

Slavery, Household Production, and Demography on the Southern Northwest Coast

Cables, Tacking, and Ropewalks

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This chapter is about the role of slaves and slavery in the household and prestige economies of complex hunter-gatherers in the Greater Lower Columbia region (GLCR) (Hajda 1984) of western North America (Figure 6.1). This region is part of the southern Northwest Coast. Northwest Coast slavery is one of the best-known examples of slavery in a non-state, non-agricultural context, and is the subject of a major book (Donald 1997). Hajda (2005) examined slavery on the lower Columbia River in response to Donald. Contrasting views of the social role of Northwest Coast slaves see them either as markers of the prestige and power of their owners, or as essential labor in the production system that supported Northwest Coast elites.

Slavery is not expected in hunter-gatherer societies, and its existence in the Northwest Coast violates long held anthropological stereotypes. The category “complex hunter-gatherers” is in many ways a residual category, used for groups that do not fit the stereotypes. In documenting the scale of household production in the GLCR, this chapter seeks to establish the parameters within which slaves and their owners acted.

It is also about a common methodological and theoretical problem for archaeology: how is it

possible to do the archaeology of something that either has no archaeological record or one that is inaccessible? In this case, not only is there no obvious archaeological record for slavery in the GLCR, but there is an extensive documentary record. What possible contribution can archaeology make in this matter? I present some partial answers by expanding Wylie’s well-known analogies of archaeological practice, cables of evidence and tacking (Wylie 1989), to include the ropewalks where cables were once made. My core argument is that the seemingly contradictory claims about Northwest Coast slavery cannot be evaluated without recourse to archaeological evidence.

Excavations of houses in three GLCR villages dating between AD 1400 and 1855 provide the evidence presented here. These excavations were conducted within a problem orientation based on household archaeology and focused on houses’ social and economic organization (e.g., papers in Sobel et al. 2006). The evidence is silent about the presence or absence of slaves, but it does provide a context for evaluating estimates of slave numbers and statements about the roles of slaves in local and regional economies and societies.

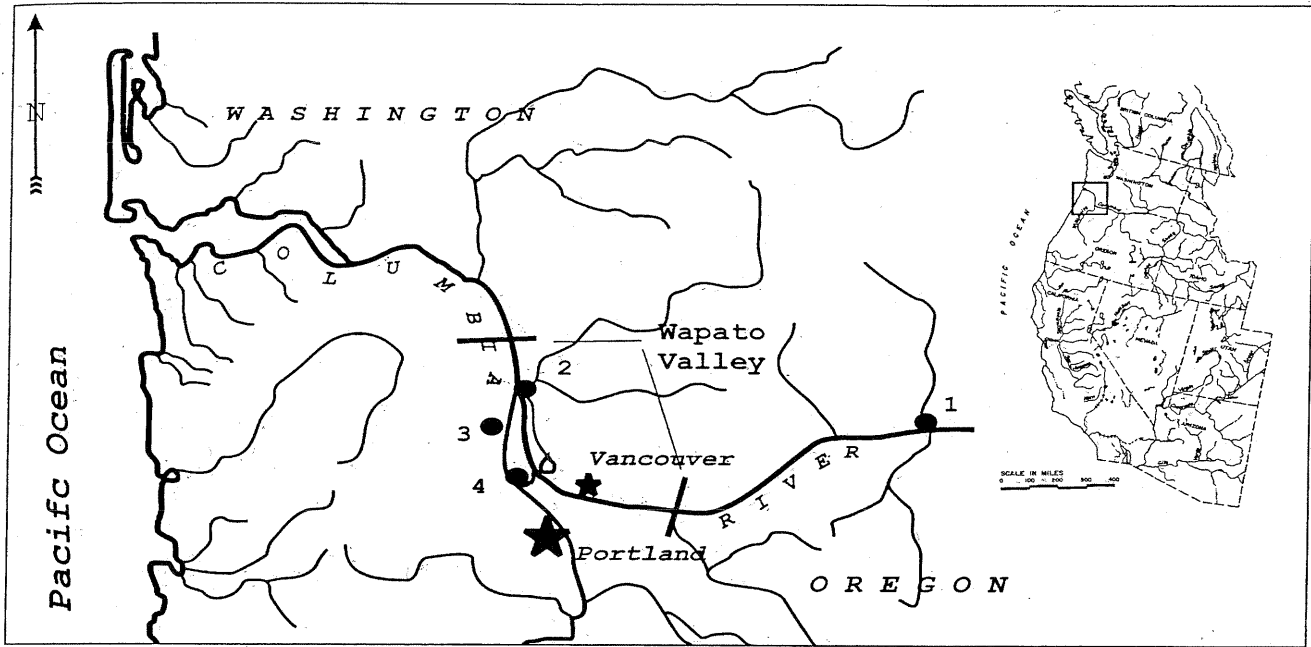


FIGURE 6.1. Map of the Greater Lower Columbia region showing locations of sites mentioned in text: 1, Clahclellah; 2, Cathlapotle; 3, Meier; 4, Site 35MU4.

Working in the Ropewalk

Rope walk *n...1* or rope yard: a long path devoted to the manufacture of rope down which the worker carries and lays the strands.

—*Webster's International Dictionary*, 3rd ed.

The answer to the question “What can archaeology contribute to a debate based on documentary evidence and for which there is no direct archaeological evidence?” is that archaeological evidence is a crucial and otherwise unavailable frame of reference for Northwest production and, hence, of the role or lack of a role of slaves in that production. To do this requires treating the archaeological and documentary evidence as separate frames of reference (Binford 2001) or as distinct lines of evidence.

Wylie (1989) uses two nautical analogies for archaeological practice: cables and tacking. The cable analogy refers to archaeologists using multiple lines of evidence to build cables of inference; any given evidentiary thread may be weak or even fragmentary, but woven together, as a cable, they are strong. Her tacking analogy is more complex. Tacking is how sailing ships sail into the wind, making progress by zigzagging. Thus

archaeologists tack horizontally between lines of evidence, which combine multiple threads of theory and evidence; one also tacks vertically within cables between theory and evidence, and among phenomenological scales. One goal of tacking between or among lines of evidence is establishing their independence. Wylie's context for discussing independence among evidentiary lines is especially germane because it was part of a discussion of historic archaeology and archaeological and historical data as independent and mutually constraining lines of evidence.

According to Wylie, lines of evidence should be independent along three dimensions (Wylie 2002): causal, epistemological (inferential), and disciplinary, and she believes historical archaeologists often conflate these. Dating a site using radiocarbon testing and frequency seriation exemplifies all three. The physical processes underlying radiocarbon dating are completely independent of the material culture measured by frequency seriation. They are causally independent and therefore potentially epistemologically or inferentially independent. They also have disciplinary independence since the fields of physics and archaeology are institutionally and structurally distinct.

Lines of evidence can lose their inferential independence, and Wylie warns that epistemological independence may be more apparent than real (Wylie 2002). However, she is more concerned with the underlying attitudes, goals, and culture that scholars may share across disciplinary lines and that can create common biases than with the merging or blurring of distinct lines of evidence, which is the concern here.

Wylie requires that epistemological independence be established for each case rather than assumed. Pursuing the cable analogy, then, before weaving the cable, the strands must be laid out in the ropewalk, and then compared and examined. Because the strands are spread on the walk, cables are said to be “cable laid.” Technically, a cable-laid rope is woven of three, three-stranded hawsers. When woven together, the individual threads can be difficult to follow or even identify. Actually, archaeologists often do not weave evidentiary cables: instead we blend evidence to the point that the sources of inferences become lost or invisible. I submit they should be very visible or, at the very least, easily teased out. One should be able to trace the strands woven into the hawsers and then woven into evidentiary cables. The purpose here, then, is not to write a blended account of lower Columbia River slavery but to do some of the ropewalk work by laying out strands of evidence and examining and testing them.

The Greater Lower Columbia Region

The GLCR encompasses the final 200 miles of the Columbia River and adjacent portions of the Pacific coastline and was one of several interaction spheres comprising the Northwest Coast culture area (Hajda 1984; Suttles 1990; Ames and Maschner 1999). Hajda defined it using local and regional patterns of social and economic interaction. The documentary record derives primarily from the accounts of explorers (such as Lewis and Clark), of individuals in the fur trade, and early settlers because we lack the voluminous ethnographic record that exists for portions of the coast farther north.

The area is topographically and ecologically diverse. At its eastern edge, the Columbia Gorge breaches the Cascade Mountain range. West of the gorge, the river passes through the Portland Basin, which Lewis and Clark called the Wapato

Valley, the name used here. Below the lowland, the river penetrates the Coast Range, a long, rugged chain of relatively low, heavily forested mountains, before entering its wide, fjord-like estuary and meeting the Pacific Ocean. The climate is maritime, with heavy rains and moderate temperatures.

Several ethnolinguistic groups occupied the GLCR at contact. Speakers of Chinookan languages were the most numerous (Hajda 1984; Silverstein 1990) with large, comparatively dense populations. Chinookan social organization and economy had much in common with other Northwest Coast societies (Hajda 1984; Silverstein 1990). The household was the basic socioeconomic unit, and the village or town the maximal unit. Households lived in large post-and-beam plank houses of western red cedar (*Thuja plicata*). Society was divided into two broad classes: free and slave (Donald 1997). Free people were subdivided into a chiefly elite and commoners. Chiefly status was based on ancestry, wealth, and widespread social and economic ties (Hajda 1984). The slave population in the late eighteenth and early nineteenth centuries may have been 20 to 25 percent of the total (Donald 1997; Hajda 1984; Mitchell 1985).

Subsistence was based on harvesting an array of terrestrial and aquatic resources, including mass harvesting of fish, most famously the five species of salmon that ran in the Columbia. Resources were hand processed, and vast quantities of food were stored (e.g., Sobel 2004), sometimes requiring large amounts of labor over short, intense time periods. Other tasks could be accomplished more slowly. In general, though, production was organized as sets of simultaneous rather than sequential, lineal tasks (Ames and Maschner 1999). Simultaneous task organization placed a priority on a household's ability to field labor.

The Fur Trade

Ongoing interaction between the peoples of the Greater Lower Columbia region and Europeans began in AD 1792, when the first ships entered the Columbia River.¹ Between 1792 and 1811, contact was primarily via the maritime fur trade. Ships bound for Chinese markets entered the river each year to trade with the Natives for hides and

sometimes furs. Lewis and Clark's lengthy presence, from October 1805 through April 1806 (Moulton 1990), was the major exception to this pattern before 1811.

The continental fur trade in the region began in 1811 with the establishment of Astoria by the American Pacific Fur Company at the river's mouth. The first permanent European presence in the entire Pacific Northwest, Astoria was the center of continued year-round efforts to acquire furs. It was sold to the British North West Company in 1813 and renamed Fort George. The North West and Hudson's Bay Companies merged in 1821, keeping the Hudson's Bay Company name. After this merger, the Hudson's Bay Company maintained Fort George and in 1824–1825 built a second lower Columbia post, Fort Vancouver. Fort Vancouver was located in the Wapato Valley and was the Hudson's Bay Company headquarters for its Columbia Department, which encompassed the entire Pacific Northwest.

Northwest Coast Slavery

I draw on the work of Donald (1997), Hajda (2005), and Sobel (2004) in summarizing the salient points of slavery on the Northwest Coast. In general, slave status was usually permanent; violence was the ultimate means of origin and recruitment (individuals born as slaves were the children of captives); slaves were alienated from their natal circumstances (they were without kin and, to some extent on the coast, without gender [as a social construct]; and slaves were under a social stigma, so that in the rare case of someone escaping and returning home, they and their descendants would carry the taint of slavery. This summary description loses important nuances explored in detail by Donald (1997), Hajda (2005), and Sobel (2004).

Since slavery was usually hereditary (although originating in capture), slaves formed a distinct class or caste. In fact, slaves and non-slaves may have been the only status distinction strongly visible in many Northwest Coast households.

Most slaves were owned by elite individuals, but lower-ranked high-status individuals also might own slaves. Slave owners treated their slaves as they wished; they could be coddled, sold, or destroyed as desired. Slaves were used as assassins and bodyguards to reinforce status

and perhaps Northwest Coast chiefs' weak power (Ames 1995). Slaves were also inherited and disposed of as grave goods like any prestige item. Slave owners had rights to a female slave's children. Upon death, slaves could be thrown away (that is, their bodies could be discarded without regard to normal mortuary practice [see Ames 2005; Hajda 2005]).

In some parts of the coast, slaves might be distinguishable from their owners by the presence or absence of permanent body modifications. On the northern Northwest Coast, free women wore lip plugs or labrets. An enslaved woman could be marked by the absence of the labret but the presence of the slit for it (and, in some cases, the lower lip hanging loosely) or possibly the absence of her lower incisors (Cybulski 1993). Free people along the lower Columbia practiced frontal/occipital cranial deformation; thus slaves, all of whom originated outside the region, had round heads. The daily life of slaves, however, could differ little from that of their owners.

In some places on the coast, slaves slept in the least comfortable part of the house near the structure's single door. Ethnographic sources are ambiguous about this (Sobel 2004). What is unambiguous is that slaves were the household drudges, "hewers of wood, haulers of water," but none of the tasks performed by slaves were done by them exclusively. Donald lists twelve broad subsistence/household chores performed by slaves (Donald 1997: Tables A-6, A-7, 318–319). Any and all of these tasks were also done by free household members. Walter (2006) argues that among these various tasks, a primary role of slaves and women on the Northwest Coast was processing foods.

Estimating the numbers of slaves on the coast is a typical demographic problem in ethnohistory (see below). Donald (1997) reviewed a variety of documentary sources (Table 6.1) and estimates about 20 percent of the GLCR population to have been slaves, generally the highest on the coast. Hajda (2005) reports an even higher average figure of 24 percent for the region. Donald concludes that with the exception of a few places, including the GLCR, the numbers of slaves held at any one time on the coast were probably low but variable, with slaves ubiquitous but not numerous.

TABLE 6.1. Estimates of the Relative Frequencies of Slaves in Northwest Coast Populations

Region	Median	Minimum	Maximum	Inter-Quartile Range	Number of Groups
North 1840s	4.8	1.4	26.1	2.8–11.8	29
Central ca. 1850	5.0	1.3	7.2	2.3–5.1	26
South ca. 1850	3.7	0.3	17.3	1.8–5.1	16
Lower Columbia River	20.0	15.8	47.4	20.0–24.8	13

Source: Donald 1997.

There were four slave-trading networks (Donald 1997), two major ones and two much smaller. The major networks encompassed the northern and southern coasts, and the GLCR was at the center of the southern network. Slaves in the GLCR were acquired either through raids on distant people or through exchange (Hajda 2005). This network was part of a much larger and ancient exchange network through which flowed a variety of goods, from processed foods to prestige goods.

Slaves and slavery were an important part of the prestige and/or political economy of the Northwest Coast. Donald (1997) sees their labor as essential to producing the wealth needed by Northwest Coast elites to maintain their status. On the coast, labor transformed harvested food into wealth; feasting, exchange, and other activities transformed wealth into prestige. Chiefs did not have power over household members (Ames 1995; Donald 1997), but they did over slaves. Because slaves were the only labor the Northwest Coast elite controlled, Donald argues that they were crucial elements in the political economies of Northwest Coast households.

Alternatively, slaves were wealth or prestige goods (animate parts of the prestige technology, in Hayden's [1998] terms). Their labor was useful but not essential. They might even be an indicator of what has sometimes been seen as the "irrationality" of Northwest Coast status competition, costing more than they produced. Hajda describes chiefly status on the lower Columbia most succinctly:

Here...the local group or village consisted of one or more large houses, each with a core consisting of an extended family related through males. The most prominent household head

might be considered the village "chief" or headman. His influence, like that of other household heads, depended on his ability to accumulate wealth and thereby attract followers, create kinship links through marriage, conduct raids, and provide food. Descent from a high-ranking family was necessary to assert or maintain high status, but the possession of wealth was crucial. Though numbers of wives...and sons...as well as dentalia and other property...were said to be important for chiefly status, the possession of slaves is mentioned most often.... While George Simpson's comment that "every Flat Head [lower Columbia River] Indian who owns a slave considers himself a chief"...may be an exaggeration, or perhaps reflects changes that had taken place by 1825, the existence of "chiefs" can be seen to have depended at least partially on the existence of slavery. (Hajda 2005:570)

In Hajda's view, Northwest Coast social status was a continuum, with the highest elite at one pole and slaves at the other. High status depended on the negation and degradation of others; it required the existence of slaves, not their production. She also makes the point that it is not possible to assess the contribution of slaves to household production given the available documentary sources. This is one of two specific issues this chapter explores using archaeological data. The second issue is whether the high estimated numbers of slaves for the GLCR are plausible.

The Archaeology and Prehistory of Northwest Slavery and Elites

There are two time periods on the northern coast during which slavery plausibly developed: 3500 to 1000 BC and AD 500 to 1200 (Ames 2001). The

latter period is marked by intensified warfare across western North America (e.g., Chatters 2004; Lambert 2002). Possible direct evidence for slaves and slavery on the northern coast includes remains of individuals discarded at death rather than formally buried (e.g., Cybulski 1979), individuals possibly killed as captives (Cybulski 1979), and skewed sex ratios in burial populations (Ames 2005; Cybulski 1993; Ames and Maschner 1999). These data are not available for the lower Columbia River and unlikely to be since much of it is derived from excavations of human burials, which are strongly opposed by most Native peoples in the GLCR. Evidence for conflict elsewhere is also fairly direct (Ames and Maschner 1999). There is reasonably good evidence for increased labor demands as well (Ames 2001, 2005). The evidence for the evolution of elites is better, but the timing is controversial.

There is a general consensus that permanent elites based on ascription existed on the coast at least by AD 500 with some kind of vertical social differentiation (e.g., ranking based on achievement) present earlier. I argue (e.g., Ames 2005) that ascribed ranking was present by approximately 1000 BC on the northern coast, if not earlier. The archaeological data used in this chapter dates between AD 1400 and 1830, well after the consensus date for the emergence of ranking. The available documentary evidence clearly indicates the presence of both elites and slaves when the era of documentary evidence opened in 1792.

The Archaeological Evidence

The bulk of the archaeological data used here was produced by Portland State University's Wapato Valley Archaeological Project (WVAP), which was initiated in 1988. The project's research is framed by household archaeology for reasons developed elsewhere (e.g., Ames 1996, 2006; Smith 2004; Sobel 2004; papers in Sobel et al. 2006). The evidence discussed here is drawn from three archaeological sites. Analyses of materials from two of them (Meier and Cathlapotle) are ongoing, so much of what follows is preliminary.

The Sites

Meier (35CO5) is located in the Wapato Valley (see Figure 6.1 for locations of sites). Excavations conducted from 1987 to 1991 exposed por-

tions of a large (14 × 30 m) plank house, exterior midden, and activity deposits. There were minimally two broad categories of wooden houses in the GLCR (Hajda 1994): permanent structures used during the winter or year-round, and more temporary structures. Permanent (or winter) structures also fall into two broad categories: those with open interiors, and those divided permanently by walls into compartments. The Meier house appears to have been of the former style, with no dividing walls, but it did have a cellar: a voluminous complex of open areas and pits beneath the floor (Ames et al. 1992; Ames et al. 2008). Although such pits were common elements in Chinookan houses in the Wapato Valley, they are not described by early Euroamerican travelers. The Meier complex is the largest known archaeologically in the GLCR. The house was constructed between AD 1400 and 1450, and abandoned sometime after contact, perhaps between AD 1810 and 1820 based on nineteen calibrated radiocarbon dates and trade goods (Kaehler 2002). Meier is not mentioned in any Euroamerican accounts.

Cathlapotle (45CL1) is in the Wapato Valley on the Washington State side of the Columbia River. The site contains six very large depressions marking the locations of plank houses arrayed in two rows paralleling the nearest river. Fieldwork was conducted from 1991 to 1996 and extensively sampled two structures as well as non-house deposits. The structures are designated Houses 1–6 (there is also a deeply buried House 7). Houses 1 and 4 were extensively sampled, and laboratory analyses are ongoing. Four of the six houses were divided by walls into compartments. Two houses had open interiors or lacked substantial interior dividers. All tested houses had storage pits. The site's occupation spans ca. AD 1450 to AD 1833 based on fifty-two radiocarbon dates (Ames et al. 1999) and historic trade goods (Kaehler 2002). One significant element of the chronology is the archaeological clarity of contact. Glass and ceramic trade goods appear abruptly in the deposits generally about 70 cm below the surface in deposits that are generally about 2 m deep.

Cathlapotle, one the major Chinookan towns in the Wapato Valley, is mentioned frequently in Euroamerican accounts written between 1792 and its abandonment. Its people and chief(s) had

ongoing and complex relationships with the fur traders and other Euroamericans in the region. Fort Vancouver, the Hudson's Bay Company's administrative center for the entire Columbia District (Oregon, Washington, and British Columbia), was 18 miles above Cathlapotle on the Columbia River between 1824 and 1844.

Clahclellah (45SAll), located in the Columbia Gorge, was completely excavated in the 1970s by a Phase III data recovery project (Minor et al. 1989). The site was not part of the WVAP. However, Sobel (2004) included an artifact sample from Clahclellah in her analysis of artifacts from Cathlapotle, allowing us to incorporate Clahclellah into the broader project. The site contained remains of seven plank houses, exterior activity areas, and perhaps earlier mat lodges (Minor et al. 1989). The plank-house village may have been established as early as AD 1500 or as late as AD 1700, and it was abandoned by AD 1856. It is briefly mentioned in Euroamerican accounts between 1805 and 1836. Clahclellah did not have the multiple linkages to the fur trade that Cathlapotle had. The houses were arrayed in two rows facing the river. The structures are broadly similar to those at Meier and Cathlapotle, although smaller. They have subfloor pits, but the pits are not merged and hence do not form cellars or trenches.

Recruitment:

Slavery and Regional Interaction

The GLCR interaction sphere (Hajda 1984) interconnected with the Plateau interaction sphere (Hayden and Schulting 1997) and the network of regional interaction spheres comprising the Northwest Coast (Suttles 1990; Ames and Maschner 1999). A trading center near the modern city of The Dalles, at the upstream end of the Columbia Gorge, was one of the major nodes for both sets of interaction spheres (Figure 6.2). The Dalles center was adjacent to the Columbia River's premier salmon fishing locale and attracted people from great distances. The river's mouth and the Wapato Valley were also major nodes.

The coastal interaction spheres probably formed in the Early Holocene, if not earlier (Ames and Maschner 1999). At the same time, in the interior, marine shell beads and obsidian flowed north from California through the Great

Basin into the eastern Columbia Plateau region. The Plateau interaction sphere crystallized by 3500 BP (Ames 2000; Ames et al. 1998; but see Hayden and Schulting 1997). Grave goods suggest exchange and interaction on the Plateau and Columbia River intensified after 1500 BP (Schulting 1995). Among the grave goods are dentalia and copper, both of which probably originated on the central and northern coast, respectively, perhaps entering the Plateau via the GLCR. Extra-regional interaction on the Plateau seems to have shifted from primarily a north-south orientation to a west-to-east (coast to interior) orientation in the Late Holocene. Interaction along the coast continued to be strongly north-south, although that is an oversimplification.

Figure 6.2 overlays Donald's reconstruction of the southern Northwest Coast slave network (white lines) onto the distribution of obsidian sources represented at Meier, Cathlapotle, and Clahclellah. The location and number of sources on the map are approximate. There are more than a hundred obsidian sources in Oregon, some quite small, but others very large and diffuse (Craig Skinner, pers. comm.).

Figure 6.2 also reproduces Stern's (1998) map of the trade routes (black lines) in the northwestern United States. The major route from the south split in the Klamath Basin, with a western route entering the southern Willamette Valley and thence up the valley into the Wapato Valley. The bulk of the three sites' obsidian (76 percent, $n = 445$) is from sources along this route. The eastern route ran east of the Cascades, meeting the Columbia River not far east of The Dalles. Only 8 percent of the obsidian derives from sources either on this eastern fork or in southern Oregon and northern California. The rest (16 percent) comes from sources in the high Cascades, close to the eastern route. None is from the many sources farther east in Oregon or Idaho.

There was some east-to-west movement of obsidian into the GLCR. Ellis and Skinner (2004) examined sources for obsidian recovered from twenty-six Wapato Valley sites in an effort to reconstruct the routes followed by obsidian within the valley. Excluding Cathlapotle and Meier from their sample left fifty-four obsidian pieces, of which twenty-five (46 percent) originated from the Willamette Valley sources, twenty-two (41

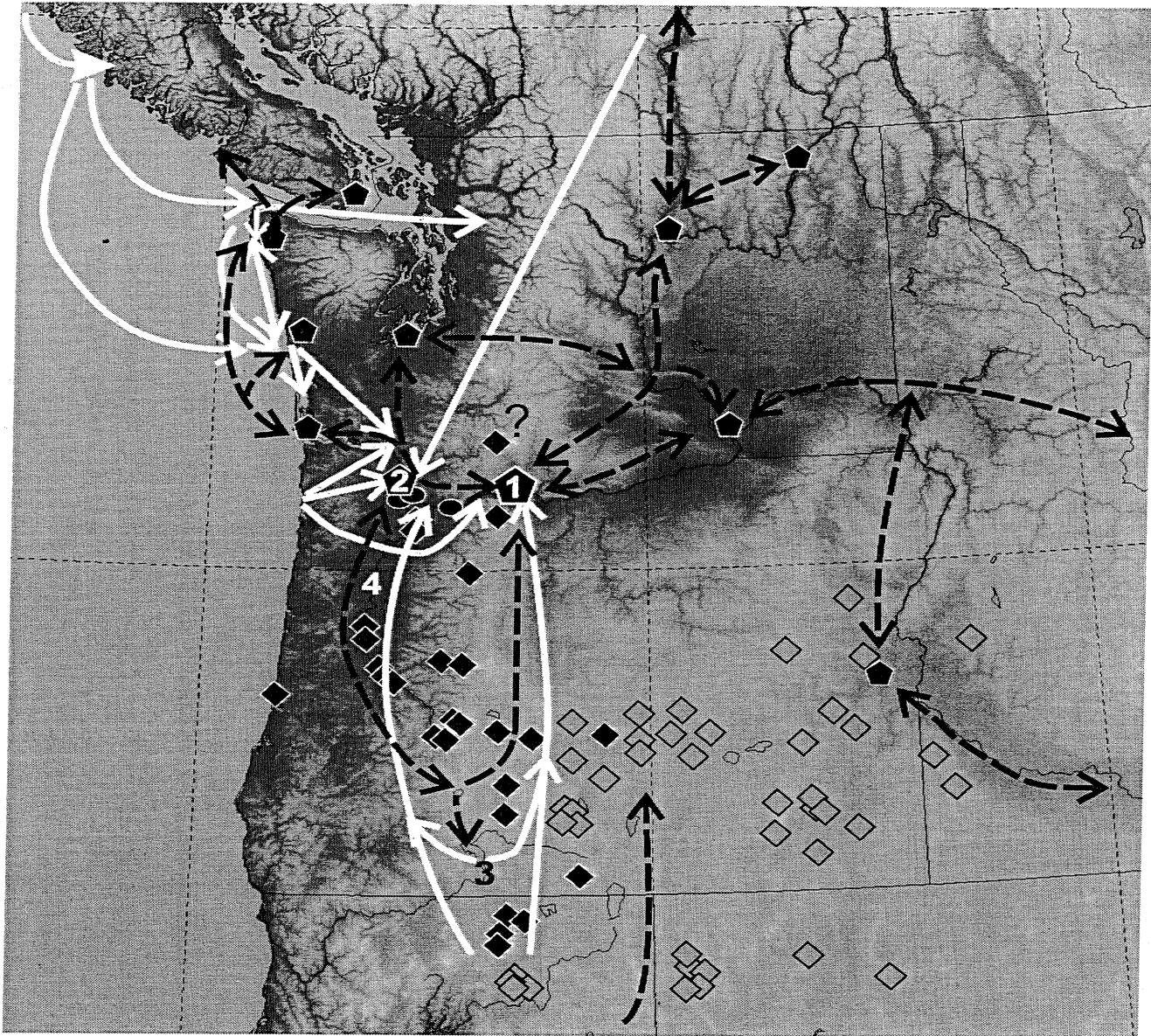


FIGURE 6.2. Map of the slave routes (white lines) and trade routes (black dashed lines) in the southern Northwest. Black diamonds indicate obsidian sources represented in samples from the Meier, Cathlapotle, and Clahcclallah sites. Grey diamonds are sources not represented. Black pentagons are major trading centers. Locations and numbers are approximate. Numbers refer to locations mentioned in text: 1, The Dalles; 2, The Wapato Valley; 3, The Klamath Basin; 4, The Willamette Valley.

percent) from the sources east of the Cascades (the eastern route), and seven (13 percent) from sources farther east.

The general correspondence between obsidian sources and the southern slave routes, as provocative as it is, needs to be approached cautiously. It certainly does not mean captives trudged north carrying obsidian cores. The connection may be indirect, perhaps indicating only

that both moved north along the same ancient, well-established routes. Although obsidian was probably a prestige marker at Cathlapotle and Clahcclallah (Sobel 2004), it would be premature to link the movement of slaves and obsidian together as prestige goods, which moved in a variety of directions in the region.

We currently have insufficient data from the three sites to document north-to-south linkages

either along the coast or from the Canadian Plateau, although obsidian from Oregon is found archaeologically across southern British Columbia. Meier produced marine shells, including dentalia, as well as two mackerel vertebrae. It also has two nephrite adzes that might be from south-central British Columbia. Both Meier and Cathlapotle have large copper assemblages, but at present only four have been analyzed, and they are European in origin.

Slaves and obsidian appear to have moved into the GLCR primarily along the same routes from the south. Whether most slaves, like most of the obsidian, moved up the Willamette Valley route, is unknown. Both slaves and obsidian were prestige goods, but it is very premature to conclude their movement was linked. Having said that, this close correspondence is very intriguing. What is also unknown is the impact of the northern movement of slaves on the likely donor populations in Oregon and California.

Production

The developing archaeological evidence on household production in the GLCR (e.g., Smith 2004; Sobel 2004) indicates it was intense. This section reviews several lines of evidence to support that claim. Among these are the labor costs of the structures themselves during their use-lives; the available storage space within the structures as a proxy measure for the scale of storage; and the spatial organization of production, currently measured by the distributions of shaped artifacts and bone, antler, and lithic debitage.

These structures had relatively long use-lives. Both the Meier house and Cathlapotle House 1 were used, at a minimum, for 370 years (Ames 1996; Ames et al. 1992; Ames et al. 1999; Ames et al. 2008). Cathlapotle House 4 was used a minimum of 200 years. According to estimated labor costs for Northwest Coast houses using the amount of lumber in them as a proxy measure (Ames 1996; Ames et al. 1992), the Meier house is estimated to have required between ca. 40,000 and 50,000 board feet of wood. (A board foot is 12 × 12 × 1 in. and is the standard cut lumber measure in the United States, where a modern suburban house requires 10,000 to 12,000 board feet.) For other archaeologically and ethnohistorically documented Chinookan houses, I estimated be-

tween 6,200 and 147,000 board feet (Ames 1996: Table 9.3). Gahr (2006) examines in greater detail the labor costs of Northwest Coast plank houses, including those of the GLCR. She analyzes these costs through three phases in the use-life of these structures: construction, maintenance, and demise. Assuming the Meier house was constructed in a short time period (following common Northwest Coast practice, but not directly documented on the lower Columbia River), its construction involved between 1,480 and 2,579 people. That figure includes everyone involved: builders, people providing food, and so on.

Ames et al. (1992) calculated the maintenance requirements of the Meier house to be between 420,000 and 1.1 million board feet of lumber over its use-life. This estimate is based on several lines of archaeological evidence. We have not extended these estimates to Cathlapotle, but they are sufficient. Gahr (2006) examined additional lines of evidence such as the vulnerability to decay of the woods used, infestations, fire, and load stresses, and she concluded that labor estimates based on board feet underestimate labor costs for house maintenance. She further observed that her estimates of the labor costs of house construction are 20 to 48 times higher than the estimated household populations. House demise was an ever-present risk, often due to fire and a maintenance load beyond the household's labor capacity. In short, these structures demanded ongoing, high labor investments.

Available storage space is a common archaeological proxy measure for investment in storage. For example, Christakis (1999) estimated "storage potential" for recent and Bronze Age houses on Crete using the volume of domestic storage spaces and jars. Ethnohistoric and ethnographic data suggest that the primary storage space in GLCR houses, as with the Northwest Coast generally, was under the house's roof, where different foods were hung on racks and lines. This space was filled in the fall. However, a number of excavated GLCR houses have large pit complexes, or cellars, beneath their floors (Ames et al. 2008). The storage potential of the subfloor pit complexes at Clahcclallah and Cathlapotle House 4 are equivalent to the most common houses in Christakis's modern and Bronze Age samples, whereas the potentials for Meier and Cathlapotle

House 1 far exceed those for all of the Cretan structures, including palaces (Ames et al. 2008). They even exceed the storage potential of the great Minoan palace of Knossos. These estimates do not include the space beneath the roof. Using the figures for the dimensions of the Meier house (Ames et al. 1992), the storage potential under the roof was 907,000 liters, and the cellar's was 127,000 liters. These figures are at best an approximation and can only suggest the scale of the available space, which may well have been smaller but still enormous.

The pit complexes are only known archaeologically, and they contain a diversity of materials (Ames et al. 2008) that Kent (1999) terms both food and non-food storage. They are rich in plant, animal, and fish remains, indicating food storage was their primary but not sole function. However, they were not filled with rubbish (Smith 2006; Ames et al. 2008). The scale of the storage potential supports a hypothesis that stored food production was geared not just for household consumption but to create a significant surplus, probably for exchange and alliance formation (that is, conversion into prestige).

Darby's analysis of wapato production provides some evidence with which to gauge that possibility. Wapato (*Sagittaria latifolia*), (a.k.a. "Indian potato" or "arrowhead root") is a widely distributed wetland plant whose tubers or corms were a GLCR staple. In an exhaustive study, Darby (1996) assumed wapato provided 20 percent of the annual caloric intake for a family of five, and she estimated that a family would need 0.633 metric tons of wapato per year. Her figures also suggest the storage space needed for a family of five possessing 0.633 metric tons of wapato. Lacking estimates of the volume/weight ratio of a wapato tuber, I used volume/weight of potatoes (Alabama Cooperative Extension Service 1997). Potatoes and wapato roots are sufficiently similar for this to be appropriate (Darby 1996). Using the Meier household population estimate of 203 people (developed below) and Darby's assumption that wapato contributed 20 percent of a year's caloric intake, 26 metric tons of wapato would have been required annually. That translates to approximately 33,000 liters of storage space (assuming it was all collected at once) or 26 percent of the potential cellar space, remember-

ing the space under the roof for other foods.² If we combine the space under the roof and the cellar, the wapato would require 3.2 percent of the total storage potential of the Meier house.

Two final examples of the scale of production are thermally altered rocks (TAR) and acorn processing. A variety of processing features, including numerous small earth ovens at Cathlapotle and multiple hearths both inside and outside the houses at all these sites, produced TAR. The amount of TAR can be used as a rough measure of the amount of heating, which would include food processing. Meier produced 8,100 kg of TAR for a mean of 61 kg/m³. The Cathlapotle excavations yielded much less TAR, although still a great deal: 1,900 kg or 19 kg/m³. This difference reflects, in part, differences in our sampling, the sizes of the sites, and their depositional histories. Applying the density figures to the sites as a whole, Cathlapotle is estimated to contain over a million kg of TAR, while Meier is estimated to have more than 600,000 kg.

The final example of the scale of processing comes not from Meier or Cathlapotle but recent work at a Wapato Valley wet site (35MU 4). The site contains at least sixty baskets preserved in the intertidal zone of a distributary of the Willamette River (Figure 6.1) (Croes et al. 2007). The baskets are filled with acorns (*Quercus garryana*), which were leached by water flowing through them from an aquifer and probably the tidal flux. The sixty baskets are estimated to have the capacity to hold approximately two million acorns annually, assuming they were used simultaneously. Acorns and hazelnuts (*Corylus cornuta*) are also ubiquitous at Meier and Cathlapotle, where they were roasted in ovens. The acorns indicate the kinds of labor involved in production in the GLCR. Some of it was skilled (making the baskets), but much was not (collecting and transporting the nuts, monitoring the baskets). These several, admittedly ad hoc, estimates need much more work and refinement, but they suggest a capacity to produce significant surpluses of processed foods. They also clearly point to the role slaves potentially would play in the production of processed foods. Given that capacity, the next issue is: how was production organized?

The available evidence comes from formal (Smith 2004; Sobel 2004) and edge-wear

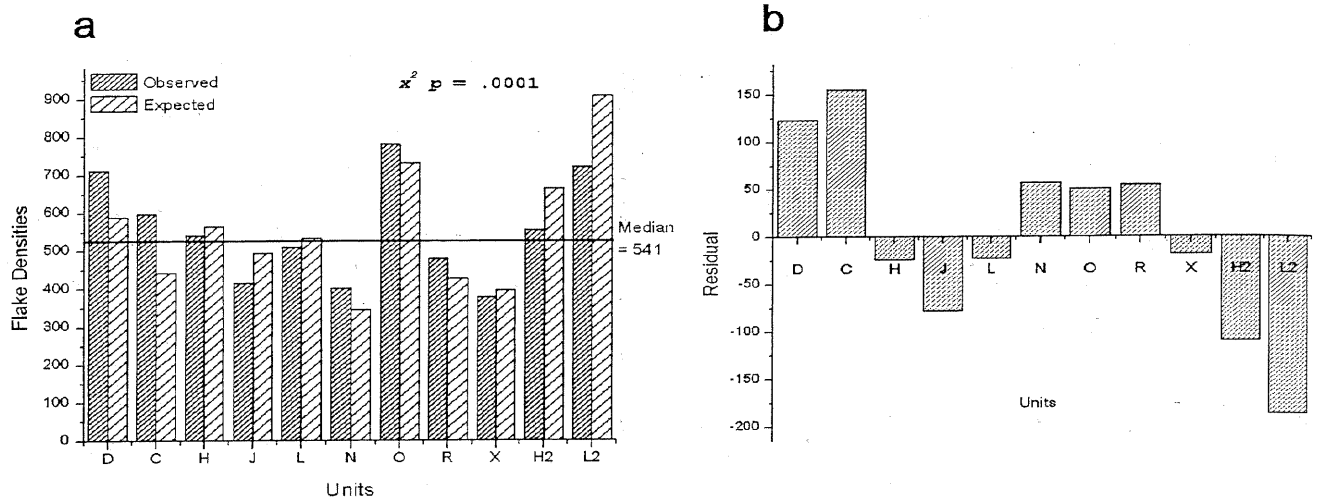


FIGURE 6.3. Chi-square analyses of flake densities in eleven excavation units within the Meier houses. Figure 6.3a shows the observed and expected densities, and also illustrates the high density of flakes throughout the deposits. Figure 6.3b shows the difference (residual) between observed and expected densities.

analyses of tools (Smith 2004). For a variety of purposes, all studies of production use household segments as their analytical units. At Cathlapotle the units are based on architectural divisions (all of House 4, the three excavated compartments in House 1); at Meier they are arbitrary but correspond closely to the distribution of hearths, which are regularly spaced along the house's long axis. These house segments are also used to investigate status (Table 6.2). The assignment of high status at Cathlapotle to the southern compartment in House 1 (compartment H1d) is on firm inferential grounds; the assignment of high status to the northern section of the Meier house is probably correct, but the archaeological evidence is contradictory. The picture developed by Sobel and Smith is being altered somewhat by current work, but their basic results are robust and are summarized qualitatively in Table 6.2. Among the key points, it is evident that all house segments, including high-status ones, participated in all major productive activities: everyone did everything, or almost everyone did. They might not have done everything to the same degree, but the differences in degree are statistically significant (e.g., Smith 2004). Different household segments focused on different activities, although not exclusively (Smith 2004; Sobel 2004). Chipped lithic production within the Meier house is illustrative (Figure 6.3). While the me-

dian density of lithic waste in the eleven units sampled in the pit complex was 541 flakes/m³, lithic debris occurs in significantly (chi-square probability < .0001) high densities in five units: two adjacent units in the north, and three in the central sections. These units also have high numbers of lithic cores, although cores are also found throughout the house. Lithic reduction occurred everywhere (as demonstrated by the universally high densities of flakes), but significantly more intensely in certain places. There are no special skills represented. Lithic reduction at Meier and Cathlapotle was opportunistic, relying heavily on bipolar production (Hamilton 1994).

There is no consistency across households, inferred status ranks, or between the communities as to what activities were emphasized. At Meier, land mammal hunting, for example, was emphasized by residents of the southern portion of the house, the one thought to be the low-status section. At Cathlapotle, land mammal hunting was emphasized in H1d, the highest-status house segment. There seems to have been a high-status emphasis on woodworking at Meier, but no special emphasis on it at all in either of the two sampled households at Cathlapotle. Copper working may be an exception to the lack of association between status and activity. Evidence for it is restricted to presumed low-status sections of the Meier house and Cathlapotle House 1.

Hide Production in Response to the Fur Trade

From 1792 on, English and American fur traders periodically visited the lower Columbia River to trade for elk hides and furs among other things. They were also provisioned by the Native peoples. At present there is no evidence that food production was intensified as a result of this provisioning, but it appears the processing of elk hides did increase. Called “clamons,” these hides were in demand on the central and northern coasts as armor. Meier and Cathlapotle have direct and indirect archaeological evidence for hide processing, and perhaps for differential involvement in the fur trade. The evidence includes elk remains and lithic scrapers with hide-working use-wear (Smith 2004).

The faunal assemblages at Meier and Cathlapotle are dominated by deer (*Odocoileus*) and elk (*Cervus*), representing 77 percent and 81 percent of all mammals, respectively (Lyman and Ames 2005). However, at Meier only 20 percent of the cervids are elk, while at Cathlapotle 58 percent are. This difference likely reflects local ecology, but it is paralleled by the numbers of hide scrapers. At Meier 17 percent of lithic tools with analyzed edge wear ($n = 301$) are hide scrapers, compared to 47 percent ($n = 319$) at Cathlapotle. Hide scrapers were present in small numbers at both sites before contact and in much larger numbers after.

Overall, Cathlapotle and Meier appear to have been differently involved in the fur trade. The two sites have similarly sized tool assemblages (ca. 10,000 each), but Cathlapotle has a much larger assemblage of historic trade goods. Part of this is chronological. Meier was probably abandoned a decade or so before Cathlapotle, which was probably abandoned around 1833 (Kaehler 2002; Ames et al. 1999). Meier is also off the beaten track, several kilometers from the Columbia River although linked to it via small waterways. It is not clearly identified in any known fur trade-era document. Cathlapotle had regular contact with Europeans after 1792 (Sobel 2004).

The Demography of Slavery in the GLCR
Regional Demography

Precontact populations on the lower Columbia are estimated to have been large. The best current estimates are Boyd’s (1999). He relies heavily

TABLE 6.2. Relative Prestige and Distribution of Productive Household Segments at Meier and Cathlapotle

	Meier North	Meier Central	Meier South	Cathlapotle H1B	Cathlapotle H1C	Cathlapotle H1D	Cathlapotle H4
Relative Prestige of Household Segment	High	Average	Low	Low	Average	High	Average
Relative Prestige of Different Activities							
Terrestrial Hunting	Low	Average	High	Average	Low	High	Average
Aquatic Hunting	High	Low	Low	High	Average	Average	Average
Woodworking	High	Low	High	Average	Average	Average	Average
Bone Working	High	Low	High	NA	NA	NA	NA
Flintknapping	Average	Average	High	Average	Low	High	Average
Hide Scraping	Low	Low	High	Average	High	Low	Average
Grinding	High	Low	High	Average	Average	High	Average
Thermal Processing	Average	Low	High	Average	High	Low	High
Copper Working	Low	Low	High	High	Low	Low	Average
							Low

on Lewis and Clark's figures, which are the best for the GLCR's population in the early nineteenth century. Boyd conservatively estimates the precontact population along the lower Columbia River (Wapato Valley and below) at approximately 14,000 (Boyd 1999: Table 6.3).³ The estimate assumes a 33 percent "across the board mortality" from the first smallpox epidemic in the 1770s, but Boyd points out that mortality may well have been much higher. Of the 14,000, some 2,000 lived at the river's mouth, and 12,000 between the estuary and the Columbia River Gorge. Most were concentrated in the Wapato Valley. Before proceeding, a brief background on Lewis and Clark's numbers is necessary.

The explorers produced two estimates; one developed in the fall of 1805 and the second in the spring of 1806. The latter has been available in print as "Estimate of the Western Indians," but the former remained in manuscript until the 1980s (Boyd and Hajda 1987). Most GLCR population estimates (e.g., Mooney 1928; Kroeber 1939) are based on the published "Estimate," which has higher population figures than the manuscript. Boyd and Hajda (1987) postulate that the differences between the two sets of figures reflect seasonal fluctuations in population along the river, with the lower figures representing a "core" GLCR population.

The region suffered several smallpox epidemics, including the widespread epidemic in the 1770s, an 1801 epidemic, and "mortality" in 1824–1825 that was probably caused by smallpox (Boyd 1999). Dysentery afflicted the region in the mid-1840s, measles in 1848, and smallpox again in 1853. These epidemics differentially affected individual groups in the GLCR. They also were not the most devastating. Between 1830 and 1834 the GLCR experienced summer outbreaks of what Boyd (1975) shows convincingly was malaria. The Wapato Valley was especially hard hit, and Boyd (1999) estimates that 98 percent of that population was lost. For the region as a whole, he estimates an 88 percent population loss.

The only population estimate not reliant on documentary sources is Darby's (1996), which is based on carrying capacity. She calculated the human carrying capacity for Sauvie Island, a large island in the Wapato Valley. Calculating the productivity of wapato for the island along with

her assumption that it provided 20 percent of the caloric intake per annum, she estimated Sauvie Island could have supported between 18,000 and 37,000 people. These extremely high figures require considerable caution since they have not been refined or tested using other resources or looking at possible limiting factors. Furthermore, hunter-gatherer populations are notorious for being below carrying capacity. Despite these caveats, Darby's numbers are useful in several ways, one of which is to suggest the possible degree of slack in the local subsistence economy. I will return to this point below.

Estimates for the numbers of slaves are also high. Mitchell (1985), Donald (1997), and Hajda (2005) draw on much the same documentary sources to estimate the number of slaves in the GLCR at 20 to 24 percent. If these numbers are even approximately accurate, they indicate slavery had a major demographic impact on the region and plausibly a major cultural impact as well, with a significant proportion of the population from somewhere else, sometimes far away. That potential impact is currently impossible to assess. Given the data on production reviewed above, the economic effects of an additional several thousand people would have been profound. The key question, of course, is whether these high frequencies were of long standing or a consequence of depopulation and/or economic changes arising from the fur trade. The region's high numbers of slaves may have replaced people lost to epidemics: not socially (that is, they were not adopted into society), but as labor. The timing of the documentary evidence is crucial for exploring this.

Hajda summarizes the critical data for Hudson's Bay Company estimates "of free and slave populations of twelve villages below the Cascades (Kennedy 1824–25)":

The mean proportion of slaves in the population of the twelve villages was 24 percent. The range is from 16 percent for two villages on Sauvie Island to 47 percent for the village by Fort George, under Concomly's control; Kiesno's village had the second highest percentage, 31 percent slaves. The importance of owning slaves for bolstering the owner's status can be inferred from these figures. (Hajda 2005:580)

Kiesno and Concomly were the regional or "great" chiefs on the lower Columbia during the fur trade era (see Ames 1995). Hajda suggests the very high numbers at Fort George reflect fur trading posts being trading centers for trade among Native peoples as well as between Natives and Europeans. The Hudson's Bay census upon which the slavery figures are based was made shortly after the 1824–1825 "mortality" but before the catastrophic malaria outbreaks (Boyd 1999). The figures are for villages; in Boyd's view, those for the villages at the river's mouth and the estuary accord reasonably well with Lewis and Clark's estimates twenty years before, while those for the Wapato Valley are extremely low (Boyd 1999). Hajda (1984) also regards them as low but accepts the slave percentages.

Although we cannot determine whether these figures accurately reflect earlier periods, we can try to establish their plausibility, and they are all we have or are likely to have. Thus, the 24 percent figure will be used heuristically without necessarily accepting it. Applying it to Boyd's pre-contact population of 14,000 produces 3,353 slaves, with 475 at the river's mouth and 2,900 upstream. Applying it to Darby's high estimates yields between 4,400 and 8,900 slaves in the Wapato Valley alone. The converse is also important. If 24 percent of the population were slaves, 76 percent were free; using Boyd's figures, approximately 10,600 total were free, including 1,500 at the mouth and slightly more than 9,000 upstream.

To put the 24 percent figure in regional perspective, 4.8 percent is Donald's median figure for the frequency of slaves among groups elsewhere on the coast, which would put just 672 slaves among the lower Columbia River's 14,000 people.

Village and Household Demography

Multiple extended families comprised Northwest Coast households. Although construction histories of the excavated houses show that some persisted for centuries (Ames 1996; Ames et al. 1992; Ames et al. 1999), individual families may have been subject to a cycle of founding, growth, and eventual household death (Ames 2006; Goody 1958). These cycles have important implications for both smaller and larger houses since the proportions of producers (active adults

and juveniles) and consumers (the very young and elderly) changed through time (Ames 2006). Recruitment of household members was central to the long-term prospects of any Northwest Coast household (Ames 2006). Consequently, even one or two extra pairs of productive hands might have been important for extended families or households with large numbers of consumers. Slaves were certainly all producers.

In a related argument, I have suggested (Ames 2006) that large households on the coast might have simultaneously pursued low- and high-risk economic strategies. High-risk strategies, such as whaling, seem to be associated with high status, low-risk with low status. Slave labor could be invested in what were dependable but low-risk strategies. Even seemingly small numbers of slaves might have been crucial for managing both the household cycle and subsistence risk. A key goal in household management would have been maintaining household size (Ames 2006). Evaluating these hypotheses would require simulating Northwest household dynamics and subsistence practices together, which has not yet been done. However, it is possible to use the estimates developed above to roughly model the possible scale of slavery at the household level and the distribution of slaves among households, particularly since production and prestige were both based in the household. This was done using two sets of data, inferentially independent at one level but not at another, as will be seen.

The first set of data is based on Lewis and Clark's estimates. They not only estimated populations but the number of houses/group in the GLCR. Using these, Hajda (1984) calculated the mean number of household members per group (Table 6.3). There are important regional patterns. Households on the river's mouth and the adjacent coast were smaller ($n = 20$) but more numerous ($n = 286$), whereas in the Wapato Valley they were larger ($n = 58$) but fewer ($n = 158$). Applying the 24 percent figure, the mean number of slaves per household on the coast was 4 ± 1 (standard deviation) with a median of 5 (regardless of which Lewis and Clark estimate is used). In the Wapato Valley the mean was 14 ± 8 ($n = 12$). This assumes a uniform percentage. The 1824 census suggests variation among groups and households in slave numbers, perhaps on the basis of

TABLE 6.3. Estimated Slaves per Household in the GLCR

	Only Estimate or Lewis and Clark's High Estimate				Lewis and Clark's Low Estimate			
	Houses	People	People/ House	Slaves/ House	Houses	People	People/ House	Slaves/ House
Coast/River Mouth								
Total	286	5,160	18	—	31	500	16	—
Mean/Group	20	369	19	4	10	167	16	4
Median	16	225	16	4	11	200	18	4
Std. Dev.	16	304	5	1	1	58	7	2
Wapato Valley								
Total	154	7,820	51	14	127	3,060	—	—
Mean/Group	12	602	58	14	14	340	25	6
Median	6	400	50	12	6	200	25	6
Std. Dev.	13	661	31	8	15	443	7	2
GLCR Totals								
Total	502	15,780	31	—	220	4,900	—	—
Mean	18	564	38	9	17	377	22	6
Median	10	270	23	5	9	200	22	5
Std. Dev.	18	666	29	7	19	470	7	4

Source: Hajda 1984.

geography but also on the basis of status, as Hajda stresses. This pattern receives some support from Ray's (1938) ethnography of the Chinook at the Columbia's mouth. According to his informants, the average high-status individual had two or three slaves, and principal ones about six; the regional chief, Concomly, had ten to twelve. Ray's ethnography was based on interviews in the 1930s with two elderly informants about conditions almost a century earlier, so these figures need to be viewed with caution. However, it is plausible that slaves were distributed across households in a pattern common to prestige markers and wealth: the power-log distribution (Maschner and Bentley 2003). We are all familiar with these. We read newspaper reports that in some country 1 percent of the population controls 90 percent of the wealth, and the bottom 90 percent controls 1 percent of the wealth. This distribution is also the essence of the Gini indices used by researchers to demonstrate wealth and prestige differentials (Ames 2007).

To model in more detail the distribution of slaves among households within a community, I estimated household populations for the Cath-

lapotle, Clahcclallah, and Meier houses (Table 6.4). The calculations are based on the assumption that all the houses at each site have been excavated or mapped. Defending that claim is deferred to other publications, but it is a strong one. To estimate household populations, I used a ratio of 2.42 m² roofed area per person. This was developed after I applied Narrol's well-known ratio of 10 m² per person, and Cook's somewhat more nuanced formula of allocating 13.92 m² for the first six people and 9.29 m² for each additional person. I previously used the latter formula (Ames 1996) with what seemed at the time satisfactory results. Both estimates yielded total and household population estimates that did not accord with Hajda's (1984) household estimates in several ways.

The index used is the mean of six population estimates for Cathlapotle made between 1792 and 1825 (Boyd 1999), which is 666 (which I think is a bit low). The resulting household estimates fit well with Hajda's household estimates for the Wapato Valley. (This is another matter deferred to a different planned publication.) I then multiplied the resulting household estimate by 0.24. I also

Slavery, Household Production, and Demography

TABLE 6.4. Estimated Household Sizes and Slave Populations at Three Lower Columbia Sites

Sites and Households	House Area (m ²)	Estimated Population	Estimated Numbers of Slaves for Different Percentages of the Population			
			24%	16%	10%	4.8%
Meier	492	203	49	33	20	10
Cathlapotle						
1A	160	66	16	11	7	3
1B	66	27	7	4	3	1
1C	113	47	11	7	5	2
1D	187	77	19	12	8	4
4	92	38	9	6	4	2
2A	128	53	13	8	5	3
2B	116	48	12	8	5	2
2C	84	35	8	6	3	2
2D	56	23	6	4	2	1
3A	131	54	13	9	5	3
3B	144	60	14	10	6	3
5	117	48	12	8	5	2
6a	108	45	11	7	4	2
6b	108	45	11	7	4	2
Total		666	160	107	67	32
Clahclellah						
1	107	44	11	7	4	2
2	101	42	10	7	4	2
3	89	37	9	6	4	2
4	72	30	7	5	3	1
5	86	36	9	6	4	2
6	65	27	6	4	3	1
7	56	23	6	4	2	1
Total		239	57	38	24	11

used three smaller estimates for the percentage of slaves: 16 percent, the estimate for the Wapato Valley cited by Hajda; 10 percent because it was intermediate between 16 percent and 4.8 percent; and 4.8 percent, Donald's median figure.

These estimates, in combination with the evidence on production discussed above, make it clear that slaves would have been a significant presence and labor source in all households at the numbers suggested by the documentary evidence. Even at 10 percent, slaves would have been significant extra labor if controlled primarily by the elite. For example, if household elites controlled a third of the total number of slaves, at Meier they would be a labor force of 19 people.

At Cathlapotle, House 1D would have had 22 slaves (33 percent of the total number estimated for the site), and House 1 at Clahclellah also would have had nineteen.

The low estimate (4.8 percent) is perhaps more revealing. If slaves were uniformly distributed, their potential labor contribution would have been trivial, with most households having fewer than four slaves and many only one or two (ignoring the potential contribution in balancing household consumers with producers). However, if slaves were unequally distributed, their potential labor contribution would have been much greater, even at low numbers. At Cathlapotle the low total estimate is 32 slaves. However, if a third

(11) were in House 1D, they would have been 13 percent of that house's estimated population of 77 individuals.

The picture is somewhat different at Clahclallah and Meier. The low estimate at Clahclallah is four slaves. If all of these were owned by House 1, the high-status household, there would have been four slaves in a household of 44. At Meier the low estimate is 10 in a household of 203. If all of those were controlled by the elite, they would still have had an impact on the ability of the house's elite to generate wealth. However, the point here is somewhat different. These figures may suggest why the percentage of slaves varied geographically in the 1825 census. Small households or communities may have needed higher proportions of slaves for them to affect production levels significantly, particularly in light of the evidence for the intensity of resource processing outlined above.

Finally, whatever the actual sizes of these households, they remained stable in size and organization over the several centuries the houses were occupied. Archaeological evidence suggests that individual house sizes fluctuated before and during contact, and also provides hints of declining populations (Butler 2000; Ames et al. 1992), but house sizes seem to have been stable.

This section has relied heavily on what Henige (1998) might call "numbers from nowhere." However, they provide a sense of the potential available pool of labor, even at percentages lower than those reported in the documentary record. Arnold (1996) defines hunter-gatherer complexity as the control of non-kin labor. The estimates developed here at least hint at the potential scale of that control along the lower Columbia River.

Discussion

The high estimated numbers of slaves in the GLCR are very plausible when examined in the context of archaeological data on processing and storage. I have not addressed resource harvesting, which would probably strengthen the numbers' plausibility. There was a lot of processing; there was also a lot of tending, such as minding the acorn baskets (which are not associated with a residential site) and tending the hearths and ovens that produced all that TAR. At Cath-

lapotle, someone had to collect all the rock that became TAR (Meier sits on a Pleistocene gravel bar). At small numbers, slaves would have been productively important only if they were concentrated in particular households. Additionally, slaves may have buffered households that possessed them from the household cycle.

One unanswered question is whether these numbers are a consequence of declining post-epidemic populations or whether they predate the epidemics. The archaeological data clearly show that the production system dates to at least AD 1400 if not earlier. The data also suggest household sizes were generally stable until they were overwhelmed by disease.

Slaves entered the Greater Lower Columbia region via an extensive regional network. From the south they moved along the same ancient routes as obsidian. The reported high numbers of slaves in the GLCR imply social and cultural impacts well beyond the region itself, regardless of whether those numbers were a consequence of population decline. If this was an ancient pattern, then the issue is how those numbers were sustained; if not, then one issue is what was the impact of a suddenly increased demand for slaves in the broader region and how was it met.

Finally, we return to the issue of whether slaves were essential for supporting elite status through their production or whether they were primarily status markers. These are not mutually exclusive. However, what emerges from the archaeological evidence is that small numbers of slaves would have had little economic impact unless held by only some people. Further, the GLCR's economy was fully capable of supporting small numbers of slaves without intensification (e.g., Darby's wapato-based population estimates). Owning small numbers of slaves would not have been an economic drain.

Large numbers are another matter, particularly if they were held for long periods, and much of their labor was required for their own maintenance. However, the storage potential at Meier suggests an enormous productive potential, particularly for hunter-gatherers. From this I infer that even large numbers of slaves may not have been difficult to maintain and support.

This conclusion supports Donald's position

that slaves were essential for producing the wealth needed by Northwest Coast elites to maintain their position. However, it does not preclude Hajda's argument, which is actually based on an entirely different calculus. In that emic calculus, the existence of high status required the existence of a null or negative status (slaves), whether there was one slave or fifty. Greater numbers would have represented greater wealth and prestige, and they were no doubt needed to produce that wealth. Finally, these data counter a long held anthropological view that Northwest Coast economies were somehow "irrational," expending important resources in a pursuit of prestige to the point of impoverishment. This is obviously not the case.

Conclusions

As an anthropological category, complex hunter-gatherers are those who counter long held stereotypes of such groups. The levels of production described here are also unanticipated, even in most discussions of complex hunter-gatherers or Northwest Coast economies. The possible extent and role of slaves in this production are also unanticipated, again particularly for hunter-gatherers, just as the extent and impact of slavery and captives documented elsewhere in this book are also generally unanticipated.

Acknowledgments

I would like to thank Cathy Cameron both for her invitation to participate in the conference at Snowbird and in this volume, and for her patience. The completion of this chapter was significantly slowed by other obligations. I also thank the other participants for an extremely lively and thought-provoking seminar. Craig Skinner provided important information and insights on Oregon's obsidian sources, and David Ellis gave me access to his obsidian data. My knowledge of lower Columbia River ethnohistory and demography has benefited from Bob Boyd's instruction. I thank all three. My colleagues on the Wapato Valley Archaeological Project generated much of the data used here, especially Ann Gahr, Cameron Smith, and Elizabeth Sobel. I am deeply indebted to them. David Ellis, Bob Boyd, Yvonne Hajda, and Alf Hornborg commented on an earlier draft and materially improved this chapter. I thank them. The errors, of course, are entirely mine.

We are left to wonder about the possibility and extent of slavery among other complex hunter-gatherers, such as the Japanese Jomon. This is not to suggest that slavery should be assumed, but the message of this book and this chapter is that it needs to be incorporated into our thinking.

Whatever success this chapter has can be attributed to two parallel threads of evidence for Northwest Coast slavery: documentary and archaeological. In the absence of the documentary record, given our stereotypes, it is extremely unlikely we would have conceived of the possibility of slavery on the coast or among hunter-gatherers. The data I have presented are silent about the presence of slaves. Where do we go from here in the absence of archaeological correlates? One obvious place is the scale of production and labor demands.

However, more broadly, we need to spend more time in the ropewalk, laying out and checking multiple lines of evidence. It is too soon for narratives. In preparing this chapter, I learned that making cables in ropewalks was hard work, and that ropewalks were dirty, unpleasant places, even dangerous. It seemed like a good analogy for a chapter on slavery and for the kind of hard work needed for an archaeology of slavery.

Notes

1. Both Europeans and Euroamericans are termed "Europeans" here unless the distinction is necessary.
2. The calculation is: 203 people are 40.6 five-member families. At .633 metric tons/family, that is 26 metric tons (40.6×0.633) or approximately 28 US short tons or 56,642 lbs. A bushel of potatoes weighs 60 lbs for 944 bushels ($56,642/60$). A bushel is 35.239 liters, for a total of 33,267 liters (944×35.239). The total available subfloor space in the Meier pit complex is 127,000 liters.
3. This is an estimate of the groups along or immediately adjacent to the river, not the entire GLCR.

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