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Metal and Prestige in the Greater Lower Columbia River Region, Northwestern North America

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METAL AND PRESTIGE IN THE GREATER LOWER COLUMBIA RIVER REGION, NORTHWESTERN NORTH AMERICA

H. Kory Cooper, Kenneth M. Ames, Loren G. Davis

ABSTRACT

Excavations at the late prehistoric-early historic Chinookan sites of Meier and Cathlapotle in the Greater Lower Columbia Region recovered several hundred metal artifacts. Portable X-ray fluorescence (XRF) was used initially to quickly determine metal type. Then a sample of copper artifacts was subjected to another round of XRF analysis to identify the presence of native copper and, or, chronologically sensitive copper metals. No native copper artifacts were identified and the lack of Muntz metal, a specific type of brass patented in the 1830s, corroborates the dating of material from both sites as no later than the early historic period. Meier and Cathlapotle were important sites for the indigenous working of trade copper, some of which was likely destined for Native communities further inland. This trade copper was a highly valued prestige good in the Plateau and Pacific Northwest and it moved rapidly through Native trade networks in advance of other non-Native trade goods and continued to be used for personal adornment and incorporated into burials into the nineteenth century.

Introduction

Several hundred copper and iron artifacts were recovered from the Meier and Cathlapotle archaeological sites (Fig. 1), two Chinookan sites occupied from approximately A.D. 1400–1820 and A.D. 1450–1833, respectively (Ames, Smith, and Bourdeau 2008). Compositional and metallographic analyses of copper artifacts from archaeological contexts in North America have been used to identify such material as either native or smelted copper, and identify specific copper alloys. These analyses, in turn, have informed discussions of the chronology of copper metal-bearing sites and contexts and provided a foundation for discussing when and how foreign trade metal was integrated into Native American culture and technology (e.g., Osborne 1957; Stapp 1983, 1984, 1985; Hancock et al. 1994, 1995; Ehrhardt 2005; Anselmi 2008). Because copper artifacts from prehistoric contexts in the Pacific Northwest and Plateau have previously been identified as native copper (see list in Hayden and Schulting 1997:56), and both sites were occupied before and after contact, one goal of the analysis was to determine whether native copper artifacts were present at these sites. Native copper is naturally occurring copper metal, often greater than 99.99% pure (Wayman 1989). Copper smelted from ores in the eighteenth and nineteenth centuries has significantly more non-metallic inclusions and a coarser grain size than native copper, and as a result it can be distinguished from native copper using either trace element analysis or metallography (Wayman et al. 1985:369). Additionally, studies in eastern North America (Hancock et al. 1994, 1995) have found the presence of certain types of copper and copper alloys useful as chronological markers for subdividing the proto-historic and historic periods.
The identification of copper from Meier and Cathlapotle as either native or smelted trade metal, and the type of smelted copper or copper alloys present, adds to our understanding of when and how these metals moved through prehistoric, proto-historic, and historic trade networks. This study does not attempt to source trade copper to its origin, neither the location of the ore, nor where it was smelted.

Regional Background

The Greater Lower Columbia River Region (GLCRR) (Hajda 1984; Boyd, Ames, and Johnson 2013) encompasses the final 200 miles of the Columbia River and adjacent portions of the Pacific coastline (Fig. 1). This region 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. At contact (AD 1792), the GLCRR was occupied by members of several ethno-linguistic groups. Speakers of Chinookan languages were the most numerous (Hajda 1984; Silverstein 1990) with large, comparatively dense precontact populations estimated at 34,000 people (Boyd 1990, 1999). Most were concentrated on the major rivers and tributaries, particularly along the Columbia River’s estuary and in the Wapato Valley (see below). Chinookan social organization and economy had much in common with other Northwest Coast societies (Hajda 1984; Silverstein 1990). The household was the basic socio-economic unit, and the village or town the maximal unit. Households lived in large post and beam plankhouses of western red cedar (Thuja plicata). Society was divided into two broad classes, free and slave (Donald 1997; Hajda 2005, 2013). Free people were subdivided into a chiefly elite and commoners. Chiefly status was based on heredity, wealth and widespread social and economic ties (Hajda 1984, 2013). The slave population in the late eighteenth and early nineteenth centuries may have been 25% of the total (Mitchell 1985; Ames 2008).

![Fig. 1. Map of the Lower Columbia River Region showing the location of archaeological sites.](image-url)
Contact began ca. 1775, with the first documented exploratory voyages along the coast (Hajda 1984; Gibson 1992). By the early 1790s American fur traders were operating at the mouth of the Columbia River (Howay 1990 [1941]; Gibson 1992). The maritime fur trade brought the GLCRR into an “internationalized ocean basin” (Igler 2004) and connected it to a mercantile and colonial system spanning the world. Competition among Spain, Great Britain and Russia (Cole and Darling 1990; Gibson 1992; Lightfoot, Schiff, and Wake 1997; Igler 2004) fueled exploration. By the 1790s the United States replaced Spain as Britain’s main competitor in the GLCRR. Between 1785 and 1841, an average of twelve vessels operated annually on the Northwest Coast (Gibson 1992) with at least one probably entering the Lower Columbia River (Robert Boyd, pers. comm.). Vessels sailed from the GLCRR to Canton, South America, Hawaii, and elsewhere (Igler 2004). Before 1811, the fur trade was entirely maritime, with ships dependent on Native people for furs and fresh provisions. The Lewis and Clark expedition spent the winter of 1805–1806 near the river’s mouth. In 1811, Fort Astoria, the first permanent Euro-American base in the GLCRR (Franchere 1967; Jones 1999), was established. The Hudson’s Bay Company (HBC) in 1824 placed the headquarters for its entire Columbia Department at Fort Vancouver, in the Wapato Valley. The region became part of United States territory in 1848. By then, epidemics had decimated the GLCRR’s original people. Contact-era epidemics were not everywhere as severe as even recently thought (e.g., papers in Larsen and Milner 1994; Baker and Kealhofer 1996). However, they devastated the GLCRR (Boyd 1999). The effects differed within the region, with the Wapato Valley worst hit. Population decline there probably exceeded 90% between 1792 and 1832.

The Archaeological Sites

The Meier and Cathlapotle sites are located in the Wapato Valley (aka Portland Basin) portion of the GLCRR; essentially in the greater Portland, Oregon—Vancouver, Washington metropolitan area (Fig. 1). The Meier site (35-CO-1) is on the western edge of the Wapato Valley. Excavations between 1987 and 1991 exposed a large (30x14 m) plankhouse, exterior midden deposits and activity areas (Ames et al. 1992; Smith 2006, 2008; Ames, Smith, and Bourdeau 2008). Chronological control is provided by nineteen radiocarbon dates and temporally sensitive artifacts (Ames et al. 2011). The house was constructed about AD 1400 and abandoned by perhaps 1820. No Euro-American accounts mention the site. Accessible by boat via small channels, it is about 6 km from the Columbia and 3 km from the nearest major waterway. It contains a variety of industrial trade goods including iron and copper, and ceramics dating to the early fur trade era (Banach 2002; Kaehler 2002; Cromwell 2011).

Cathlapotle (45-CL-1) is near the Columbia River on the U.S. Fish and Wildlife’s Ridgefield Wildlife Refuge (Ames et al. 1999; Sobel 2004; Ames et al. 2008) near Ridgefield, Washington, about 29 km below Vancouver, Washington. It was one of the Wapato Valley’s major Chinookan towns with population estimated as high as 900 (Boyd and Hajda 1987; Ames 2008). The site contains the remains of six very large plankhouses arrayed in two rows paralleling a small tributary of the Columbia River. Two structures and associated exterior deposits were intensively sampled between 1991 and 1996 (Ames et al. 1999; Sobel 2004; Smith 2008). The village was established in its present location ca. AD 1450 and abandoned ca. 1833 (Ames and Sobel 2010). It appears frequently in Euro-American accounts from 1792 (Vancouver 1926; Sobel 2004) until its abandonment and was deeply involved in the fur trade (e.g., Jones 1999). Lewis and Clark visited 29th March 1806, writing lengthy accounts (Moulton 1990). The site has a rich assemblage of fur-trade era trade goods (e.g., Banach 2002; Kaehler 2002) including ceramics contemporary with
those from Meier (Cromwell 2011). The initiation of the fur trade at the site is archaeologically distinct. Trade goods appear abruptly about 70 cm below surface in deposits 2 m deep. The sequence of trade goods across the site is consistent, allowing separation of precontact and contact-era deposits. This sequence is generally replicated at the Meier site. The research program at both sites centered on the political economies of large households, including the relationships between social status and household production (e.g., Ames 1996; Sobel 2004; Smith 2008), and on how these households and communities engaged in and responded to the fur trade. Cupreous artifacts were of particular interest and it was important to distinguish trade metal from native copper because the latter could be heirlooms and hence precontact markers of high status.

Banach (2002) classified the copper artifacts from both sites and analyzed their spatial distributions. The Meier-Cathlapotle assemblage contained copper sheets, rolled beads, tubes, rings, bracelets, rods, projectile points and unidentifiable pieces. Copper was concentrated within the houses at both sites, around hearths (fabrication?), under sleeping platforms, and in the house cellars (Ames, Smith, and Bourdeau 2008). The relative status of household members does not appear to directly affect the spatial distributions of the copper objects themselves (Banach 2002) although copper working may have occurred primarily in lower status areas of houses. At Cathlapotle, copper sheets and beads were also concentrated in a midden area in front of House 1 and it is thought this may be an exterior fabrication area.

Previous Studies of Copper Artifacts in the Region

Artifacts of copper, presumably native, have also been recovered from Late Prehistoric sites in the Plateau region (Galm 1994; Schulting 1994; Hayden and Schulting 1997). But several of the examples listed by Hayden and Schulting (1997:56) from the southern Plateau, primarily the Columbia River Valley, may in fact be protohistoric trade metal. In some cases the original investigators of these sites identified artifacts as being made of native copper based on an impressionistic visual examination (Smith 1910:95; Krieger 1928:13; Butler 1959:9) or questionable interpretation of ambiguous or unreported analytical results (Strong 1960:56; Combes 1968:171; Bergt 1978:93). In other instances the context of the copper was noted to overlap the Late Prehistoric and Protohistoric periods (Butler 1959:16), or the investigators offered no opinion as to the source or age of the copper (Skinner and Copp 1986).

One of the first scholars to take an interest in protohistoric copper burial goods in the Plateau was Osborne (1957). He provides a detailed discussion of the possible origins of this material and incorporated compositional (Kroll 1957) and metallographic (McLeod 1957) analyses of copper artifacts in his study. McLeod (1957) studied five copper tube beads and three flat pieces of copper from the McNary site microscopically and confirmed they were industrial smelted copper, as opposed to native copper, that had been rolled due to the amount of impurities present and the elongated arrangement of inclusions. Kroll (1957) analyzed copper beads from the McNary Site spectrographically and determined they were not recent, i.e., no later than the 1880s based on the lack of purity that is possible with more recent copper products thanks to the use of electrolysis. Yet the beads were not pure enough to be considered native copper.

Building on the work of Osborne and colleagues, Stapp (1984) performed the first large-scale regional study of protohistoric copper artifacts in the Plateau. Using XRF to analyze hundreds of artifacts from protohistoric burials he identified over ten different types of relatively pure smelted copper sheet using trace elements. Though many brass (copper and zinc) artifacts were also present it was not possible to develop different brass types based on the trace element results. The different
types of copper sheeting identified are believed to relate to different origins, i.e., different sources of copper ores and, or, different smelters. However, the different copper types varied at multiple spatial scales between burials, sites, and regions such that it was not possible to offer a definitive explanation for their distribution.

According to Stapp (1983, 1984) the most likely origins for industrial copper traded into the Northwest Coast include Britain, Germany, Russia, Spain, Mexico, China, and eastern North America. However, very little copper was being produced in North America in the late eighteenth century (Mulholland 1981). Additionally, Britain, the number one copper producer in the world at this time, was using both domestic and foreign ores and metals, e.g., Germany (Jopling 1989; Day 1991). Smelted copper was also traded into the region from Chile (Howay 1990 [1941]). Stapp (1983, 1984) was unable to match his three copper types to any specific source, but his work demonstrated the potential for doing so.

In addition to the XRF analysis, Stapp’s (1984) review of the archaeological evidence found the following. Most of the burials containing copper artifacts were infants or adult females. The richest burials with respect to copper were found along the upper Columbia, in the Snake and Clearwater Rivers region. Most of this copper found upriver along the Columbia River and tributaries was acquired via intermediary trade and exchange from the sailing vessels engaged in the fur trade and probably dates to the mid-1790s, after trading began at the mouth of the river (Stapp 1984).

Just as Stapp (1984:75) was unable to compare his results with those of earlier studies, we did not attempt to look for the various copper types he identified among the material at Meier and Cathlapotle. The results of a study performed to assess the inter-laboratory reproducibility of quantitative XRF results obtained from historic coppers alloys (Heginbotham et al. 2011) does not encourage attempting such comparisons even though Stapp (1983, 1984) also used XRF. In the inter-laboratory study nineteen XRF instruments from fourteen institutions were used to analyze twelve metal samples following ASTM (American Society for Testing and Materials) standard E1601, Standard Practice for Conducting an Interlaboratory Study to Evaluate the Performance of an Analytical Method. Although the reproducibility of results for copper, zinc, and tin were better than for elements with lower detection limits, the overall ability to reproduce comparable results between labs was “relatively poor” (Heginbotham et al. 2011:252). As a result, though Stapp’s (1983, 1984) research made some interesting initial findings that have yet to be pursued further, this study did not attempt to identify the different copper trace element profiles he identified.

XRF Analysis of Meier and Cathlapotle Metal

After consultation with the U.S. Fish and Wildlife Service, Confederated Tribes of Grand Ronde, and the Chinook Indian Nation only non-destructive analysis was approved, which means we were unable to remove samples for metallography. X-ray fluorescence was considered to be the best option to obtain data for such a large collection non-destructively. The metal artifacts from Meier (n = 194) and Cathlapotle (n = 331) were first analyzed using a portable NITON XL3t x-ray fluorescence (XRF) instrument at Oregon State University in order to identify major metal types, e.g., iron, copper, or copper alloy. It was believed that these collections might contain native copper, but if so, probably few in number. As a result, all metal artifacts in both assemblages were subjected to this initial screening instead of sampling.

The NITON results showed that approximately half of the Cathlapotle metal artifacts are copper-based and the other half iron. Approximately one-third of the 200 metal artifacts from Meier
are copper-based and the rest iron. One pewter (tin-lead alloy) object was recovered from each site. The Cathlapotle collection contains more examples of brass (copper and zinc) and leaded brass than Meier but most of the copper-based material from both sites is unalloyed smelted copper of varying purity. None of the brasses have large amounts of zinc, excepted for two Chinese coins. For example, Muntz metal, patented in 1832 by George Muntz specifically for use in sheathing ship hulls, was a copper:zinc alloy with anywhere from 37–50% zinc, though the most common ratio was 60:40. Its use became more common after 1850 (Day 1991). The lack of this metal supports the abandonment of both villages earlier in the nineteenth century. The NITON results also demonstrated that the vast majority of smelted copper specimens have high enough levels of a number of trace elements such as arsenic, iron, nickel, and antimony to confirm they are not native copper. Nine of the Cathlapotle artifacts, six tapered rods (45CL1-46188a-f) (Fig. 2) and three tube beads (45CL1-13507,-6029, -28034) (Fig. 3) were high enough in copper (over 99% Cu) to warrant further investigation to determine if they might be native copper.

A sample of 51 copper metal artifacts (Meier n = 16, Cathlapotle n = 35) were subjected to a second round of XRF analysis using a Fischerscope XDAL X-Ray at the Science Applications International Corporation office located in the Purdue Research Park Northwest Indiana. Because the initial analysis revealed nine copper artifacts from Cathlapotle with similar results indicating they were made of relatively pure copper, a characteristic of native copper (Wayman 1989), this second round of analysis was performed to confirm the presence or absence of native copper at these two sites. Archaeological and geological native copper specimens from Alaska, which previously

Fig. 2. Copper rods from Cathlapotle (catalog #46188a-f). Mean is 99.1% copper, based on ppm.
had been analyzed using Instrumental Neutron Activation Analysis (INAA) and Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) (Cooper et al. 2008) were analyzed for comparative purposes, not in an effort to identify the source of artifact copper.

Each sample was subject to bulk analysis for 100 seconds at 50 keV, 300 mA, using a 0.6mm spot size. The Fischerscope XDAL has a micro-focus tungsten tube with Be window and high energy resolution PIN semiconductor diode detector. Quantitative results were calculated using fundamental parameters and instrument software (WinFTM® V.6). All of the results are shown in Table 1. Target artifact surfaces were gently scraped with a stainless steel dental instrument in order to analyze clean metal, but artifacts were not scrubbed or polished. Thus, the elevated iron in some of the results is likely due to the effects of corrosion and presence of excavation sediment. To demonstrate the effectiveness of the Fischer XDAL, European Commission Community Bureau of Reference (BCR-691) standards were analyzed (Ingelbrecht, Adrianes, and Maier 2001). First reported on in Cooper and Bowen (2013), these results are shown in Table 2 along with published data on these standards. Though the use of fundamental parameters in lieu of an empirical calibration is insufficient for archaeological provenance work that relies on comparing trace element signatures, it is sufficient for determining the presence or absence of elements (Shackley 2011). We believe the results shown in Table 2 demonstrate the effectiveness of the Fischer XDAL in identifying and differentiating between smelted copper and copper alloys containing various amounts of tin, zinc, and lead using fundamental parameters.

As seen in Table 1, the copper results for the high purity copper artifacts from Cathlapotle overlap with the archaeological and geological specimens of Alaskan native copper. However, analyses of eighteenth and nineteenth century industrial copper, specifically sheet copper used for ship sheathing, have produced results ranging from 99%–100% copper by weight (Craddock and Hook 1990; Atauz et al. 2006), overlapping with the purity of native copper. More importantly, the Cathlapotle material contains several times more arsenic than the Alaskan native copper. There is no overlap in the amount of arsenic between archaeological and geological specimens of Alaska native copper with the highest purity copper artifacts from Meier and Cathlapotle. Arsenic is commonly found in native copper (e.g., Broderick 1929; Franklin et al. 1981; Rapp et al. 2000),
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<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>6.65</td>
</tr>
<tr>
<td>35CO5-06387</td>
<td>button</td>
<td>ternary alloy</td>
<td>71.1</td>
<td>nd</td>
<td>4.67</td>
<td>11.30</td>
<td>1.69</td>
<td>nd</td>
<td>0.48</td>
<td>0.21</td>
<td>0.11</td>
<td>nd</td>
<td>12.20</td>
<td></td>
</tr>
<tr>
<td>35CO5-03661</td>
<td>tube bead</td>
<td>ternary alloy</td>
<td>71.0</td>
<td>nd</td>
<td>2.87</td>
<td>19.10</td>
<td>1.64</td>
<td>0.03</td>
<td>nd</td>
<td>0.27</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>6.96</td>
</tr>
</tbody>
</table>
**TABLE 2. ANALYSIS OF EUROPEAN COMMISSION COMMUNITY BUREAU OF REFERENCE (BCR-691) STANDARDS (INGELBRECHT, ADRIANES, AND MAIER 2001) USING FISCHER X-RAY XDAL (PREVIOUSLY REPORTED ON IN COOPER AND BOWEN 2013), AND MANUFACTURER REPORTED DATA; ND= NO DATA COLLECTED, EITHER ELEMENT WAS NOT ANALYZED FOR OR WAS PRESENT AT OR BELOW THE INSTRUMENT DETECTION LIMIT.**

<table>
<thead>
<tr>
<th>Catalog #</th>
<th>Cu</th>
<th>Ni</th>
<th>Fe</th>
<th>Zn</th>
<th>As</th>
<th>Se</th>
<th>Ag</th>
<th>Sn</th>
<th>Sb</th>
<th>Au</th>
<th>Hg</th>
<th>Pb</th>
<th>Total</th>
</tr>
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<tr>
<td>Fischer X-Ray XDAL- wt. %</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Quaternary Bronze</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>6.02±0.22</td>
<td>0.194±0.01</td>
<td>nd</td>
<td>7.16±0.21</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>7.9±0.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Brass</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>14.8±0.5</td>
<td>0.099±0.01</td>
<td>nd</td>
<td>2.06±0.07</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.39±0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Arsenical Copper</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.05±0.005</td>
<td>4.6±0.27</td>
<td>nd</td>
<td>0.20±0.029</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.175±0.014</td>
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<tr>
<td>D. Lead-bronze</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.148±0.024</td>
<td>0.285±0.022</td>
<td>nd</td>
<td>10.1±0.8</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>9.2±1.7</td>
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<td></td>
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<td>E. Tin-bronze</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.157±0.025</td>
<td>0.194±0.020</td>
<td>nd</td>
<td>7.0±0.6</td>
<td>nd</td>
<td>nd</td>
<td>nd</td>
<td>0.20±0.018</td>
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<td>Manufacturer’s Data – wt. %</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>A. Quaternary Bronze</td>
<td>82.0</td>
<td>0.16</td>
<td>0.22</td>
<td>6.07</td>
<td>nd</td>
<td>0.01</td>
<td>0.04</td>
<td>6.73</td>
<td>0.45</td>
<td>0.08</td>
<td>nd</td>
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<tr>
<td>B. Brass</td>
<td>81.7</td>
<td>0.26</td>
<td>0.63</td>
<td>14.80</td>
<td>0.12</td>
<td>0.05</td>
<td>0.05</td>
<td>1.96</td>
<td>0.05</td>
<td>0.03</td>
<td>0.06</td>
<td>0.29</td>
<td>100.00</td>
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<tr>
<td>C. Arsenical Copper</td>
<td>94.1</td>
<td>0.04</td>
<td>0.22</td>
<td>0.23</td>
<td>4.38</td>
<td>nd</td>
<td>0.03</td>
<td>0.27</td>
<td>0.36</td>
<td>0.13</td>
<td>nd</td>
<td>0.20</td>
<td>99.96</td>
</tr>
<tr>
<td>D. Lead-bronze</td>
<td>85.8</td>
<td>0.41</td>
<td>0.06</td>
<td>0.24</td>
<td>0.08</td>
<td>0.01</td>
<td>0.01</td>
<td>9.27</td>
<td>0.32</td>
<td>0.05</td>
<td>0.03</td>
<td>3.72</td>
<td>100.00</td>
</tr>
<tr>
<td>E. Tin-bronze</td>
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<td>0.55</td>
<td>0.34</td>
<td>0.22</td>
<td>0.14</td>
<td>nd</td>
<td>0.04</td>
<td>6.97</td>
<td>0.67</td>
<td>0.13</td>
<td>0.07</td>
<td>0.32</td>
<td>100.04</td>
</tr>
</tbody>
</table>

but Wayman et al. (1985) found that arsenic levels in nineteenth century smelted copper were significantly higher than would be expected in native copper. Thus, there are no native copper artifacts present at these sites as arsenic levels in even the purest smelted copper are sufficiently high enough to separate them from native copper. Additionally, the arsenic results for the high purity copper artifacts from Cathlapotle (0.4–1% by wt.) are similar to those reported for four samples of copper sheathing from early nineteenth century British vessels obtained using atomic absorption spectrophotometry (Craddock and Hook 1990). In short, we believe all of the copper objects from both sites are trade copper.

**Introduction of Trade Metal to the Pacific Northwest**

Europeans (e.g., Juan Perez in 1774, James Cook in 1787) believed metal objects in the hands of Native people on the Northwest Coast in the 1770s must have reached the region via overland trade from the east. Long-distance east-west and north-south trade connections in North America pre-dated the arrival of Europeans and may account, in part, for the widespread presence of iron and copper in Pacific Northwest communities in the 1770s. However, explorers in the region during this decade may have been preceded by other less-well documented expeditions and shipwrecks (Keddie 2006). For example, an iron adz blade at Cathlapotle is dated to ca A.D. 1450 (Ames et al. 1999). Shipwrecks originating from Asia could have put metal and other foreign goods in the hands of Native coastal people, including those living along the Columbia River, and their interior trade partners, many centuries before the Maritime Fur Trade (Rickard 1939; Quimby 1985),
though Keddie (2004, 2006) believes the overall impact of Japanese wrecks on Northwest Coast cultures to have been minimal.

Even if long-distance overland trade from the east and Asian derived flotsam and jetsam provided some of the metal seen by Spanish and English explorers on the Northwest Coast in the 1770s, by this time the Russians had been trading metal to Native people along the coast of Alaska for three decades. After the initial Russian voyage of exploration to the coast of Alaska in 1741 fur traders moved through the Aleutians and were trading with Chugach, Eyak, Ahtna Athabascan, and Northern Tlingit in the Gulf of Alaska by the end of the eighteenth century (Gibson 1976). Russian trading activity in this region could account for the abundance of metal, and other trade goods such as beads, seen by early explorers in the 1770s among Northwest Coast Natives, especially the most northerly groups such as the Tlingit and Haida.

When Cook visited the Nootka in 1778 the demand for metal in exchange for furs was so great crews bartered using a variety of metals such as copper, brass, tin, pewter, and iron, in a variety of forms including buttons, candlesticks, furniture hardware, and kettles (Beaglehole 1967). Because of the high value accorded metal on the Northwest Coast all ships destined for the region soon carried copper sheet like that used for sheathing ship hulls and other metal stock such as iron bars, copper rods, and copper and iron wire, in addition to finished copper, brass, iron, and pewter goods such as pots, pans, basins, kettles, thimbles, buttons, scissors, knives, and other edged tools and weapons (Rickard 1939; Roe 1967; Jopling 1989). According to Lt. Broughton of the Vancouver expedition, peoples on the Lower Columbia possessed “copper swords” in 1792 (Vancouver 1926). The American trading vessel Columbia, which traded with Chinook at the mouth of the Columbia River, was carrying approximately 3490 lbs. of sheet copper when it reached the Northwest Coast in 1791 (Howay 1990[1941]).

Chinook oral history tells of a shipwreck believed to have occurred in the mid-eighteenth century (Boas 1894). The ship was described as being covered in copper and was a source of metal for the Chinook, specifically the residents of a nearby Clatsop village who became wealthy trading metal to other Native people (Storm 1990). The British navy began experimenting with the application of copper sheathing to the hulls of ships in 1759. Copper sheathing prevented structural damage caused by wood boring worms and also decreased the drag caused by barnacles and seaweed thereby increasing speed and maneuverability. Its use increased rapidly during the decades after its introduction as metallurgical innovations resulted in improved metal alloys for both sheathing and fasteners (Knight 1973).

Value of Metal in the Fur Trade

Because Native taste in trade goods varied across time and space in the Pacific Northwest, easy profits were not guaranteed for Euro-American fur trade entrepreneurs. However, within this dynamic context of fluctuating values of furs and trade goods, “copper remained a steady medium of exchange,” and iron also maintained high value (Howay 1990[1941]:41). The desire for copper during the first years of the maritime fur trade was such that ships lacking it were in a weak bargaining position (Howay 1990[1941]). From a Native perspective non-Native fur traders seemed at times to have an endless supply of copper, but fluctuations in production impacted its availability (Day 1991). While in the port of Canton in 1797, Bishop, Captain of the Ruby, obtained copper to mend the ships’ sheathing because European copper was “scarce,” and noted in a letter to his supercargo that copper was still “good trade” on the southern portion of the Northwest Coast (Roe 1967:238).
After entering the Columbia River in 1792, the crew of the *Columbia* purchased sea otter furs at the rate of four per copper sheet, one beaver for two iron spikes, and one iron spike for other land furs. In 1793 sea otter pelts and clamons, elk skins used for armor, were obtained in the Columbia River at the rate of two sea otter pelts or four clamons for one 50–60 pound copper sheet. These sheets were the most desired form of copper. Iron was in less demand than previously but clamons could be had for three iron chisels. Clamons from the Columbia River Valley were traded to coastal Native groups further north for sea otter pelts. Available evidence suggests that Cathlapotle was deeply engaged in the production of clamons while the residents of Meier were not (Smith 2008). Natives in the Columbia drainage were still trading for copper in 1807 but a shift to trading furs for foodstuffs and liquor was underway (Ruby and Brown 1976; Howay 1990[1941]). By the end of the eighteenth century the Northwest Coast had been saturated with metal such that Native demand for it had decreased significantly (Rickard 1939; Strong 1960:56; Ruby and Brown 1976; Jopling 1989; Gibson 1992; Keddie 2006).

Trade goods reached the Plateau soon after trade with non-Natives was initiated at the mouth of the Columbia in the early 1790s, or possibly earlier via overland routes to the east. According to Stapp (1984), Native groups on the Lower Columbia allowed relatively small amounts of metal and other trade goods to move upstream. This imposed scarcity kept the exchange value of metal high. The Chinook traveled upriver to exchange “. . . trifling pieces of Copper and Iron” (Roe 1967:118–119) for furs and clamons which were then taken back to the coast and exchanged for additional foreign goods.

Relatively few copper artifacts were recovered from the Middle Village site (Fig. 1), a Chinookan site on Baker Bay (a major anchorage for maritime fur traders) directly across from the modern city of Astoria, Oregon, the site of Ft. Astoria/George, the major Anglo-American fur trading post on the Northwest Coast ca. 1811–1813. Middle Village appears to have been a summer plankhouse village occupied between ca. A.D. 1792–1820 (Wilson et al. 2009). Altogether 95 cupreous artifacts were recovered as part of a numerically and taxonomically rich assemblage of trade goods including ceramics and very large glass beads. Copper beads (N = 18) were the most common copper artifact, along with fragments of copper sheets. The excavators identified a copper working area at the site based on high artifact densities within one of the houses. Interestingly, the highest numbers of copper ornaments were associated with a different, perhaps more substantial house, suggesting possible status differences between fabricators and consumers. As noted above, copper was also worked at Meier and Cathlapotle, but there are no examples of pendants like those recovered from burials in the Plateau supporting Stapp’s (1984) suggestion that those objects were created from imported trade metal to suit regional tastes. Middle Village appears to have been primarily a trading and perhaps sturgeon fishing locality. The assemblage of traditional domestic and economic artifacts is small compared to its rich assemblage of trade goods, which Hajda and Sobel (2013) suggest it received in exchange for provisioning fur traders.

In contrast to Middle Village, many metal artifacts were recovered from the Chinookan site of Kathlamet Village (Fig. 1), including 236 copper tube beads. This site was occupied into the mid-nineteenth century and would have been an important link in the trade connecting communities in the upper and lower Columbia River valley during the late 18th and early 19th centuries (Minor and Burgess 2009). Trade metal may have passed through the hands of residents of this site on its way to Cathlapotle and Meier. In addition to furs and clamons destined for coastal trading vessels, the Chinook and Clatsop continued to obtain pre-contact trade items from the interior, primarily food stuffs such as salmon and roots, in exchange for metal and other goods (Ruby and Brown 1976). By at least the early nineteenth century, metal trade goods from the coast had reached the Nez Perce in the far interior Plateau where copper and brass bracelets and arm bands were popular (Lewis 1965[1814]).
Bishop, Captain of the Ruby, noted in 1796 that the coastal Chinook wore brass rings on their fingers and wrists and the adult daughters of Chief’s wore “a load of copper ornaments and beads about their necks” (Roe 1967:126). Given the active role of Chinook, Clatsop, and other Northwest Coast Native women in early nineteenth century fur trade negotiations (Littlefield 1988), the female desire for metal in the form of pots, kettles, edged tools, objects of adornment, and raw stock used for tools and adornment should be kept in mind when examining the large quantity of metal trade goods at Meier and Cathlapotle. Many of the finished copper products traded to Native people such as pots and kettles were not used as originally intended, but were instead cut up and used for “symbols of prestige” decorating both people and homes (Ruby and Brown 1976:63). Similar use of finished European copper goods as a source of highly valued raw material by Native Americans has been noted for the Protohistoric and Historic periods in eastern North America (e.g., Miller and Hamell 1986; Moreau and Hancock 1999; Ehrhardt 2005; Anselmi 2008).

Discussion

On the Northwest Coast and adjacent interior, prehistoric examples of copper that are well-dated or have good contexts are exclusively from burials or other ritualized contexts (e.g., Matson and Coupland 1995; Blake 2004; Ames 2005; Cybulski 2014). Many copper artifacts have also been recovered from Protohistoric and Historic burials in the Plateau, especially the Columbia River Valley. Most of this material probably dates to the mid-1790s. Burials with the greatest number of copper artifacts in the Columbia River valley are found in the upper region. Tube beads are one of the more common forms and have been found in the burials of men, women, and children in interior Washington (Stapp 1983, 1984, 1985; Schulting 1994; Hayden and Schulting 1997). The lower Columbia has produced more copper artifacts, but from a variety of contexts. The large copper assemblages from Cathlapotle, Meier, and the Middle Village sites were recovered from domestic contexts (Banach 2002; Wilson et al. 2009) and provide important new insight into the movement of trade metals during the maritime fur trade.

Because copper was used for personal adornment and incorporated into burials in different parts of the Pacific Northwest both before and after Euro-American contact, the presence of copper alone, without more detailed analysis, is not sufficient for determining if a burial or site is Prehistoric, Protohistoric, or Historic. Strong (1960) noted that beads and bangles made from trade sheet copper had been recovered from cremation and burial features containing no other trade goods such as beads or buttons. The rapid inclusion of large amounts of copper in burial rituals shows how quickly it was integrated into indigenous ideology and value systems as a way to display wealth and prestige (Stapp 1983, 1984). As a result, it traveled farther and faster through preexisting Native trade networks than other non-Native trade goods. “The Copper is Speared,” a Kathlamet myth referring to copper that Boas (1901) collected in 1894 and related here in brief tells of a chief with two daughters in a village where people saw a thing out on the ocean that shone like the sun. The people tried to shoot it but could not hit it and eventually gave up. In secret, the chief’s daughters took his bow and arrows and harpoon shaft and got very close to hitting the shining thing on the ocean. The people noticed and asked who it could be that almost hit it but did not recognize the girls who disguised themselves as men by putting their hair up. The younger of the two girls eventually hit the thing and they speared it and put it in their canoe. They brought it to their house and put it under their bed. When they later showed it to their father he had to close his eyes because it was shining. The people of the village were gathered together and they cut up the shining thing and
distributed it amongst the people. This story may be further evidence of the rapid integration of a new and highly valued material into Chinookan culture, rather than indicating great antiquity.

Conclusion

Industrial goods including smelted iron, copper, and a variety of copper alloys were being traded into northwest North America in the latter part of the eighteenth century in large quantities, drawing Native people into the fur trade. Substantively, our analysis of large samples from two major residential sites suggests that native copper objects were either absent or very rare in the GLCRR and upriver in the interior Plateau immediately prior to contact. The majority of trade copper found archaeologically likely entered the region in the late 18th and very early 19th centuries.

It should be noted here that Cathlapotle, Meier, and Middle Village all contain copper working areas, suggesting the skill was already present or rapidly acquired post-1792. Though we were not able to build on Stapp’s research investigating the origin of industrial smelted copper found in protohistoric Plateau burials, we were able to address Stapp’s (1984:143) questions concerning where artifacts were made. Though pendants were apparently made by Plateau inhabitants from copper sheet acquired in trade (Stapp 1984) more recent archaeological evidence suggests tube beads and other objects found in burials in the Plateau may have been fabricated out of sheet copper in communities downriver such as Meier, Cathlapotle, Kathlamet, and Middle Village.

The presence of large amounts of copper in post-contact residential deposits indicates major changes as a consequence of the influx of trade copper. Most of the items discussed here were recovered within houses (as opposed to exterior deposits such as middens or sheet middens) but not exclusively in high status areas (Banach 2002). Thus, while valued, they were not obviously or solely high status, or high prestige items. It is important to note that the fur trade era deposits at these two sites encompass blocks of time between roughly 30 and 45 years in length. What we are seeing is modal behavior. Thus copper may have started out as a prestige marker ca. 1792 but that value may have declined rapidly as copper, and other trade goods, became widely available.

ACKNOWLEDGMENTS

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capabilities and limitations of this instrument. Cooper’s participation in the preparation of this manuscript was supported by a Purdue Research Foundation Summer Faculty Grant. Any errors, of course, are entirely ours.

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