house on the Lower Columbia River*. MA, Portland State University.

Woodward, Arthur

1965 *Indian Trade Goods*. Portland: Binford and Mort.

Zenk, Henry B

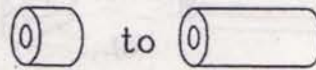
1990 Kalapuyans. *In Handbook of North American Indians*. W. Suttles, ed. Pp. 547-553, Vol. 7: Smithsonian Institution.



Table A1.1 Undecorated, Brown Monochrome Cylindrical Beads with Flat Ends  
Type: BAIICU

| Inventory # | Provenience   | Dimensions      | Material  | Weight | Color       | Shape    | Notes           |
|-------------|---------------|-----------------|-----------|--------|-------------|----------|-----------------|
| 1997.1.1    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.2    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.3    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.4    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.5    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.6    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.7    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.8    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.9    | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |
| 1997.1.10   | Chalchicomula | 1.5 x 1.5 x 0.5 | Stoneware | 0.15g  | Light Brown | Cylinder | 1.5 x 1.5 x 0.5 |

Appendix A: Bead Tables



### Type D/MCCU

**Table A1.1 Undecorated, Drawn Monochrome Cylindrical beads with Cut Ends**

| Variety # | Decoration Comments | Diaphaneity Luster Patina               | Layering Color Munsell               | Shape   | Size Diameter x Length (mm)      | Fig. # | Quant |
|-----------|---------------------|---|--------------------------------------|---------|----------------------------------|--------|-------|
| Fova 1066 | Undecorated         | Translucent Dull Patina: No             | Monochrome Green 5G 4/8              | Cylindr | 2.67 x 2.05                      | a      | 1     |
| CAT 48    | Undecorated         | Transparent Dull Patina: No             | Monochrome Blue 2.5B 2/4             | Cylindr | 5.51 x incompl                   | b      | 1     |
| CAT 76    | Undecorated         | Transparent Dull Patina: Yes Iridescent | Monochrome Purplish-Blue 2.5PB 3/6   | Cylindr | 3.60 x 2.76                      | c      | 6     |
| CAT 39    | Undecorated         | Translucent Dull Patina: Thick, whitish | Monochrome Greenish-Yellow 7.5GY 4/6 | Cylindr | 3.12 x incompl<br>5.16 x incompl | d      | 2     |
| FOVA 1006 | Undecorated         | Translucent Dull Patina: No             | Monochrome Blue 7.5B 5/2             | Cylindr | 7.81 x 7.06                      | e      | 1     |

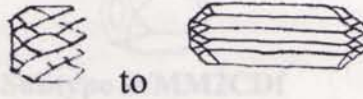
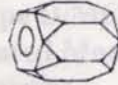


Table A1.3 Drawn, Monochrome, Faceted Beads with Cut Ends and Two Rows of Ground Facets

Subtype D/ MM4CDF

Table A1.2 Drawn, Monochrome, Faceted Beads with Cut Ends and four Rows of Ground Facets

| Variety # | Decoration Comments  | Diaphaneity<br>Luster<br>Patina    | Layering<br>Color<br>Munsell            | Shape    | Size<br>Diameter<br>x Length<br>(mm) | Fig # | Quant |
|-----------|--|------------------------------------|---|----------|--------------------------------------|-------|-------|
| CAT 77    | Decorated:<br>Septagonal with one row of 7 molded sides and two rows of hand-ground facets, two rows of ground corner facets | Transparent<br>Shiny<br>Patina: No | Monochrome<br>Purple<br>10P 3/4         | Sphericl | 8.48 x 6.93                          | f     | 1     |
| CAT 78    | Decorated:<br>Octagonal with one row of 8 molded sides and two rows of hand-ground facets, two rows of ground corner facets  | Transparent<br>Shiny<br>Patina: No | Monochrome<br>Yellowish-Red<br>10YR 5/8 | Sphericl | 11.30 x 8.49                         | g     | 1     |
| CAT 211   | Decorated:<br>Cylindrical with one row of 8 molded sides and two rows of hand ground corner facets                           | Transparent<br>Shiny<br>Patina: No | Monochrome<br>Bluish Purple<br>5BP 4/2  | Cylindr  | 8.61 x 25.28                         | h     | 1     |



Subtype D/MM2CDf

Table A1.3 Drawn, Monochrome, Faceted Beads with Cut Ends and Two Rows of Ground Facets

| Variety # | Decoration Comments  | Diaphaneity Luster Patina   | Layering Color Munsell               | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|--|-----------------------------|--------------------------------------|---------|-----------------------------|--------|-------|
| FOVA 1002 | Decorated: Hexagonal with one row of six molded sides and 2 rows of ground corner facets | Transparent Dull Patina: No | Monochrome Purplish Blue 7.5PB 2/8   | Cylindr | 5.54 x 4.84                 | i      | 7     |
| FOVA 1067 | Decorated: Hexagonal with one row of six molded sides and 2 rows of ground corner facets | Transparent Dull Patina: No | Monochrome Colorless                 | Cylindr | 6.82 x 5.43                 | j      | 7     |
| FOVA 1003 | Undecorated  | Transparent Dull Patina: No | Monochrome Blue 5B 1/4               | Cylindr | 3.96 x 3.37                 | h      | 4     |
| FOVA 1004 | Undecorated  | Transparent Dull Patina: No | Monochrome Blue 7.5PB 4/6            | Cylindr | 3.10 x 3.15                 | g      | 2     |
| FOVA 1005 | Undecorated  | Transparent Dull Patina: No | Monochrome Blue 2.75 10              | Cylindr | 3.30 x 3.23                 | h      | 4     |
| FOVA 1006 | Undecorated  | Transparent Dull Patina: No | Monochrome Colorless                 | Cylindr | 3.81 x 3.36                 | f      | 2     |
| FOVA 1011 | Undecorated  | Transparent Dull Patina: No | Monochrome Yellowish Green 7.5GY 4/5 | Cylindr | 2.61 x 2.16                 | e      | 1     |

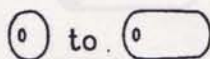
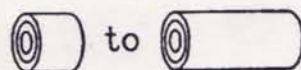


Table A1.5 Undecorated, Dull Finish, Cylindrical  
**Type D/MCHU**  
**Table A1.4 Hot-Tumbled, Undecorated Monochrome Beads**

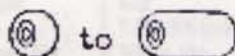
| Variety # | Decoration Comments | Diaphaneity Luster Patina   | Layering Color Munsell                          | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|---|---|---------|-----------------------------|--------|-------|
| FOVA 1003 | Undecorated         | Opaque Dull Patina: No. Some yellowish soil staining              | Monochrome White N/9                            | Cylindr | 3.69 x 2.48                 | k      | 121   |
| FOVA 1063 | Undecorated         | Translucent Shiny to Dull Patina: Iridescent to white to greenish | Monochrome Bluish Green 7.5 BG 4/6 to 10 BG 4/8 | Cylindr | 3.68 x 2.39                 | l      | 81    |
| FOVA 1081 | Undecorated         | Opaque Shiny Patina: No   | Monochrome Purplish Blue 2.5 PB 4/4             | Cylindr | 3.96 x 2.28                 | m      | 5     |
| FOVA 1051 | Undecorated         | Opaque Dull Patina: No  | Monochrome Red 5R 3/6                           | Cylindr | 3.10 x 2.37                 | n      | 1     |
| FOVA 1042 | Undecorated         | Translucent Dull Patina: No                                       | Monochrome Blue 5B 5/4                          | Cylindr | 7.90 x 7.13                 | o      | 4     |
| FOVA 1027 | Undecorated         | Transparent Shiny Patina: No                                      | Monochrome Red 7.5R 4/10                        | Cylindr | 2.05 x 1.15                 | p      | 2     |
| FOVA 1074 | Undecorated         | Transparent Dull Patina: No                                       | Monochrome Blue 2.5B 3/6                        | Cylindr | 3.50 x 3.21                 | q      | 5     |
| FOVA 1060 | Undecorated         | Transparent Dull Patina: No                                       | Monochrome Colorless                            | Cylindr | 3.01 x 2.50                 | r      | 2     |
| FOVA 1061 | Undecorated         | Transparent Dull Patina: No                                       | Monochrome Yellowish-green 7.5GY 4/6            | Cylindr | 2.61 x 2.16                 | s      | 1     |



### Type D/PCCU

**Table A1.5 Undecorated, Drawn Polychrome Cylindrical Beads with Cut Ends**

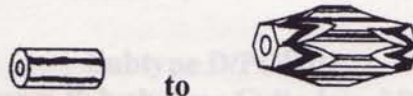
| Variety # | Decoration Comments | Diaphaneity Luster Patina   | Layering Color Munsell                    | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|---|---|---------|-----------------------------|--------|-------|
| FOVA 1024 | Undecorated         | Transparent over opaque<br>Patina: No, but some yellowish soil-staining | Polychrome<br>Colorless over white<br>N/9 | Cylindr | 5.34 x broken               | t      | 2     |



### Type D/PCHU

**Table A1.6 Undecorated, Drawn Polychrome Cylindrical Beads with Hot-Tumbled Finish**

| Variety # | Decoration Comments  | Diaphaneity Luster Patina   | Layering Color Munsell  | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|--|---|---|---------|-----------------------------|--------|-------|
| FOVA 1040 | Undecorated  | Opaque over opaque<br>Shiny to dull<br>Patina: No   | Polychrome<br>Lt. Yellowish-white<br>10Y 9/1 over<br>Lt. Yellowish-white<br>10Y 8.5/1 | Cylindr | 2.58 x 3.07                 | u      | 110   |
| CAT 1     | Undecorated  | Transparent over opaque<br>Shiny<br>Patina: No  | Polychrome<br>Colorless over<br>Lt. Yellowish-white<br>7.5Y 9/2                       | Cylindr | 2.93 x 3.41                 | v      | 38    |
| FOVA 1038 | Undecorated with the exception of some fortuitous vertical stripes | Transparent over opaque over transparent<br>Shiny to dull with some pitting<br>Patina: No | Polychrome<br>Colorless over Red<br>7.5R 3/6 over<br>Greenish-yellow<br>10GY 6/6      | Cylindr | 3.36 x 3.02<br>5.51 x 7.09  | w      | 20    |



### Type D/PCHsf

**Table A1.7 Decorated, Drawn Polychrome Cylindrical Beads with Cut Ends, Stripes and Facets**

| Variety # | Decoration Comments          | Diaphaneity Luster Patina                | Layering Color Munsell                                    | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|------------------------------|--|---|---------|-----------------------------|--------|-------|
| CAT 69    | 4-5 thick stripes            | Opaque over opaque<br>Dull<br>Patina: No | Polychrome<br>Purplish-Blue<br>5PB 4/6 over<br>White 9.5N | Cylindr | 8.12 x incompl              | x      | 1     |
| FOVA 1039 | Two opaque on opaque stripes | Opaque over opaque<br>Dull<br>Patina: No | Polychrome<br>Red<br>7.5R 3/8 over<br>White 9N            | Cylindr | Unmeasurable fragment       | y,y2   | 1     |



### Subtype D/PM2CDf

**Table A1.8 Decorated, Drawn Polychrome Cylindrical Beads with Cut Ends and Two Rows of Ground Facets**

| Variety # | Decoration Comments   | Diaphaneity Luster Patina               | Layering Color Munsell                    | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---|---|---|---------|-----------------------------|--------|-------|
| FOVA 1034 | Hexagonal with one row of six molded sides and two rows of hand ground facets | Opaque on opaque<br>Shiny<br>Patina: No | Polychrome<br>Purplish-blue<br>7.5PB 3/10 | Cylindr | 5.41 x 7.39                 | z      | 7     |



## Subtype D/PCHDs

**Table 1.9 Decorated, Drawn Polychrome Cylindrical Beads with Hot-Tumbled Finish and Simple to Compound Stripes**

| Variety # | Decoration Comments         | Diaphaneity Luster Patina                      | Layering Color Munsell   | Shape   | Size Diameter x Length (mm) | Fig. #     | Quant |
|-----------|-----------------------------|--|--|---------|-----------------------------|------------|-------|
| Fova 1028 | 4 simple straight stripes   | Opaque over opaque<br>Dull<br>Patina: No       | Polychrome<br>Purplish-blue stripes<br>2.5PB 4/6 over<br>White N/9                               | Cylindr | 4.28 x 3.26                 | aa         | 1     |
| CAT 16    | 4 simple straight stripes   | Opaque over opaque<br>Dull<br>Patina: No       | Polychrome<br>Bluish-green stripes over<br>White N/9   | Cylindr | 2.97 x 1.95                 | bb         | 6     |
| CAT 72    | 7 simple straight stripes   | Opaque over transparent<br>Shiny<br>Patina: No | Polychrome<br>White stripes N/9 over<br>Purplish-Blue 5PB 6/8                                    | Cylindr | 4.52 x 3.11                 | cc         | 1     |
| CAT 27    | 6 simple straight stripes   | Opaque over transparent<br>Shiny<br>Patina: No | Polychrome<br>White stripes N/9 and red stripes 10R<br>6/12 over red 7.5R<br>3 / 4 body          | Cylindr | 3.66 x 2.54                 | dd         | 2     |
| CAT 64    | 4 simple straight stripes   | Opaque over opaque over translucent            | Polychrome<br>White stripes N/9 over<br>yellowish-red 2.5YR 3/5 over<br>Purplish-blue 5PB 7/2    | Cylindr | 3.56 x 2.86                 | ee         | 1     |
| CAT 75    | 6-8 simple straight stripes | Opaque over opaque                             | Polychrome<br>White stripes N/9 over<br>a black body N 0.5                                       | Cylindr | 5.76 x 5.24                 | ff         | 3     |
| CAT 47    | 4 compound stripes          | Colorless over opaque over transparent         | Polychrome<br>Black N 1/5 and white N/9 stripes<br>over red 7.5R 3.6 over<br>greenish-yellow 6/6 | Cylindr | 9.42 x 9.21                 | gg,<br>ggx | 1     |

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## Type W/MSU

Table A2.1 Undecorated, Wound, Monochrome, Spherical Beads

| Variety # | Decoration Comments | Diaphaneity Luster Patina   | Layering Color Munsell                  | Shape    | Size Diameter x Length (mm)             | Fig # | Quant |
|-----------|---------------------|---|---|----------|---|-------|-------|
| FOVA 2002 | Undecorated         | Translucent to opaque<br>Shiny to Dull<br>Patina: Some pitting and whitish, chalky coating on approx. 15% of assemblage | Monochrome Blue<br>2.5B 6/4-8           | Sphericl | 3.1-6.3 x 2.8-8.4<br>8.5-10.4 x 7.3-9.5 | hh    | 89    |
| FOVA 2033 | Undecorated         | Transparent<br>Shiny to Dull<br>Patina: No  | Monochrome Blue<br>5B 4/4               | Sphericl | 6.48 x 5.20                             | ii    | 51    |
| CAT 280   | Undecorated         | Transparent<br>Dull<br>Patina: No   | Monochrome Bluish-green<br>10BG 4/8     | Sphericl | 7.13 x 5.12                             | jj    | 11    |
| CAT 223   | Undecorated         | Transparent<br>Dull<br>Patina: No   | Monochrome Greenish-yellow<br>7.5GY 2/4 | Sphericl | 6.53 x 5.61                             | kk    | 2     |
| FOVA 2005 | Undecorated         | Transparent to translucent<br>Dull<br>Patina: Whitish   | Monochrome Blue<br>7.5B 4/8             | Sphericl | 5.60 x 5.45                             | ll    | 14    |
| CAT 290   | Undecorated         | Transparent<br>Dull<br>Patina: Coarse greenish to white coating   | Monochrome Bluish-green<br>2.5BG 2/4    | Sphericl | 7.62 x 7.50                             | mm    | 4     |
| FOVA 2006 | Undecorated         | Opaque<br>Dull<br>Patina: No  | Monochrome Purplish-Blue<br>5PB 3/8     | Sphericl | 11.30 x 10.08                           | nn    | 4     |
| FOVA 2008 | Undecorated         | Opaque<br>Dull<br>Patina: No  | Monochrome Reddish-purple<br>5RP 5/12   | Sphericl | 6.73 x 8.22                             | oo    | 4     |
| CAT 222   | Undecorated         | Transparent<br>Shiny<br>Patina: No  | Monochrome Reddish-purple<br>5RP 6/12   | Sphericl | 5.71 x 3.96                             | pp    | 1     |
| FOVA 2046 | Undecorated         | Transparent<br>Shiny to Dull<br>Patina: No  | Monochrome Red<br>7.5R 2/8              | Sphericl | 4.63 x 8.72                             | qq    | 4     |
| FOVA 2041 | Undecorated         | Opaque to translucent   | Monochrome White 9/5N                   | Sphericl | 7.42 x 5.91                             | rr    | 2     |

| Variety # | Decoration Comments | Diaphaneity Luster Patina  | Layering Color Munsell           | Shape    | Size Diameter x Length (mm) | Fig. # | Quan |
|-----------|---------------------|--|----------------------------------|----------|-----------------------------|--------|------|
| FOVA 2052 | Undecorated         | Transparent Dull Patina: one specimen is covered with an iridescent patina | Monochrome Purplish-blue 5PB 3/6 | Sphericl | 4.94 x 6.35                 | Ss     | 5    |
| FOVA 2012 | Undecorated         | Translucent Dull Patina: No  | Monochrome Colorless             | Sphericl | 7.42 x 5.91                 | Tt     | 3    |
| FOVA 2016 | Undecorated         | Opaque Shiny Patina: No  | Monochrome Blue 2.5B 4/6         | Sphericl | 8.14 x 6.63                 | Uu     | 1    |
| CAT 207   | Undecorated         | Translucent Shiny Patina: Some brown soil-staining                         | Monochrome Blue 2.5B 5/8         | Sphericl | 10.11 x 8.83                | vv     | 1    |

Table 2.1 (continued)


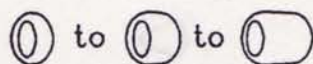

  
Type W/MEU

Table A2.2 Wound, Monochrome, Undecorated, Ellipsoidal Beads

| Variety # | Decoration Comments | Diaphaneity Luster Patina  | Layering Color Munsell  | Shape     | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|--|---|-----------|-----------------------------|--------|-------|
| FOVA 2032 | Undecorated         | Translucent Dull Patina: No  | Monochrome Red 5R 4/10  | Ellipsoid | 5.24 x 8.15                 | ww     | 2     |
| FOVA 2003 | Undecorated         | Translucent Shiny Patina: No   | Monochrome Blue 10B 4/6   | Ellipsoid | 7.83 x 11.28                | xx     | 2     |
| FOVA 2021 | Undecorated         | Opaque Dull Patina: No   | Monochrome Yellow 7.5Y 7/6  | Ellipsoid | 5.15 x 9.10                 | yy     | 2     |
| FOVA 2009 | Undecorated         | Opaque Dull Patina: No   | Monochrome White 9.25N  | Ellipsoid | 4.11 x 8.74                 | zz     | 10    |
| FOVA 2067 | Undecorated         | Translucent Dull Patina: Thin Whitish. Specimen is partially devitrified | Monochrome Blue Unable to determine Munsell chroma second to patina | Ellipsoid | 5.75 x 9.70                 | al     | 1     |



## Type W/MOU

Table A2.3 Wound, Monochrome, Cylindrical, Undecorated Beads

| Variety Number | Decoration Comments | Diaphaneity Luster Patina   | Layering Color Munsell               | Shape   | Size Diameter x Length (mm) | Fig. #   | Quant |
|----------------|---------------------|---|--------------------------------------|---------|-----------------------------|----------|-------|
| FOVA 2007      | Undecorated         | Transparent Shiny Patina: No  | Monochrome Purplish-Blue 5PB 2/8     | Cylindr | 7.19 x 4.40                 | bl       | 2     |
| CAT 213        | Undecorated         | Transparent Shiny Patina: No  | Monochrome Greenish-yellow 10GY 5/10 | Cylindr | 6.52 x 4.29                 | cl       | 1     |
| CAT 231        | Undecorated         | Translucent Dull Patina: Cloudy to whitish  | Monochrome Colorless                 | Cylindr | 8.46 x 5.72                 | not shwn | 1     |
| CAT 243        | Undecorated         | Translucent Dull Patina: Interior of perforation is coated with a whitish substance, chalk or clay? | Monochrome Bluish-green 10BG 6/6     | Cylindr | 6.79 x 5.39                 | el       | 1     |
| FOVA 2065      | Undecorated         | Opaque Dull Patina: No  | Monochrome Blue 7.5B 5/6             | Cylindr | 4.06 x 6.86                 | fl       | 22    |
| FOVA 2013      | Undecorated         | Translucent Dull Patina: No   | Monochrome Blue 2.5B 4/6             | Cylindr | 8.38 x 10.74                | gl       | 4     |
| CAT 222        | Undecorated         | Transparent Shiny Patina: No  | Monochrome Reddish-purple 2.5RP 5/12 | Cylindr | 6.56 x 5.89                 | hl       | 1     |
| CAT 275        | Undecorated         | Transparent Shiny Patina: No  | Monochrome Blue 5B 4/10              | Cylindr | 6.18 x 4.09                 | jl       | 1     |
| CAT 219        | Undecorated         | Translucent Dull Patina: No   | Monochrome Blue 7.5B 5/6             | Cylindr | 4.27 x 5.85                 | kl       | 2     |



**Type Ws/MBU**

**Table A2.4 Wound and Shaped, Monochrome, Biconical, Undecorated Beads**

| Variety # | Decoration Comments | Diaphaneity Luster Patina | Layering Color Munsell           | Shape  | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|---------------------------|----------------------------------|--------|-----------------------------|--------|-------|
| CAT 220   | Undecorated         | Opaque                    | Monochrome Purplish-Blue 5PB 3/6 | Bicone | 3.86 x 5.34                 | LI     | 1     |
| CAT 221   | Undecorated         | Translucent               | Monochrome Colorless             | Bicone | 6.98 x 5.72                 | ml     | 1     |



**Type WPSM**

**Table A2.7 Wound, Polychrome, Spherical, Decorated Beads with Inlaid Dots**

| Variety # | Decoration Comments | Diaphaneity Luster Patina | Layering Color Munsell | Shape     | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|---------------------------|------------------------|-----------|-----------------------------|--------|-------|
| CAT 222   | Decorated with...   | Opaque                    | ...                    | Spherical | ...                         | ...    | 2     |



**Type Ws/MTU**

**Table A2.5 Wound and Shaped, Monochrome, Toroidal, Undecorated Beads**

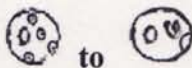
| Variety # | Decoration Comments                                       | Diaphaneity Luster Patina          | Layering Color Munsell  | Shape     | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---|------------------------------------|---|-----------|-----------------------------|--------|-------|
| CAT 277   | Undecorated   | Transparent Shiny Patina: No       | Monochrome Purplish-Blue 7.5PB 3/6  | Toroidal  | 5.20 x 2.64                 | nl     | 1     |
| CAT 278   | Decorated with a possible lower degree of pink and yellow | Opaque over transparent Patina: No | Yellow 5Y 8/12 and Reddish-Pink 2.3RP 4/10 and White 10B over a black-green 2.1BG 4/10 background | Spherical | 6.79 x 6.64                 | 4      | 1     |



## Type W/PSU

Table A2.6 Wound, Monochrome, Spherical, Undecorated Beads

| Variety # | Decoration Comments | Diaphaneity Luster Patina               | Layering Color Munsell                  | Shape     | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|---|---|-----------|-----------------------------|--------|-------|
| FOVA 2049 | Undecorated         | Transparent over Opaque Dull Patina: No | Polychrome Red 5R 3/10 over white 9.25N | Spherical | 11.44 x 10.70               | ol     | 1     |



## Type W/PSDd

Table A2.7 Wound, Polychrome, Spherical, Decorated Beads with Inlaid Dots

| Variety # | Decoration Comments   | Diaphaneity Luster Patina                 | Layering Color Munsell  | Shape     | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---|---|---|-----------|-----------------------------|--------|-------|
| CAT 286   | Decorated with inlaid white dots with smaller red and blue dots in the interior | Opaque over opaque Matte, dull Patina: No | Polychrome Red dots 7.5R 4/14 and Purplish-blue dots 5PB 3/8 over white N/9 on a Bluish-green 10BG 4/6 background | Spherical | 7.63 x 7.85                 | pl     | 2     |
| CAT 288   | Decorated with inlaid white dots with smaller red and blue dots in the interior | Opaque over opaque Matte, dull Patina: No | Polychrome Red dots 7.5R 4/14 and Purplish-blue dots 5PB 3/8 on a White N/9 background                            | Spherical | 7.49 x 7.22                 | ql     | 1     |
| CAT 722   | Decorated with a possible flower design of pink and yellow                      | Opaque over transparent Dull Patina: No   | Polychrome Yellow 5Y 8/12 and Reddish-Purple 2.5RP 4/10 and White N/9 over a Bluish-green 2.5BG 4/10 background   | Spherical | 6.79 x 6.32                 | rl     | 1     |



## Type W/PSDcl

Table A2.8 Wound, Polychrome, Spherical, Decorated Beads with Combed Loops

| Variety # | Decoration Comments   | Diaphaneity Luster Patina  | Layering Color Munsell   | Shape     | Size Diameter x Length (mm)  | Fig. # | Quant |
|-----------|---|--|--|-----------|------------------------------|--------|-------|
| CAT 212   | Decorated: inlaid with horizontal opaque white combed loops | Opaque over transparent Dull Patina: yes, one bead is covered in a thick, whitish patina | Polychrome White N/9 looping designs over bluish-green 2.5BG 4/4 | Spherical | 14.63 x 11.37<br>7.19 x 6.34 | sl     | 2     |

## Type DMCCU

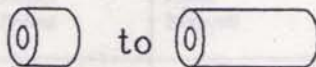


Table A1.10 Undecorated, Drawn, Monochrome, Cylindrical Beads with Cut Ends

| Variety # | Decoration Comments | Diaphaneity Luster Patina    | Layering Color Munsell           | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|------------------------------|----------------------------------|---------|-----------------------------|--------|-------|
| FOVA 1020 | Undecorated         | Translucent Shiny Patina: No | Monochrome Purplish-blue 5PB 2/4 | Cylindr | 6.81 x 27.16                | tl     | 1     |

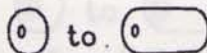


Table A1.11 Drawn, Monochrome, Faceted Beads with Cut Ends and

**Subtype D/MM4CDf**

**Table A1.11 Drawn, Monochrome, Faceted Beads with Cut Ends and Four Rows of Ground Facets**

| Variety # | Decoration Comments  | Diaphaneity Luster Patina    | Layering Color Munsell            | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|--|------------------------------|-----------------------------------|---------|-----------------------------|--------|-------|
| CAT 78    | Decorated: Octagonal with one row of 8 molded sides and two rows of hand-ground facets, two rows of ground corner facets | Transparent Shiny Patina: No | Monochrome Yellowish-Red 10YR 5/8 | Cylindr | fragment                    | g      | 1     |



Type D/MCHU

Table 1.12 Hot-Tumbled, Undecorated, Monochrome Beads

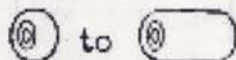
| Variety # | Decoration Comments | Diaphaneity Luster Patina  | Layering Color Munsell                  | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|--|---|---------|-----------------------------|--------|-------|
| FOVA 1063 | Undecorated         | Translucent Shiny to Dull Patina: Approx. 88% of beads have A whitish to grey patina | Monochrome Bluish-green 10BG 4/4 to 5/4 | Cylindr | 2.66 x 2.14                 | l      | 9     |
| FOVA 1074 | Undecorated         | Transparent Dull Patina: No  | Monochrome Blue 2.5B 3/4                | Cylindr | 2.84 x 2.57                 | q      | 1     |



## Type D/PCHs

Table A1.13 Drawn, Polychrome, Cylindrical Beads with Cut Ends, Stripes

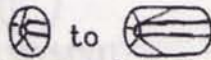
| Variety # | Decoration Comments         | Diaphaneity Luster Patina                                       | Layering Color Munsell                                     | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|-----------------------------|---|--|---------|-----------------------------|--------|-------|
| MER 1     | 4-6 simple straight stripes | Opaque over opaque<br>Dull<br>Patina: Light iridescence overall | Red stripes 7.5R 4/8 and Greenish- yellow stripes 10GY 5/6 | Cylindr | 8.30 x inc.                 | xl     | 1     |



## Type D/PCHU

Table A1.14 Undecorated, Drawn, Polychrome, Cylindrical Beads with Hot-Tumbled Finish

| Variety # | Decoration Comments  | Diaphaneity Luster Patina  | Layering Color Munsell  | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|--|--|---|---------|-----------------------------|--------|-------|
| FOVA 1038 | Undecorated<br>With the exception of some fortuitous stripes | Transparent over opaque over transparent<br>Shiny to Dull<br>Patina: two beads display a thin whitish patina | Colorless over red 7.5R 3/6 over greenish yellow 10GY 6/6                   | Cylindr | 3.32 x 3.38<br>5.23 x 5.07  | yl     | 6     |
| FOVA 1040 | Undecorated  | Opaque over opaque<br>Dull<br>Patina: No   | Polychrome<br>Lt. Yellowish-white 10Y 9/1 over Lt. Yellowish-white 7.5Y 9/2 | Cylindr | 4.22 x 2.06                 | u      | 3     |



## Subtype D/PCHDs

**Table A1.15 Decorated, Drawn, Polychrome, Cylindrical Beads with Hot-Tumbled Finish**

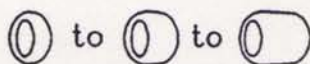
| Variety # | Decoration Comments         | Diaphaneity Luster Patina                              | Layering Color Munsell   | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|-----------------------------|--|--|---------|-----------------------------|--------|-------|
| Cat 75    | 6-8 simple straight stripes | Opaque over Opaque Dull Patina: Thin iridescent patina | Polychrome White stripes N/9 over a black body N 0.5                         | Cylindr | 6.44 x 4.97                 | aal    | 1     |
| MER 3     | 4-6 simple straight stripes | Opaque over opaque Dull Patina: No                     | Polychrome White stripes N/9 and red stripes 10R 4/6 Over a black body N 0.5 | Cylindr | 3.95 x 3.42<br>4.97 x 6.14  | bbi    | 3     |

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Table 2.10 Wound, Monochrome, Spherical, Undecorated Beads

Table A2.9 Undecorated, Wound, Monochrome, Spherical Beads

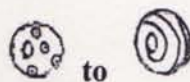
| Variety # | Decoration Comments                                       | Diaphaneity Luster Patina  | Layering Color Munsell  | Shape     | Size Diameter x Length (mm)               | Fig. # | Quant |
|-----------|---|--|---|-----------|---|--------|-------|
| FOVA 2002 | Undecorated   | Translucent to Opaque Shiny to Dull Patina: Thin peeling iridescence                               | Monochrome Blue 5B 6/4 to 6/6   | Spherical | 7.37 x 3.29<br>7.19 x 5.33<br>8.29 x 6.81 | ccl    | 11    |
| FOVA 2046 | Undecorated   | Transparent Shiny to Dull Patina: Thick white to thin iridescent. One bead displays marked pitting | Monochrome Red 5R 3/8   | Spherical | 6.16 x 4.42                               | qq     | 3     |
| FOVA 2041 | Undecorated   | Opaque Dull Patina: Some brown speckling, soil-staining  | Monochrome White 9.25N  | Spherical | 11 x 9.21                                 | eel    | 1     |
| FOVA 2016 | Undecorated   | Translucent Shiny Patina: No   | Monochrome White 9.25 N   | Spherical | 12.01 x 4.98                              | Tt     | 1     |
| CAT 28c   | Infused white dots with variable red and blue dot centers | Opaque to transparent Dull Patina: No  | Polychrome Red dots 5R 5/8 and 7.5R 5/8 inside white dots 10Y 8/2 and 10Y 8/2 | Spherical | 2.79 x 2.19                               | pl     | 1     |
| MUR 27    | Red horizontal wavy lines                                 | Opaque to transparent Dull Patina: No  | Polychrome Red wavy lines 2.5R 5/8 and 2.5R 5/8                               | Spherical | 2.61 x 4.92                               | ms     | 1     |



## Type W/MOU

Table 2.10 Wound, Monochrome, Cylindrical, Undecorated Beads

| Variety # | Decoration Comments | Diaphaneity Luster Patina                                  | Layering Color Munsell           | Shape   | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---------------------|--|----------------------------------|---------|-----------------------------|--------|-------|
| FOVA 2065 | Undecorated         | Opaque<br>Dull<br>Patina: Slight iridescent patina         | Monochrome<br>Blue<br>7.5B 5/4   | Cylindr | 4.37 x 6.12                 | fl     | 2     |
| MER 66    | Undecorated         | Translucent<br>Dull<br>Patina: Thick whitish, Kaolin clay? | Monochrome<br>Yellow<br>2.5Y 6/4 | Cylindr | 7.87 x 3.76                 | hhl    | 1     |
| MER 77    | Undecorated         | Transparent<br>Dull<br>Patina: Iridescent                  | Monochrome<br>Blue<br>10B 3/4    | Cylindr | 7.33 x 5.71                 | iii    | 1     |



## Type W/PSDds

Table A2.11 Wound, Polychrome, Spherical, Decorated Beads with Inlaid Dots and Stripes

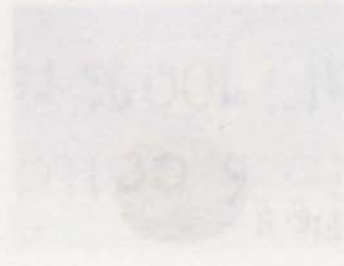
| Variety # | Decoration Comments                                     | Diaphaneity Luster Patina                       | Layering Color Munsell Notation   | Shape    | Size Diameter x Length (mm) | Fig. # | Quant |
|-----------|---|---|---|----------|-----------------------------|--------|-------|
| CAT 286   | Inlaid white dots with smaller red and blue dot centers | Opaque over Opaque<br>Dull, Matte<br>Patina: No | Polychrome<br>Red dots 5R 5/8 and<br>Bluish-green dots<br>2.5BG 5/6 inside<br>white dots N/9 on a<br>Bluish-green body<br>5BG 6/2 | Sphericl | 8.79 x 7.19                 | jjl    | 1     |
| MER 87    | Red horizontal whorled stripes                          | Opaque over Translucent<br>Dull<br>Patina: No   | Polychrome<br>Red whorling<br>7.5R 3/8 over<br>a green 2.5G 4/6<br>body   | Sphericl | 7.64 x 6.02                 | kk1    | 1     |



## Type W/PSDfld

**Table A2.12 Wound, Polychrome, Spherical, Decorated Beads with Gold Foil and Inlaid Dots**

| Variety #  | Decoration Comments                                   | Diaphaneity<br>Luster<br>Patina   | Layering<br>Color<br>Munsell Notation   | Shape     | Size<br>Diameter<br>x Length<br>(mm) | Fig.<br># | Quant |
|------------|---|---|---|-----------|--------------------------------------|-----------|-------|
| MER<br>112 | Covered with gold foil and inlaid diamond-shaped dots | Opaque on opaque over transparent<br>Shiny<br>Patina: No but the gold foil coating is flaking and crumbling | Polychrome<br>Yellowish-red<br>diamond-shaped dots<br>5YR 6/4 over metallic<br>gold over bluish-green<br>10BG 4/8 | Spherical | 14.42 x 14.02                        | LLI       | 1     |



Appendix B: Bead Photographs



Fig. a

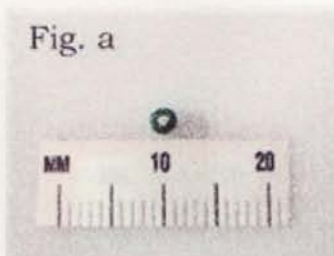


Fig. b

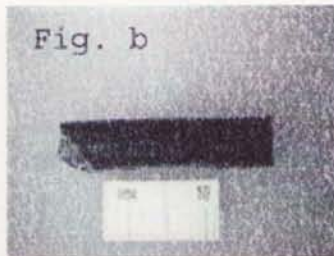


Fig. c

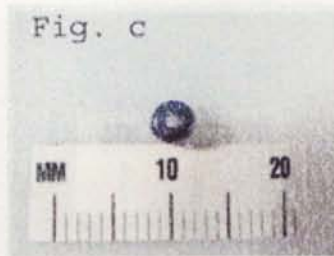


Fig. d

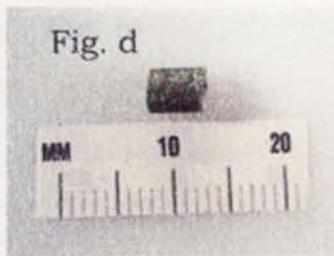


Fig. e

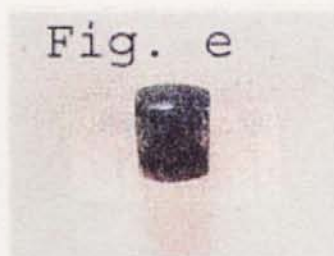


Fig. f

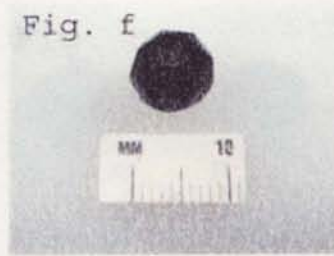


Fig. g

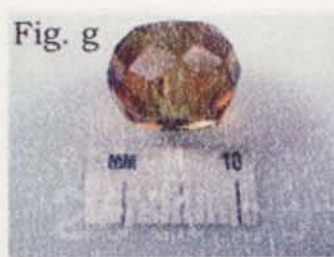


Fig. h

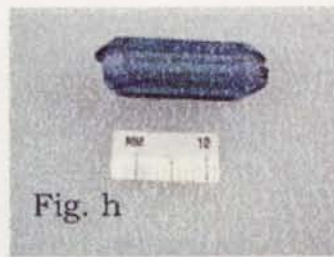


Fig. i

