Consumer Behavior and Household Complexity: Households and Consumption in Three Localities of the 18th-Century Atlantic World

Eric Schweickart
University of Tennessee, eschweic@vols.utk.edu

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I am submitting herewith a dissertation written by Eric Schweickart entitled "Consumer Behavior and Household Complexity: Households and Consumption in Three Localities of the 18th-Century Atlantic World." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Anthropology.

Barbara Heath, Major Professor

We have read this dissertation and recommend its acceptance:

Tim Baumann, Kandi Hollenbach, James Fordyce, Julie Reed

Accepted for the Council:

Dixie L. Thompson

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)
Consumer Behavior and Household Complexity: Households and Consumption in Three Localities of the 18th-Century Atlantic World

A Dissertation Presented for the
Doctor of Philosophy
Degree
The University of Tennessee, Knoxville

Eric George Schweickart
December 2019
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Abstract

This project examines the intersection of household formation practices and consumer behavior in the 18th-century British Atlantic world. Scholars have argued that more complex households, comprised of extended family and/or non-kin residents, limit the consumer choices available to constituent members more than simple, nuclear households do. I test this assertion by comparing patterns of variation in the material attributes of copper alloy buttons from several households in three separate localities, Williamsburg, Virginia; Brunswick, North Carolina; and Chota, Tennessee. The degree of similarity between each household’s assemblage of these globally-traded artifacts, when placed in the context of the distribution of object variants available at local marketplaces, is a key indicator of the degree to which individuals living at these sites were able to choose consumer goods that fit their personal tastes. Differences in household complexity, both synchronically across localities and diachronically within a locality, are tested as a causal factor for variation in the consumer choices evident in household assemblages. Using these data, I demonstrate the significance of household complexity as a factor which influenced the rise and spread of consumerism in the 18th century and provide archaeologists with a generalizable method for comparing the internal dynamics of multiple households.
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<tr>
<td>Cr</td>
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All that follows began in a footnote. The footnote in question can be found in the book *The Industrious Revolution: Consumer Behavior and the Household Economy* by historian Jan de Vries (2008), which I read while writing my master’s thesis. I was investigating why farmers in Virginia and the Scottish Lowlands purchased a greater amount and variety of consumer goods in the year 1800 than they did in the year 1700. I found that they were participating in what scholars have called the “consumer revolution” which pre-dated and precipitated the better-known industrial revolution.

De Vries devotes the first section of *The Industrious Revolution* to a meticulous and well supported argument, in which he claims that increased consumer spending by households in Northeastern Europe during the late-17th and early-18th centuries was driven by the increasing number of women and children entering the marketplace as both wage-earners and active consumers. He speculates that the reason the consumer revolution first occurred in Northeastern Europe is because the nuclear family was a common household form in these countries and that more complex households, comprised of extended family and/or non-kin residents, limit the consumer choices available to constituent members more than simple, nuclear households do.

De Vries’ footnote supporting this point reads in full:

Consider this evidence from a survey of the consumer decision making of 800 recently married women in northern Italy between 1880 and 1910. Asked who had made the decisions about the purchase of their own clothing in the first two years of their marriages, the wives of white-collar workers either made these decisions on their own (30 percent) or after discussion with their husbands (59 percent). Among the wives of
sharecroppers, only 6 percent reported that they had made these decisions on their own, while an additional 22 percent made them together with their husbands. However, another 50 percent of sharecroppers’ wives reported that the decisions had been made by one or both of their parents-in-law. This finding reflects a household structure inimical to the emergence of the industrious revolution. (18)

When I read this passage I was struck by the implications this pattern holds for the archaeological record, if indeed it is as widespread as de Vries argues. Since the 1990s, most archaeological thought has held that items of personal adornment are used by individuals to create and display their identity within the bounds set by their society. However, if as late as 1910 the clothing worn by half of the sharecroppers in northern Italy was primarily decided by the husband’s parents, we must at least consider adding households to this equation. At the time I read the footnote, took a few moments to ponder this line of thinking, and then pushed it to the back of my mind to focus on topics more salient to my thesis. In this work, I have returned to this footnote, read it again, and begun to explore its relevance to archaeology in depth.

Problem

The importance of consuming objects in line with one’s personal taste is an essential element of the consumer revolution as defined by modern scholars. Recent explanations of this so-called revolution have emphasized the importance of new conceptions of personhood and refinement, which cross-cut socio-economic divisions, and downplayed emulation of the next higher social class as a causal factor (Shammas 1990; Breen 2004; De Vries 2008; Hodge 2014). These scholars have argued that consumers were not blindly emulating the decisions of others, but instead consumed objects in order to situate themselves in relation to larger social entities defined by ethnic, religious, racial, gender, and class divisions (Beaudry et al. 1991; Mullins
individual agents and overarching social structures, most archaeologists have downplayed the influence of the household, the social group which cross-culturally mediates between these two poles (but see (Groover 2001; Heath 2004; Galle 2010; Prossor et al. 2012). Despite the paucity of archaeological investigations into the effect of household composition on consumer behavior, there is good reason to believe that household groups play an important role in structuring individual consumer decisions. A household, in a cross-cultural sense, is the group of individuals who share everyday production, consumption, transmission, or reproduction tasks (Wilk and Rathje 1982; Hirth 1993). Therefore, the nexus of consumption is often the household, not the individual.

While individuals are motivated to make consumption decisions that communicate their identities, consumption decisions affect the entire household group. Individuals in more complex households have both a greater number and a more varied (in age, social status, and gender) set of individuals to consider when making consumption decisions. Acquiring the consent of other household members, who may have different self-conceptions or motivations to consume, is a prerequisite for any consumption decision (Laslett 1984). Therefore, differing traditions of household complexity can place distinctive constraints on an individual’s ability to acquire the objects he or she wants from the range of available objects.

Data derived from the archaeological record are ideally suited to investigate the effects of household complexity on the internal dynamics of household interactions with local marketplaces. Archaeological excavations collect the actual objects consumers selected from the options available to them. The object’s materiality is, in some respects, unchanged by the passage of time (Miller 2010; Olsen 2010; Hodder 2012). Therefore, the inherent qualities an
artifact possessed when it was manufactured in the 18th century, such as its size or shape, can be measured today (Brooks 2005). If consumers preferentially selected an object based on one of its inherent qualities, that preference has been preserved in the archaeological record.

Research Questions

Does greater household complexity result in more limited consumer choices for household constituents? If so, are these limitations consistent across social, racial, political, and economic divisions? To answer these questions, I examined copper-alloy buttons recovered from 25 separate sites occupied in the mid-18th century within three different localities whose occupants had different traditions and/or circumstances of household complexity. Variation in household complexity, both synchronically across localities and diachronically within a locality, was tested as a causal factor for the amount of consumer choice evident in button assemblages associated with each household. Finally, other factors believed to constrain consumer choice, including freedom and social status, were added to the model to determine what effect they had on consumer freedom and the interactions between these effects.

In the following sections, I lay out how my analysis engaged with the research question. First, I describe the archaeological sites that I used in this analysis and how these sites are uniquely suited to determining the effect of household complexity on consumer constraint. Next, I describe the dataset that I collected for this study, consisting of measurements of over 1600 copper-alloy buttons, in order to define the variability in button attributes available in local marketplaces. Finally, I show how I used the similarity between button attributes, when placed in the context of the variation available in the local marketplace, to perform two separate analyses necessary to answer my research question: a household assemblage analysis to determine which,
if any, household each button was acquired by, and a consumer constraint analysis to evaluate the effect of household complexity on the choices available to individual consumers.

**Archaeological Sites**

In order to test my hypothesis, I examined archaeological sites associated with four different groups, two of which generally lived in less complex households and two of which generally lived in more complex households. These groups were defined by the locality they were associated with and the time period of occupation. The three localities that I examined were Williamsburg, the colonial capital of Virginia in the 18th century, Brunswick, a British colonial port town along the Cape Fear River in North Carolina, and Chota, the mother town of the Overhill Cherokee (Figure 1). The time periods that I used were roughly defined as the third quarter of the 18th century (1750-1775) and the fourth quarter of the 18th century (1775-1800). In practice, since it is difficult to define dates so precisely in the archaeological record, I selected sites that generally dated to the second half of the 18th century and categorized them as either pre-dating or post-dating the American Revolutionary War. The few contexts post-dating the Revolutionary War in Brunswick and Chota were removed from this analysis, leaving four groups of sites: pre-Revolutionary Williamsburg, post-Revolutionary Williamsburg, pre-Revolutionary Brunswick, and pre-Revolutionary Chota.

These localities have many similarities. They are all towns that were founded in the early 18th century and occupied by military forces during the Revolutionary War, leading to a significant decrease in their size and population. The primary reason that I selected these localities was because of the amount of archaeological excavations that have occurred near them. Multiple, large-scale excavations have occurred at all of these places, and large collections of artifacts have been curated and are accessible to researchers. Therefore, not only was I able to
Figure 1: Map of Localities
draw upon the artifact assemblages found at multiple domestic structures associated with each
group, I was also able to examine artifacts found at other sites, including both domestic and
public contexts, from the same locality and time period. By compiling a dataset of hundreds of
buttons consumed in each locality during each time period, I was able to contextualize the
buttons associated with each household in terms of how common they were within the local
marketplace. As I will discuss below, this context plays an essential role in my analysis.

The work of historical demographers of the American South suggests that the relative
percentage of singleton to nuclear to extended households among a plantation’s enslaved
laborers is a function of its length of occupation and the number of non-entailed estate divisions
that occurred over time (Malone 1992; Walsh 1997; Dunaway 2003; Pargas 2010). Given
decades of plantation stability, enslaved African Americans tended to form multigenerational,
extended families. However, estate divisions and the movement of laborers to far-flung
landholdings tended to break these social units down into smaller, less complex forms.

In the mid-18th century, three major plantations, Kingsmill, Littletown, and Carter’s
Grove, crowded together along the banks of the James River directly south of Williamsburg,
Virginia. Archaeologists and historians have argued that the period directly preceding the
American Revolution represented an apex of household complexity among enslaved African
Americans at these plantations because most of the laborers living on them were entailed or
legally bound to a particular parcel of property (Walsh 1997; Fesler 2004). Additionally, estate
divisions were minor, which created a relatively stable enslaved community after the turn of the
18th century. The Revolutionary War marked the end of this period of stability. Directly after the
conflict, the largest plantation of the three, Kingsmill, was sold to a string of buyers, and the
enslaved population of the other two dropped as their entails were broken and individuals were
sold or transferred to other properties (Kelso 1984; Pullins et al. 2003; Fesler 2004). Thus, the enslaved communities who occupied these sites during the fourth quarter of the 18th century were less able to form complex households than their predecessors, providing an example of a population whose household complexity changed over time.

In the 1970s William Kelso excavated several different sites associated with the Kingsmill property in preparation for development along the James River, including the Littletown Field (44JC34), Littletown Quarter (44JC35), Kingsmill Quarter (44JC39), and North Quarter (44JC52) (Kelso 1984). Additionally, Kelso conducted excavations of the Carter’s Grove Quarter site (44JC110) at the behest of the Colonial Williamsburg Department of Archaeology in 1971-2 (Kelso 1971). In the 1990s the James River Institute for Archaeology (JRIA) excavated several sites associated with the enslaved inhabitants of the Utopia tract including Utopia 4 (44JC787) which was occupied during Burwell’s ownership of the property (Fesler 2004). Finally, in the early 2000s the William and Mary Center for Archaeological Research (WMCAR) excavated the Southall’s Quarter site (44JC969) which was also part of Burwell’s landholdings (Pullins, et al. 2003).

In addition to these sites, I examined several contemporaneous sites in order to contextualize the full range of buttons available to Williamsburg residents during the third and fourth quarters of the 18th century. These sites included the Littletown manor house and outbuildings (44JC34), the Kingsmill manor house and outbuildings (44JC37), and the Burwell’s Ferry ordinary (44JC40) which were all excavated by Kelso as part of the Kingsmill project. Additionally, I examined the Palace Lands site (44WB90) and the Rich Neck Quarter site (44WB52) which were both 18th-century domestic sites excavated by the Colonial Williamsburg Department of Archaeology in the 1990s and early 2000s. Finally, I analyzed several buttons
which were excavated from the 1930s to the 1950s and included in the Colonial Williamsburg Study Collection.

In comparison to the highly variable households of enslaved African Americans, Cherokee households were consistently quite complex. Like many native tribes of the American Southeast, the Cherokees were matrilineal and matrilocal (Perdue 1998). Clan affiliation, property, and community membership were inherited through the female line and domestic complexes were inhabited by a matriarch, her children and grandchildren (Schroedl 1986; Perdue 1998; Marcoux 2010; Boulware 2011). Accounts by 18th-century visitors describe large kinship groups living together and sharing consumption decisions (Bonnefoy 1916; Timberlake 2007). While the Overhill Towns along the Little Tennessee River, including Chota, were decimated by smallpox epidemics and destroyed by the American forces during the American Revolution, traditions of extended, matriarchal households proved to be tenacious enough to survive in Cherokee society into the 20th century (Stremlau 2011).

The construction of the Tellico Dam in 1979 at the confluence of the Little Tennessee and Tennessee rivers inundated thousands of acres of land along the banks of the Little Tennessee River. In the 12 years preceding the completion of the dam, the Tennessee Valley Authority and the National Park Service contracted with the University of Tennessee to survey the affected area for sites of archaeological interest and mitigate them to the extent possible. From 1969 to 1974, large-scale excavations were undertaken at the location of Chota-Tanasee (40MR2/40MR62), the mother town of the Overhill Cherokee villages in the 18th century before it was attacked and burned by the American forces during the Revolutionary War (Hatley 1993). These excavations uncovered the remains of 34 domestic structures making up at least 16 distinct compounds, in addition to several public buildings and over 100 human burials (Schroedl 1986).
In order to contextualize the buttons from these households, I also examined the other contemporaneous Overhill Cherokee towns which were excavated during the Tellico project, including Tomotley (40MR5), Toqua (40MR6), and Citico (40MR7), or during earlier excavations, including Tallassee (40BT8).

The historians associated with the Cambridge Group for the History of Population and Social Structure have demonstrated that the small, nuclear family, consisting of two parents and their unmarried children, has an unexpectedly long history in Northwest Europe (Hajnal 1965). This “European Marriage Pattern,” wherein most households consisted of simple, nuclear families with only a few complex, extended families, has been found in census records in England, France, and the Netherlands going back to the medieval period. This pattern is also apparent in the English colonies on mainland North America, once the initial demographic disruption of colonial settlement in the 17th century ran its course (Hajnal 1965; Carr and Walsh 1977). The colonists who lived in Brunswick, a colonial port town on the Cape Fear River in the colony of North Carolina, were no exception (Lee 1965; South 2010). English colonial households in Brunswick Town generally consisted of simple, nuclear families.

Large scale excavations were undertaken at Brunswick Town by Stanley South in the 1950s and 1960s, including four lots owned by Euro-American colonists along the waterfront. These properties: the James Espy House (31BW376**S8), the Leach Jobson House (31BW376**S9), Nath Moore’s Front (31BW376**S10), and the Judge Maurice Moore House (31BW376**S11, S15, S20), were occupied in the third quarter of the 18th century before being abandoned after the Revolution (South 2010). In the late 2000s, archaeologists returned to one of South’s partially excavated sites (31BW376**N29), and were able to define two more structures occupied by colonial households (Gabriel 2012; Gabriel 2013; Beaman and Melomo 2016). In
addition to these domestic sites, South dug at a public house (31BW376**S25) and the Brunswick Town Courthouse (31BW376**N7) which I added to my dataset in order to better define nature of the Brunswick button market.

**Button Data**

Individuals in each of these three areas had access to mercantile networks that spanned the Atlantic Ocean, providing them with a range of European, and especially British, manufactured goods. By the 1740s, small country stores, specializing in selling to small farmers and enslaved laborers were popping up all over the Virginia Tidewater (Martin 2008; Breen 2013). Archeologists and historians have shown that enslaved African Americans were able to sell produce raised in their gardens or gathered from the woods for small amounts of cash with which they could buy finished goods from stores and merchants (Heath 1997). Finally, by the mid-18th century the Overhill Cherokee were heavily involved in the fur trade, exchanging animal skins with British merchants for European commodities brought up from shops in Charleston and Augusta (Adair 1930; Hatley 1993).

These trade networks brought copper-alloy buttons manufactured in English workshops to consumers in all three of these places, facilitating their comparison. The process of refining copper from raw ore and alloying it with zinc in the 18th century was expensive and required specialized equipment, so button manufacturers purchased pre-refined brass from large copper foundries, which at the time were mostly located in and around the city of Bristol (Hamilton 1967; Day 1973). The expense and political pressure against importing raw material to the North American colonies prevented brass button makers from practicing their craft at any significant scale in the American colonies until the 19th century (South 1964; Noel Hume 1969). Thus, the
vast majority of brass buttons found on 18th-century archaeological sites in North America were manufactured in Europe, and typically in England.

The fact that physical attributes of the artifacts were determined by their producers in Europe, not their consumers in North America, justifies the use of the same set of qualitative and quantitative measurements to capture information from artifacts found at each locality in this analysis. However, consumers living in the same locality acquired buttons from a pool of objects with physical attributes that varied according to the nature of the mercantile network to which they had access. By gathering a dataset of hundreds of buttons recovered from contemporary archaeological sites in and around each locality, I reconstructed the range of variability in button attributes available to consumers in that locality. Each locality had a unique mix of buttons which varied according to the desires of local consumers and the nature of its mercantile connections to England (Figure 2). These data allowed me to determine how common or uncommon any individual button’s physical attributes were. Contextualizing buttons and/or assemblages of buttons in terms of their availability at local marketplaces allowed me to perform two analyses: first, an analysis of household assemblages, and second, an analysis of consumer constraint.

Data Analysis

Household Assemblage Analysis

Before I could examine the extent to which household complexity affected consumer constraint, I first had to define which buttons were associated with each household. Anthropologists have noted that households and domestic structures do not have a direct relationship. Since households are defined by their corporate ownership of resources and distribution of production tasks, co-residential groups may only represent a part of a household,
Figure 2: Relative Percentage of Button Manufacturing Styles at each Locality
or they may represent many separate households (Bender 1967; Hammel 1984). Therefore, an archaeology of households must take a multi-scalar approach to the identification of household groups and investigate the extent to which resource pooling took place at different loci (Anderson 2004). I use one such analysis in this study.

First, I defined a series of loci of potential household behavior based on the architectural features found at each domestic structure which historical, anthropological, and archaeological researchers have determined were important to household groups in each society examined in this study. Next, the spatial relationship between each archaeological context that contained buttons and each of these household loci were examined using GIS software. Finally, an attribute analysis, specifically examining variation due to difference in market access, was used to determine which groups of buttons were more similar to one another, and therefore were likely acquired from the same set of sources. The material makeup of each button, defined through pXRF analysis, was used as the sourcing variable in this analysis. Using this method, assemblages of buttons which were associated with the same household loci and also had similar patterns of material makeup, when compared to the overall variation in each local marketplace, were defined as likely associated with the same household group.

Consumer Constraint Analysis

Once household assemblages were defined using this methodology, the analysis of public qualities, to test the research question described above, was undertaken. The crux of my analysis rests upon interpreting the degree to which a consumer’s ability to choose the commodities he or she desired was constrained by societal factors, particularly household complexity. I quantified the dispersion of household assemblages within the universe of locally available variability as a proxy for consumer constraint. The more constrained an individual’s consumer choices are, the
more similar the objects they acquire will be to other households from the same locality laboring under the same factors, when compared to the overall amount of variability in the local marketplaces. Therefore, the dispersion of household assemblages within each group is a proxy for the amount of constraint the individuals in the group were under. Given the expectations of household complexity for each of the four social groups used in this analysis, there are testable implications for the household assemblages, as determined through household assemblage analysis, of copper-alloy buttons found at sites in these three localities. Using these data, I sought to either support or refute the importance of household complexity as a factor that influenced the rise and spread of consumerism in the 18th century and provide archaeologists with a generalizable method for comparing the internal dynamics of multiple households.

**Hypotheses**

To determine if household complexity serves to constrain consumer choice, data was collected to support or reject two specific, testable hypotheses. The first hypothesis tested whether household complexity is the most significant factor to constrain consumer choices.

**Hypothesis 1:** Household button assemblages associated with groups with less complex households (post-Revolutionary Williamsburg and Brunswick) are significantly more dispersed from one another than button assemblages associated with groups with more complex households (pre-Revolutionary Williamsburg and Chota).

If hypothesis 1 was rejected than I would test hypothesis 2:

**Hypothesis 2:** Household complexity is an informative explanatory variable in a multivariate linear model of household dispersion.
If hypothesis 2 was accepted then this study would demonstrate that household complexity has an effect on consumer constraint, but that other factors, specifically if the household is enslaved or free and the social status of household members, have more significant effects. If hypothesis 2 was rejected then I was not able to demonstrate the theorized relationship between increasing household complexity and increasing consumer constraint.

Outline

This dissertation is divided into two sections, the first focusing on the background research that was necessary to develop and complete this analysis, and the second focusing on the analysis itself. The first section begins broadly and becomes more specific. Chapter 2 will discuss the theoretical background of this analysis and provide a literature review of the scholarly analysis of consumerism and households. As part of this chapter I situate this study within the current landscape of archaeological theory as well as the broader humanistic examination of these two important themes of human behavior. In chapter 3 I focus on the manufacture of copper-alloy buttons in the 18th century, and the way that the physical attributes of the raw materials used in this trade shaped the scale and organization of the manufacturers in England. I then explain how I used this research to guide the measurements and attributes that I captured during my data analysis. Finally, in chapter 4, I refine my focus further to the three specific localities from which I drew this analysis. I examine the history of each locality over the course of the 18th century, describe the nature of mercantile connections which allowed inhabitants to acquire buttons from British manufacturers, provide detailed explanations of the size and nature of the households that I examined, and provide a cursory analysis of the adornment practices the individuals in each locality were exposed to with regards to buttons.
In the second section of this dissertation, I describe the analysis that I performed and discuss some of the implications of my results. Chapter 5 examines the methodology that I used to perform my analysis. In this chapter I describe exactly how I performed the household assemblage analysis and consumer constraint analysis as well as providing the theoretical justification for measures and statistical analyses I used as part of these methods. In Chapter 6 I describe the results of my analysis. First, I provide a map of the spatial extent of each household assemblage that I defined using the household assemblage analysis, and then I describe the results of my consumer constraint analysis. Finally, in chapter 7, I conclude this study by examining the implications of the results of my consumer constraint analysis on my hypotheses. I also provide a discussion of the broader implications of my study for the archaeology of consumerism and consumption as well as some of the future directions for this research.
Chapter 2: Literature Review

The topics of consumerism and households have been the subject of debate and analysis in anthropology and the social sciences for decades. Of the two, consumerism is the more thoroughly theorized subject, since it is an essential element of capitalism and has therefore been the subject of considerable scholarly effort. Economists, historians, sociologists, psychologists, anthropologists and social critics of all stripes have examined the relationship between people and the things that they buy and have offered a bewildering variety of explanations for the behaviors that they observe. Households, on the other hand, are less often explicitly theorized. The household is a useful unit of analysis when examining a wide variety of questions, since it is an easily recognized, cross-cultural social grouping which often acts as an interface between individuals and society. However, researchers who have explicitly set out to examine the household have found their attempts to define this seemingly obvious social grouping stymied by the fluidity of forms that households take in practice. In this chapter I will provide an overview of the history of the scholarship concerning each of these subjects, how archaeologists have applied these theoretical developments to their unique datasets, and how my own research engages with the questions scholars are currently investigating.

Consumerism

While consumerism and consumption have been topics of interest for social scientists throughout the 20th century, different fields theorized the consumer and attempted to probe consumer behavior from different perspectives with relatively little cross-disciplinary conversation. It was not until the 1980s that a specific field of material culture research was developed in order to bring together cultural anthropologists, archaeologists, historians, economists, sociologists, art historians, geographers, and psychologists under a unified, though
still fairly loose, theoretical framework. The material culture framework, unlike earlier approaches, was based on a positive reading of consumption and consumers, arguing that consumption is, or at least can be, an arena of creative and meaningful self-discovery and liberation. Since the heyday of material culture research in the mid-to-late 1990s, scholars have both drawn back and surged forward, with the rise of *materiality* as an explanatory framework both constraining some of the more radical post-modern interpretations of “artifacts-as-text” while at the same time emphasizing the essential nature of objects in the creation of the human subject.

**The Scholarship of Consumerism**

*The Many Branches of Consumerism Research (1900-1980)*

Until the late 1970s, anthropologists generally avoided studying consumerism, due to both the conception of the discipline as focused on primitive, rather than modern, cultures and the reaction against the evolutionary paradigms created by late 19th-century material culturists mostly associated with museums. The evolutionary theorists, observing collections of curios acquired by European explorers and colonists, argued that cultures had a number of hierarchical stages of technology and craft which they passed through as they moved from primitive to civilized (Hicks 2010). Similar explanations were used by European archaeologists to sort European pre-historic societies into stone, bronze, and iron ages (Kehoe 2013). These anthropologists assigned themselves the most “primitive” cultures, with the least advanced objects, to study. Commodity exchange and consumerism were placed firmly in the “civilized” phase of human existence and were therefore topics left to other fields of study.

Both the British structural-functionalists and American cultural relativists of the early 20th century firmly rejected evolutionary explanations, putting primacy on arenas of social
relations which all cultures shared and emphasizing ethnographic methodologies of knowledge production, which had the effect of minimalizing the importance of material things (Miller 1987; Hicks 2010). Both of these schools of thought, when called upon to examine the exchange of material objects, turned to the work of Marcell Mauss, a French sociologist who in 1925 published an essay on the nature of gift giving. Mauss (1990), argues that all gifts are given with the understanding that the receiving party is required to reciprocate at some point in the future. This required reciprocation serves to create solidarity between the gift giver and gift receiver, linking a single act of exchange into a complicated web of past and future actions and binding members of societies together. Gifts, under Mauss’ definition, had little to do with the objects themselves and much to do with the interpersonal relationships and social structures that made up cultures, fitting well into both the structural-functionalist and cultural relativist theoretical understandings of society. Therefore, for most of the 20th century, when anthropologists studied objects they emphasized “traditional” crafts (Mullins and Paynter 2000), and emphasized the social obligations the object represented. These objects were contrasted to modern, western, capitalist commodities which were foreign invaders pushed into traditional societies and therefore inappropriate to study (Appadurai 1986). As a result of this distinction, the scholarly investigation of consumerism was left to the other social sciences and humanities.

The consumer, as opposed to the producer, has long been a subject of interest in social science, but has rarely been portrayed in a particularly positive light. Since the 17th century, household surveys have been conducted in Europe, seeking to quantify what individuals purchased from the marketplace and in what amounts. The intent of these surveys prior to the early 20th century was to advocate for poverty relief, with data collectors primarily interested in showing how the poorest members of society were unable to afford the food and rent necessary
to sustain their lives (Stigler 1954). Therefore, studies of this type divided expenditures between necessities: those things necessary for sustaining life, and luxuries: those frivolous things that people do not need to survive. The division between necessity and luxury is also apparent in Marx’s work in the mid-19th century. Marx opens his treatise, *Capital*, with a long discussion of the nature of the commodity, leading up to the conclusion that workers bought the objects of other workers because they “fetishized” the goods and believed they had an intrinsic value, rather than seeing them, as he did, as units of materialized, alienated labor (Appadurai 1986; Miller 1987). For both the social crusaders taking household surveys and the Marxian thinkers, any consumption beyond those things necessary to sustain life was an unnecessary waste.

The negative tone of consumer research culminated in Thorstein Veblen’s (1899) classic study, *The Theory of the Leisure Class: An Economic Study of Institutions*. In this book Veblen introduced the idea of conspicuous consumption, which has prevailed as the primary explanation of why modern consumers choose one object over others ever since. Veblen, looking in disgust at the practices of the East Coast *nouveau riche* during the Gilded Age, argued that all consumption is driven by the desire of consumers to demonstrate the amount of time and money they can afford to waste on leisure activities. He argued that in all civilized societies, productive labor is de-valued and associated with poverty, whereas leisure, the unproductive use of time and effort, is the privilege of kings and elites. This argument dovetails well with the division between the consumption of necessities and the consumption of luxuries, as well as the associated connotation between luxury and waste. He argued that all individuals seek to emulate their betters, and that the top rung of society continuously invents ever-more-elaborate consumption rituals in order to demonstrate their distinction from the others. Thus, his explanation for the ever-changing demands of fashion among modern consumer societies was that only the most
elite members of society have the time and money to waste on the most cutting-edge of fashion and therefore they are incentivized to “keep up” with it in order to prove their social standing. Each lower class then conspicuously consumes as far as they are able, elbowing each other in their haste to climb the social ladder.

While critical social theorists like Veblen continued to hold the relationship between people and commodities in a negative light, the newly formed nation-states of the early 20th century sought to increase consumption. An attitude of progressivism, holding that it was the purpose of government to improve its populace using scientific methods, reached its peak in the early 20th century (Kreshel 1990; Bashford and Levine 2010). Governments hired sociologists to produce household expenditure surveys, transforming them from an explicitly political exercise to advocate for poverty relief to an instrument the nation-state used to understand its populace (LeeDecker 1991). Seeking to keep up with the modern movement, economists and psychologists sought to refocus their disciplines on using empirical scientific methods to investigate laws of human behavior, with the explicit purpose of engineering better societies (Martin 1993).

Veblen, like many other economists of the time, relied upon “inner observation” as a principle methodology of his research. This methodology, borrowed from psychology, involved the author observing his own psychological reaction to stimuli and was critiqued by economists in the early 20th century as being insufficiently empirical. By the 1930s, the field of economics had (mostly) rid itself of psychological, feelings-based, examinations of consumer choice, preferring instead to examine preferences by counting or measuring the choices consumers made between products (Hands 2010). In doing so, economists turned their attention away from attempts to explain why individuals consumed and instead focused on patterns of consumer
behavior, attempting to create laws and models that could be used to predict behavior and therefore set government and corporate policy (Douglas and Isherwood 1979). Thus, the schism between psychological and economic explanations of consumption for most of the 20th century revolved around the question of whether the consumer was primarily driven by emotion or logic when making consumption decisions.

Psychologists, arguing that consumers could be persuaded to purchase products through emotional appeals, found an eager audience for their work in advertising firms. In 1920, John Watson, one of the key proponents of behaviorism, the theory that humans were infinitely malleable based on their environment, found himself out of a job after a highly publicized affair with a student and subsequent divorce led to his dismissal from Johns Hopkins University. He was quickly hired by the J. Walter Thompson Company, one of the largest and most successful advertising firms in the world at the time, to apply his knowledge of the human brain to the problem of consumer behavior (Jansson-Boyd 2010). Though Watson’s work at the Thompson Company seems to have focused more on selling the idea of “scientific advertising” than actually doing research into consumer behavior (Kreshel 1990), he nevertheless championed the idea that consumers did not rationally select the object that gave them the most value for the least cost, but instead selected the one that appealed to them the most. Many psychologists followed Watson’s path into the field of advertising, each pushing the idea that the newest forms of psychological research could be used to better understand the mind of the consumer.

In the mid-20th century the reason versus emotion debate intensified. The ascendancy of Keynesian economics further cemented economists on the rational side of the debate, just as the injection of Freudian theory into advertising psychology emphasized irrational consumer motivations. Economists of the time were primarily interested in the production side of the
production > exchange > consumption process. Their interest in the actions of the consumer began and ended at the moment of market exchange, and the overriding question of “if you produce it, will they buy it and for how much” drove their research (Douglas and Isherwood 1979; Martin 1993; Gibb 1996). These macro-economists drew upon Adam Smith’s conception of the rational, self-interested individual to construct *homo economist*, the everyman who would always rationally act in his own self-interest to get the most value for the least cost. For the rational, all-knowing consumer, purchasing decisions were simply a function of interacting supply and demand curves, and for neo-classical economists, the primary division in consumer goods was between necessities, which had inelastic demand curves (changes in price have little effect on demand), and luxuries, which had elastic demand curves (changes in price have a large effect on demand) (Douglas and Isherwood 1979; Appadurai 1986). The assumption of this theoretical perspective was that any luxury could be substituted for any other luxury since it was the value of the object, not the object itself, which consumers desired.

Post-War psychologists similarly dismissed the object itself as the focus of consumer desire, but they argued that it was the deep-seated subconscious structures of the brain, not rational valuations, that led consumers to choose one good over another. This new, Freudian-based consumer psychology was known as motivation research. Utilizing a new set of techniques, practitioners sought to deduce the unconscious, emotionally-based symbols that motivated individuals to purchase one object over another (Jansson-Boyd 2010). One of the preeminent proponents of motivation research, Ernest Dichter, argued that consumers were inherently irrational and that appeals to emotion and subliminal advertising could be used to sway their decision making (Samuel 2010). For the motivation researchers, every object
symbolized an unconscious desire and through savvy marketing producers could tap into those desires to sell their products.

Critical theorists of the post-war era rejected the emotion versus reason debate by reaching back to Veblen and Marx and the negative view of human-object relations. In 1958, at the height of both Keynesian economics and Freudian market research, John Kenneth Galbraith published his opus *The Affluent Society*. Galbraith, a professor of Economics at Harvard, argued that once individuals have enough necessities to satisfy their basic needs, producers and advertisers cultivate desire for unnecessary luxuries in the minds of consumers by telling them that owning material things would increase their happiness. However, his research found that increasing material wealth, or affluence, was not linked to better well-being (Galbraith 1969). Though Galbraith’s tone towards material goods was not as negative as Veblen’s, he similarly viewed consumer behavior as a unique plight of the modern man and consumption as primarily driven by status-seeking social climbers. An instant countercultural hit, Galbraith’s work exemplifies the perspective of a variety of historians, sociologists, and critical economists who in the mid-century published works which implied that before producers and advertisers induced consumerism, there existed a pure, pre-consumer who only sought to acquire necessities (Schor 1998; Schor 2007). Work such as Galbraith’s inspired social historians in the 1960s, seeking to critique the American lifestyle of their time, to look for self-sufficient anti-consumers along the frontiers of pre-industrial America (Martin 1993; Martin 2008).

Therefore, for the better part of the 20th century, most scholars of consumerism, despite their differences, saw consumption primarily as the end-product of production. It was taken as a given that the desire to consume as much as possible was an essential element of humanity which recent industrial development had allowed producers to exploit. Consumers, whether rational
value-maximizers, irrational symbol-followers, or duped status-seekers, had little ability to define what they wanted, but simply acted in accordance with the laws of human behavior and therefore eagerly threw their money away on frivolous luxuries the moment they had accrued enough material wealth to avoid starvation. A savvy capitalist producer, once informed about the patterns of consumer behavior, could induce desire for any given product; the actual object itself did not matter. However, key developments in the early 1980s suggested that consumers were more active participants in consumerism than these early scholars believed, leading to the construction of the first unified theory of material culture across the social sciences.

The Material Culture Consensus (1980-2010)

In 1979, Mary Douglass, a cultural anthropologist, and Baron Isherwood, an economist, wrote a book which set out a new, positive tone for studies of consumerism. Drawing upon Bourdieu’s theories of habitus and distinction (Bourdieu 1984), Douglass and Isherwood argued that rather than only being a way to seek out value or status, consumption could be about communication and solidarity within social groups. They found that consumers were active in using commodities to reify social identities, often in ways the original producer of the good never intended (Douglas and Isherwood 1979). The value of this perspective is that it put to rest the rational versus irrational consumer debate. Both neo-classical consumption models and Freudian subconscious motivation research assumed that consumers acted in a social void according to pre-determined and universal patterns. However, if the primary purpose of consumption is to communicate with others, then consumption decisions are dependent upon the message an individual sought to send to a specific audience at a specific time and cannot be generalized across societies or found within the mind of a single individual. Additionally, since communication and the creation and maintenance of social identity are essential aspects of
human behavior, Douglas and Isherwood demonstrated that the divide between necessities and luxuries is more complicated than social scientists had assumed. Consuming an object with no obvious utilitarian value can be a necessity if doing so is essential to creating and projecting an individual’s self-image in a social sphere.

From this point on, the anthropological literature about consumption expanded dramatically. Arjun Appadurai (1986) argued that prior work by anthropologists had overstated the dichotomy between commodities and gifts, showing that when considered in the context of the entire life of an object, from production to destruction, the moment of consumption is merely one point when the meaning and value of the good is emphasized. At other moments even the most alienated commodity can be used to represent and reinforce intimate social relationships. Additionally, Appadurai points out that the desire to consume is not a universal human trait, that there are societies where the increase of social status and the increased consumption of material goods are not co-occurrent. By taking an anthropological view of consumption as a social behavior not simply limited to modern, western society, cultural anthropologists such as Douglas and Appadurai found that it could be described as one of many potential methods of social communication.

Building upon this work, Daniel Miller (1987), a British cultural anthropologist, set out a new research agenda for the study of “material culture” wherein objectification is the emphasis of research. Miller defined objectification as the process by which a subject progressively defines itself by opposing itself to an object before reconciling that object as part of itself. The importance of Miller’s theory of objectification is that it did not give primacy to objects or subjects; therefore material culture was not simply the result of cultural processes but was an essential part of them. The study of a person’s material surroundings, Miller argued, was the
study of a person’s identity, the way they construct themselves and choose to display that construction to the world. Moreover, Miller’s emphasis on the positive, self-creative nature of consumption flew in the face of Marxist theory, which saw all consumption (except perhaps at the uppermost levels of society) as a way for capitalists to reinforce their unequal access to resources. Miller argues (in the direct aftermath of the fall of the Berlin Wall) that critical theorists who seek to re-shape society must consider the alluring power of consumption not only as an ideology to be exposed but as a method of self-emancipation to be supported. Around the same time, Ian Hodder began to argue that since objects were imbued with symbolic meaning, in the same way text was, then archaeologists, like literary critics, had to accept that artifacts had no inherent meaning that could be intuited from the object itself (Hicks 2010). The multi-vocality of artifacts meant that the same object could represent a multitude of identities, or a different identity to each observer.

Around the same time, English economists and historians complicated the previously-assumed relationship between production and consumption by showing that the industrial revolution was preceded by a significant increase in household consumption in 18th-century England. In *The Birth of a Consumer Society: The Commercialization of Eighteenth-Century England* Neil McKendrick, John Brewer, and J. H. Plumb (1982) drew upon a variety of documentary sources to demonstrate that, in contrast to the assumptions of neoclassical economists, Freudian psychologists, and cultural critics alike, consumerism in 18th-century England was driven by consumers, not producers and/or marketers. McKendrick’s (1982) section of this publication draws upon Veblen’s social critique to explain this phenomenon as an innate desire to emulate the upper crust which was facilitated by rising wages, urbanism, and the uniquely gradual gradient of English classes during this historical era rather than engaging with
an anthropological view of consumption. While McKendrick’s explanation has been critiqued by a number of scholars (Shammas 1990; Martin 1993; De Vries 2008), this book was foundational in demonstrating that there was, in fact, a “consumer revolution” in 18th-century England, wherein manufactured goods were purchased in an ever-greater amounts by large sections of English society, putting an end to the search for an anti-consumer in the past.

The idea that consumption is an essential aspect of modern identity-making was by far the most well accepted part of the “material culture” argument. While Miller’s objectification argument was based in abstract philosophical tenets which were difficult to grasp and even harder to apply methodologically, the idea that who we are is based on what we buy proved useful to a variety of scholars from diverse fields. Historians drew upon the idea to show how the mass political mobilization of the American Revolution was based upon commonalities of consumption and the solidarities materialized in consumer boycotts (Breen, 2004). Consumer psychologists used the concept, along with their concern with mental health, to argue that feelings of belonging are central to an individual’s positive self-conception, and therefore consumption activities which emphasize social connections or positive social distinction (difference from others who are conceived as bad) can be an essential method of creating and maintaining a stable mental image of one’s own personality (Gal 2010).

*The Material Turn (2010-Present)*

In the last decade or so theorists, especially cultural anthropologists and archaeologists, have argued that rather than study “material culture” we should study “materiality.” Drawing upon the ideas of philosophers, particularly Bruno Latour, materiality theory argues against the persistent bias in scholarship towards human-centric, and particularly mind-centric, ontologies of human behavior (Latour 1993). These scholars recognize that humans can only exist in their
relationship with things. As Ian Hodder argues in the introduction *Entangled: An Archaeology of the Relationships between Humans and Things* (Hodder 2012):10:

“imagine a human growing up deprived of all external stimuli […] suspended (but with no strings) in darkness, without sound, food, water, without things and people. If it was possible to keep such a being alive, my argument is that it would have no thought, no feeling – it would not develop as a human.”

Physicality, these theorists argue, is an essential element of humanity. The relationships between the human subject and non-human objects are actually central to the human subject and cannot be meaningfully distinguished from it.

One of the key insights of the material turn is that the physical world is not infinitely mutable by humans, but instead has its own temporalities and characteristics which no amount of re-interpretation can change (Hicks 2010; Olsen 2010; Hodder 2012). Unlike text, objects cannot be imbued with infinite symbolism because they have their own physicality which stubbornly resists human agency. Therefore, any study of human behavior must focus not on objects or subjects, but on the complex web of relationships which bind them together.

In response to these critics, Miller (2010) has refined his own views to argue that materiality and immateriality have a dialectical relationship with one another. Unlike his rather clunky definition of objectification, the material-immaterial dialectic is much more elegant and easily applied. In essence, all immaterial social relationships (religion, family, labor) are founded in and dependent upon material things while all material things are imbued with immaterial symbols and meaning. Neither materiality or immateriality precede the other and they can only be defined in terms of one another. For Miller, the implication of the material-immaterial
dialectic to the scholarship of consumerism is that there is no inner person (whether driven by emotion or by reason) who is represented by objects that they consume but instead a multitude of social persons who are shaped by the objects they use to represent themselves within particular social contexts. By re-centering the analytical focus on the relationships between objects and their use in social situations by human actors, the materialist scholarship of consumerism has fully rejected the early 20th-century approach to consumption, which reduced all objects to either necessities or luxuries and sought to map out the universal human mind, in favor of highly-contextual analyses of material-immaterial relations.

**Archaeological Consumerism**

Throughout this process, archaeologists have played a surprisingly marginal role, despite the centrality of objects to their scholarship. Historical archaeologists in particular have typically been theory consumers rather than theory producers, drawing upon other fields’ ideas of consumerism to explain the particularities of their sites rather than attempting to contribute to a unified understanding of the process. I argue that we should take greater advantage of our unique data set, physical artifacts in context, to investigate both the important role consumption has always played in human societies and the unique, infinitely complex nature of modern consumerism.

The first explicit analyses of consumerism by historical archaeologists took a highly processual approach. In 1987, the same year Daniel Miller published his theories of objectification, a volume of historical archaeological research on consumer behavior, edited by Suzanne Spencer-Wood, was published in America, marking the high-water mark of processual studies of consumerism. In her introduction, Spencer-Wood (1987) set out the research agenda for consumer behavior studies. Specifically citing Binford, she argued that households consumed
objects, particularly ceramics, in accordance with several interacting social factors, primarily socioeconomic status. Thus, it was the preview of archaeologists to use middle-range theoretical methods to identify these factors by observing the archaeological record. The most common way to do so was to create a pattern of consumer behavior variation along socioeconomic lines (not unlike Stanley South’s (1978) pattern analysis) by comparing frequencies of different types of artifacts found at different households to the status of the head of household, as determined by documentary evidence. George Miller’s CC index (Miller 1980), which ranked the price of ceramic dishes in relation to the cheapest type (plain cream-colored ware) over the course of the 18th and 19th centuries, was instrumental to the rise of consumer behavior studies because it provides a consistent baseline to compare household expenditures on ceramics to one another. This approach, using large databases full of multiple sites known through documentary records to vary along socially meaningful axes, was the hallmark of the processual approach to consumerism in historical archaeology.

This sort of analysis was initially unable to stand up to the post-processual critique. Critics argued that these consumer behavior studies generalized artifacts by giving them a static, uniform meaning which was directly related to their market price. They argued instead that only contextual analysis could demonstrate the meanings an artifact could have to a consumer (Howson 1990; Beaudry, et al. 1991). Others critiqued the household-focused nature of these early consumer behavior analyses. Feminist archaeologists criticized their emphasis on the household as a single, undifferentiated unit, arguing that gender and age differences played critical roles in shaping consumer behaviors (Beaudry 1999). Others pointed out that they failed to take into account the effect of household cycles, the growth and division of households over time, on consumer choices (Groover 2001; Heath 2004). Finally, others critiqued the use of
bounded individual households as limiting and not representative of the archaeological record or the variety in human social experience (Voss 2008). Even more importantly, though not part of the initial post-processual response, was that these studies only considered consumer choices, not consumerism, and therefore only really focused on the moment of transaction rather than the whole life-process of an object or the social structures which shape and are shaped by the processes of production, exchange, and consumption (Martin 1993; Majewski and Schiffer 2009).

Historical archaeologies of consumerism in the 1990s and the first decade of the 2000s therefore focused mostly on comparing artifacts found on particular sites to broader networks of production, exchange, and consumption represented in the documentary record. For example, in her book examining the Calvert house in Annapolis, Anne Yentsch (1994) is able to pick out the choices enslaved African American women made when dressing themselves or cooking food as part of the household by comparing artifacts found at the site to a wide variety of documentary records associated with Annapolis, Maryland, and the wider Atlantic World. She uses these resources to examine the ways black women asserted their identities, even in the face of the depersonalizing nature of chattel slavery. Eleanor Casella (2013) terms this type of study of consumerism as arising from Actor-Network Theory (ANT) as applied to archaeological data. Her own studies of women in 19th-century Australian prisons examine the ways that broad global processes, such as the interruption in the British Empire’s cotton textile trade caused by the American Civil War, are represented in the sewing artifacts that she found on her site. This type of post-processual consumer behavior study, eschewing comparative research to situate archaeological finds within global processes and local networks, often in search of how individuals used artifacts to define their personal identities, is only possible in times and places
when there are enough historical records to support such an analysis (Wilkie 2000; Silliman and Witt 2010). While archaeologists of the Old World are increasingly drawing upon consumerism frameworks to interpret sites, they are usually forced to rely on comparative methods to explain consumer choice (Dietler 2010; Walsh 2013).

In the last few years, large scale, comparative studies of consumerism have regained popularity in historical archaeology, due in large part to the creation and maintenance of large databases of archaeological data such as DAACS (Heath 2017). For instance, Jillian Galle (2010) uses statistical comparisons and evolutionary theory to argue that some enslaved households in 18th-century Virginia utilized costly signaling strategies by buying particular types of consumer goods from the marketplace. Key to her analysis is the argument that statistical methods can be used to compare consumer behaviors between different spatial/temporal contexts without ignoring the unique context of each act of consumption. Archaeologists have begun to draw upon new methods developed to analyze and understand large data sets, such as network analysis, to examine consumer behavior in a comparative context (Blair 2017; Babin 2018). This new approach re-centers objects, rather than networks, as the methodological basis of consumerism research in archaeology.

**Implications for My Own Research**

While I agree with the post-processual critique of the early processual consumer behavior studies, I find comparisons between households to be a very useful method of understanding patterns of consumer choice. If, as I argue above, taste is defined as the selection of a particular variant out of many, then understanding the choices available to a consumer is essential to understanding their taste. While documentary records are necessary for contextualizing these choices, I argue that contextualizing artifacts within the archaeological record is equally
important. By this I don’t just mean where the artifact was found within the site and what other artifacts were found with it, but also where similar artifacts were found in related sites and what artifacts were found with them (Schweickart 2019). Moreover, not only do artifacts persist, their attributes persist. The physicality of artifacts can be compared between sites/regions, or with modern equivalents created through experimental archaeology. Such analyses are necessary to truly contextualize how an object was used. These sorts of studies are the best way for archaeologists to contribute unique data, not available to any other field, to the broader cross-disciplinary study of consumerism.

Additionally, my research is informed by the modern debate over the historical origins of modern consumerism and the reasons for the consumer revolution. For many scholars drawing upon Veblen, consumption is first and foremost a competition wherein one seeks to outdo one’s neighbors as they reach for the next rung of the social ladder. These conceptions of a static, hierarchical class system are simply not supported by most recent research on consumption and identity (Shammas 1990; De Vries 2008; Martin 2008; Hodge 2014; Schweickart 2014). These scholars emphasize that for lower-class consumers, purchasing whatever new, fashionable good which was available was not an effort to achieve a higher social class, but instead a statement of the personal taste that they had already cultivated. Taste is choosing one option out of many, not slavishly copying the things of the next rank up. Interestingly, according to consumer psychologists, believing that you are consuming things that are different from others promotes a positive self-image when you believe you are distinct from the others, but it promotes a negative self-image when you believe you are the same (Jansson-Boyd 2010). Therefore, it would make sense that upper-class individuals would interpret similar consumption choices by those they see as lower-class as an attempt to emulate them, while those same choices would be interpreted by
the lower–class individual as demonstrating solidarity and refined taste. My research seeks to define consumer choice as self-creation within a constellation of different social groups and identities rather than in a strictly hierarchical, wealth-based class system.

Households

Scholars have long recognized the importance of the household as a social group. Some of the first sociological and economic surveys used households as their unit of study (Stigler 1954). In fact, the word “economics” is derived from oikos, the ancient Greek word for household. The field of Home Economics, which was formalized in the early 20th century in order to improve the productivity of rural households by educating young women about household tasks, is entirely devoted to the study of households (Niehof 2011). Until the middle of the 20th century, scholars in these fields defined households as a discrete, bounded group which articulated together as part of larger society (in a structural functionalist sense), and were delimited by each analyst according to their own common-sense understanding of the term (Ellickson 2008; Niehof 2011).

It was not until the 1960s that scholars in the humanities and social sciences began to try to define exactly what a household was and was not in a cross-cultural sense. This spurred, for a time, a cross-disciplinary interest in household studies, initiated by the Cambridge Group for the History of Population and Social Structure. However, after this brief convergence, household studies splintered as economists, sociologists, historians and anthropologists each took the core findings of this group, along with their many critiques, and applied them in different ways to their own subjects of interest. Therefore, the narrative of the history of household scholarship is the reverse of the narrative of the scholarship of consumerism, beginning with a cross-disciplinary consensus and splitting over time into a variety of strands of thought. In this chapter,
I will focus on three particular strands which are relevant to my research, the time depth of household forms in Europe, the household formations of enslaved African Americans on North American plantations, and the way kinship structures access to resources in Cherokee households.

**The Scholarship of Households**

*Defining the Household (1960-1990)*

In the middle of the 20th century, historians and historical demographers began to trace household forms into the past. Drawing upon censuses and census-like documents, these scholars conceptualized the household as a group of people, names grouped together on a list, rather than a place. They developed a classification system for household form based on the number of members in a household and their relationships to one another (Netting et al. 1984). While a wide variety of household forms have been proposed by scholars, in general they varied between less-complex households, with fewer members and fewer types of relationships, and more complex households, with more members and more types of relationships (Laslett 1972; Hammel 1984). However, as historians brought together documents from around the world, they had difficulty coming up with a single definition of what was and was not a household which had universal relevance both among modern societies and in the past.

Donald Bender (1967), a cultural anthropologist, set out the terms of the problem. Bender pointed out that there were three types of domestic groups, defined by kinship, co-residence, and household, which often overlapped but were not always considered the same within societies. Households are not always families, since there are ethnographic examples of individuals who recognized each other as kin but were not expected to live together or support one another, and households are not always co-resident groups, since there are ethnographic examples of groups
that lived together in the same structure but did not define themselves as kin or support (or even socialize with) one another. Thus, Bender argued that households needed to be defined functionally as the group that worked together to accomplish domestic tasks, rather than categorically as a combination of kin or residence relationships.

Richard Wilk and William Rathje (1982) agreed with Bender’s functional definition of the household, but sought to define more explicitly what a domestic task was. They argued that domestic tasks could, but did not have to, include: production, distribution, transmission, and reproduction. Production is the gathering or transformation of material resources to increase their value; distribution is the exchange of objects from an individual/collective to another individual/collective either within or between household groups; transmission is the passing on of rights to resources to new individuals/collectives (usually within the context of inheritance); and reproduction is the birthing, nurturing, and socialization of new members of the society. Wilk and Rathje (1982) point out social institutions other than the household can perform some of these functions (for instance, after the industrial revolution factories came to be key places/groups which performed production activities), and in some cases households are not expected to perform one or more of these functions at all. This observation introduces vagueness into what can and cannot be considered a domestic function in a particular context, limiting the cross-cultural validity of this definition.

In response to this problem, E.A. Hammel (1984) argued that the household must be defined as the smallest emic social group that had the greatest corporate function. For Hammel both group membership and the definition of “domestic task” have to be defined by the society being analyzed, the important part for scholars to decide is which social group pooled their labor and resources the most. Despite Hammel’s uncertainty that this definition universally described
the household, it seems to have held up the best to anthropological and archaeological scrutiny (Leonetti and Chabot-Hanowell 2011; Matthews 2012). The fact that this widely-accepted definition of household was proposed in an article entitled “On the *** of Studying Household Form and Function” with the author suggesting “futility” and “impossibility” as words which would be appropriate to fill in the blank space, gives some indication of the difficulty of assigning precise definitions to these groups. While this definition has generally been accepted by modern scholars, more recent scholarship has critiqued the way households were defined in practice.

_Critiques of The Household (1990-Present)_

Robert Ellickson (2008), a professor of law, argues that the vagueness around the academic definition of household is due to the inherent vagueness and fragility of households as social forms. He points out that unlike kinship groups, where changes in group membership are marked with formal events like weddings and funerals, and inter-group disputes are settled through formal means regulated by laws and traditions, changes in household group membership tend to be much more informal and internal disputes tend to be settled internally. He argues that this flexibility enhances a household’s ability to distribute everyday domestic tasks and resources in changing environments. The fact that household membership changes easily and often is a critique leveled at early attempts to define household form which imagined households as static and unchanging (Groover 2001; Niehof 2011; Beaudry 2015). Indeed, it has been argued that it is more appropriate to conceptualized households as processes which cycle through a series of stages over time (Skinner 1997; Niehof 2011).

Additionally, feminist scholars have critiqued the early conception of households as singular units without internal divisions. They have pointed out that household decisions cannot
be simply understood as the outcome of a strategy issued by some genderless head of household, but instead must be seen as the result of negotiations between different household members (Beaudry 1999; Allison 2002; Niehof 2011). They have argued that households must be understood in terms of gender relationships both because households usually contain members who have different genders and also because, even if they do not, they play a key role in the construction of gender identities and the negotiation of gender roles and norms (Wilkie and Howlett Hayes 2006). Therefore, household scholars must seek to recognize how inter-household differences in age and gender affect both how the household as a group interfaces with other social groups and the identities and actions of constituent members.

Some Relevant Strands of Household Research

Scholars in a variety of fields have drawn upon the consensus view of household definition postulated by Hammel, as well as these common critiques of the subject, to investigate their topics of interest. Of these, I will discuss three specific themes of household analysis that are related to my dissertation research: the time depth of household forms in Europe, household forms among enslaved laborers on American Plantations, and households and the control of resources among the Cherokee.

Household Forms in Northwestern Europe

In a seminal paper, J. Hajnal (1965) noted that a particularly high proportion of single men and women at all age groups and the delay of first marriage until the mid-to-late 20s constituted a demographic trend associated with industrialized societies in the mid-20th century. While this pattern had been noted by many others, Hajnal was the first to point out that it could be traced back several hundred years in the British Isles, Scandinavia, Germany the Low Countries and France. Hajnal argued that the origin of the practice was not an attempt to keep
population growth low, as other demographers had suggested, but instead arose for economic reasons. Delaying marriage gave young single men and women in northwestern Europe time to work, typically as servants in established households, and save the capital necessary to start a new household upon marriage (Hajnal 1965; Laslett 1972; Hammel 2005). Building on this observation, Peter Laslett (1972) and the Cambridge Group for the History of Population and Social Structure argued that, contrary to popular assumptions, the simple, nuclear household had great antiquity. While much additional work has been done on the demographics of Europe since this time, the “European Marriage Pattern” of late marriage and simple, nuclear households is apparent in the documentary records since at least 1600 (Skinner 1997; De Vries 2008).

North American Enslaved Household Forms

There have been a number of attempts to understand the demography of North America’s enslaved population in the 17th, 18th, and 19th centuries. An early example, Herbert Gutman’s (1979) treatise, The Black Family in Slavery and Freedom, responded to sociological work that argued African American families were in a “state of chaos” due to the repercussions of slavery. Gutman drew upon census and plantation records to argue that enslaved laborers throughout the American South mostly lived in “double-headed” nuclear families, and had a consistent demographic profile that was shaped by their African heritage. More recent work has found that in contrast to Gutman’s broad pattern, demographic trends amongst enslaved communities were highly regional in America. For instance, enslaved populations in Jamaica and the northern British colonies had negative population growth (Dunn 2014), enslaved groups in the South Carolina/Georgia lowlands grew slowly due to the rampant spread of infectious diseases (Morgan 1998; Pargas 2010), while the enslaved population in the Chesapeake grew steadily from the start of the 18th century to the American Civil War. Therefore, in order to identify the
household forms of enslaved laborers in the Chesapeake, scholars have taken an inter-regional comparative approach to identify factors, both universal and unique to the region, which affected an enslaved individual’s household membership.

For instance, much scholarly attention has been focused on the “abroad” marriage practice which was uniquely popular in the Chesapeake. From at least the early 18th century, a large number of enslaved men and women in the Chesapeake were partners in marriages between individuals who were owned by different people (Gutman 1979; Morgan 1998; Chambers 2005). Men involved in abroad marriages were often given blanket permission to leave their owner’s plantations to visit their families on particular days. Nineteenth-century commentators, both enslaved and free, stated that enslaved men preferred abroad marriages because it gave them an excuse to leave the plantation (Chambers 2005). However, the size and complexity of enslaved households throughout the American South was dependent upon the decisions and life-cycle status of plantation owners.

Ann Malone’s (1992) book *Sweet Chariot: Slave Family and Household Structure in Nineteenth-Century Louisiana* is one of the few scholarly attempts to investigate enslaved household cycle. Malone examines the demographic information relating to the enslaved population of three particularly well documented Louisiana plantations (Oakland, Petite Anse, and Tiger Island) from the 1810s to the 1860s. By focusing on these particular plantations, Malone was able to examine how important life events within the planter’s household inhibited the formation of enslaved families on their estates. For instance, Malone found that in all three cases the first generation of enslaved individuals to be forcibly immigrated to Louisiana, often from the planter’s other plantations further east, were slow to form marriage bonds or produce children. As the populations of each of the plantations aged, they began to form simple, nuclear
families, typically made from partnerships between individuals who had migrated as children and individuals who were purchased from neighboring plantations in Louisiana. This phase was marked by a sharp decrease in the number of single member households or singletons. Finally, if a community was allowed to develop without significant interference by plantation owners, multiple-family households centered around extended kinship groups began to form.

Thus, Malone’s (1992) evidence suggests that, lacking estate divisions, the enslaved household cycle should have three stages: 1) the initial founding population of singletons and single mothers with young children growing slowly until 2) the second generation began starting families and reproducing, creating a large number of nuclear families with young children which slowly evolved into 3) extended, multiple family households centered on particular surviving lineages as the children of the nuclear families began to intermarry. It is important to note that historians have disproportionately relied upon demographic data associated with wealthy landowners who owned large plantations with many enslaved laborers. Therefore this cycle should only apply in those contexts, not among the many smaller landowners with smaller enslaved communities (Dunaway 2003). Indeed, this pattern has been observed among enslaved communities on large plantations in the Chesapeake, particularly prior to the American Revolution when enslaved individuals could be legally “entailed” to a piece of property, preventing their owners from selling them without also selling the land they worked upon (Walsh 1997; Fesler 2004; Walsh 2010). This practice insulated enslaved laborers in the colonial Chesapeake from the worst effects of transfers of plantation management and enhanced the development of complex households.
One of the functions of households identified by Wilk and Rathje (1982) is transmission, the task of justifying the transfer of the ownership of resources between generations. Anthropologists in the cultural materialist tradition have argued that, prior to the development of capitalism and personal private property, association with a lineal kinship group was one of the primary ways individuals earned the rights to resources (Wolf 1982). These anthropologists divide societies into four types of kinship relationships based on post-marriage residential patterns and the importance of kin-based claims on resources: matrilineal, patrilineal, cognatic, or neolocal.

In matrilineal and patrilineal societies, kin-based claims on resources are important and membership in a descent group is either passed through the mother’s or father’s line (Ensor 2013). Co-ownership (in a truly corporate sense) of resources is based on descent group membership, so the matriarch or patriarch of a household group and their socially-recognized children and grandchildren communally own the household’s resources. An essential aspect of these societies is that the spouses of the matriarch/patriarch and their lineal descendants co-reside with them but do not gain access to the co-owned household resources, though they often get use-rights to resources (Ensor 2013). Married-in spouses are still members of their natal descent group and they may or may not retain co-ownership rights of the resources of their natal household. Thus, in these societies, some household members co-own resources while others merely have use rights to them. This practice complicates Hammel’s definition of household among matrilineal and patrilineal societies, because household tasks and resources are not shared equally but are subject to a hierarchy of ownership.
Property among the Cherokee was co-owned by matrilineal descent groups. Matriarchs, their children, and their grandchildren owned the objects that they either harvested from Cherokee territory, were given by other families, or traded with European merchants (Perdue 1998). Women were in charge of planting and harvesting crops, the primary source of food for the household, so most households consisted of several related women, as well as their spouses and underage children. Men who married into the household were given use rights to some amount of the household property but were not allowed to own it or exchange it with others and had no claim on household property if they separated from their wives, which was relatively common (Perdue 1998).

Additionally, captives taken in war were occasionally adopted into households and given use rights to property, but care was taken to only select captives that would contribute more than they consumed to the household (Perdue 1979). For instance, in the 1740s a group of Overhill warriors attacked a French ship on the Mississippi. During the raid they captured five men, four white Frenchmen and one black enslaved laborer. Each of the white men was sold to a high-status family when the war party returned to town, but none of the warriors wanted the black man, so he was set free after being captured and eventually killed when he followed the party rather than wander lost in the woods. The warriors realized that elite Cherokee families would buy white Frenchmen to adopt because they had access to valuable trade goods that they would be obliged to give to their adopted family, but the black Frenchman would be unable to fulfil his obligations and therefore wasn’t worth capturing (Bonnefoy 1916). Therefore, Cherokee households tended to be quite large and contain many different types of relationships, though some individuals had more rights to household resources than others.
Archaeological Households

Household archaeology is not a recognized sub-field within the broader discipline, in the sense that there is no specific cannon of works or a well-discussed historiography of thought. This is not to say that archaeologists have not specialized in households, nor that archaeologists have not recognized and drawn upon the wider constellation of anthropological theories of households, but in comparison to other themes, research on households has been relatively unfocused. The analytical unit of the household, defined in a number of different ways, has been used to investigate a variety of research questions, with very little agreement, or even explicit discussion, of what a “household archaeologist” does or seeks to uncover about the past.

Indeed, many archaeologists who use households as part of their research do not consider the household to be the main focus of their work, but instead draw upon some aspect of it in order to investigate questions about other topics such as identity, ethnicity, memorialization, everyday life, economic decision-making, kinship, gender, ideology, and/or social status. Archaeologists who used the term households tended to define them, implicitly or explicitly, as either: 1) the opposite (or the other end of the spectrum) of an institution, 2) the most basic meaningful unit of social organization, or 3) a key locus of identity construction and ethnogenesis. I will examine each of these concepts of the household in turn and describe how archaeological work fits into the broader theme of household scholarship.

The earliest household archaeology explicitly defined as such was carried out by Edward Thompson in the late 19th century. He sought to prove that the small mounds surrounding the Mayan pyramids were the remains of houses and that therefore the Classic Mayans lived in a truly urban society (Robin 2003). In his work, Thompson explicitly defined households against the large, public sites excavated by most archaeologists at the time, which represented political
and religious institutions. In this conceptualization, households are short-lived, secular spaces of everyday domestic life which are contrasted to institutions which are long-term, symbolic spaces of ritual and power. Beginning with Thompson and continuing to the modern day, the difference between a household and an institution archaeologically is primarily based on architectural remains. Houses are usually smaller, less-permanent, and highly regular, whereas sites associated with institutions are usually larger, built of sturdier materials, and unique.

Modern studies which define households in this way recognize the variation within the term household and are more likely to recognize a household as a place of messy, everyday life choices, unlike institutions which are places of explicit restraint and prescribed behavior. Sites with exceptional preservation, such as Pompeii and Ceren (Allison 2002), are often cited in this sort of household research as places where everyday life was suddenly interrupted and therefore can be used to provide a more complete picture of the range of activities which took place in household. The development of micro-archaeology, examining tiny artifacts, ecofacts, and chemical residues is often cited as an important development in this sort of household archaeology, allowing archaeologists to reconstruct the patterns of everyday life more completely (Souvatzi 2012; Beaudry 2015). This definition of household is entirely place-centric, focusing on the co-resident group rather than the household as a social entity. While this type of archaeology has a lot to say about household tasks, it does not necessarily seek to examine how those tasks were structured as part of a social organization.

During the height of new archaeology’s popularity among American archaeologists, several archaeologists sought to draw upon anthropological theories of households, particularly Bender’s (1967) functional definition, to anticipate patterns which could be observed archaeologically. Wilk and Rathje (1982) suggest several universal processes, including
population density, agricultural development, and ecological factors, which could be investigated by archaeologists in order to interpret the form and function of household groups in the past. The basis of this argument is that since households are the most basic unit of social organization, they are therefore the most responsive group to larger ecological and economic processes (Hirth 1993). In addition, since households are a universal human social phenomenon, households can be compared on a number of analytical scales to demonstrate how processes only observable in the long-duree affected the everyday lives of individuals in the past.

In practice, these grand processual hypotheses proved extremely difficult to test using archaeological data alone, due to the nature of the archaeological record, and archaeologists examining both the recent and distant past have generally relied upon historical documents and ethnographic accounts to explain household membership (Hirth 1993). The most-typical modern methodology to define households using archaeological data alone is to look for redundant, simultaneously used task areas. The argument is that since households are defined by their corporate nature, domestic task specialization should occur (Hendon 2000; King 2006; Marcoux 2010; Souvatzi 2012). For example, if there are two cooking hearths within a structure which artifact/ecofact evidence suggests were used for the same purpose, then the assumption would be that each hearth was used by a separate corporate household (Nash 2009). However, since waste rarely builds up evenly over time in direct relation to where activities took place, site formation processes such as trampling, biased discard, secondary midden formation, unequal taphonomic decay, and site abandonment practices complicate and confuse the archaeological record (LaMotta and Schiffer 2002). Despite this difficulty, new conceptions of households as processes, rather than static groups, suggest that the archaeological record’s diachronic
perspective may be a boon, not a liability, to interpreting household behavior (Groover 2001; Heath 2004; Prossor, et al. 2012).

Beyond the difficulties of interpreting household form and function, post-processual archaeologists, and particularly feminist archaeologists, have questioned the value of the processual approach of interpreting households as undifferentiated social building blocks (Beaudry 1999; Lawrence 2002; King 2006). These archaeologists argued that rather than reacting to external stimuli as a united whole, households were riven with gender and age-based divisions which were played out as a dialog and re-negotiations over time. Moreover, post-processual archaeologists have argued that in addition to containing individuals with different identities, households are an important locus of identity formation where everyday practices become imbued with meaning (Yentsch 1994; King 2006; Wilkie and Howlett Hayes 2006). Food preparation and consumption, socialization, dressing and undressing, and the sharing of tasks and resources all take place within the household and are areas ripe for being imbued with meaning, the creation of distinction and therefore identity.

Archaeologists studying households as a locus of identity creation and negotiation have tended to take a singular rather than comparative approach to households. They have drawn upon historic documents and ethnographic observations to discover the multivalent meanings imbued within particular artifacts and practices. For instance, in her study of Oakley Plantation, Laurie Wilkie (2000) draws upon both artifacts and documents to interpret the ways individuals within four consecutive African American households created their own identities within the larger community. She shows how the relationship between one household’s head, who worked as a housekeeper for the local White landowner, provided her with more consumer options but marginalized her within the local black community. However, Wilkie then shows how
connections between the children of the household and the children of African American field
workers created ties within the black community which lasted generations.

**Implications for my Own Research**

Archaeologists have long recognized that assuming that all of the artifacts found at or
near a domestic structure were associated with the same household is problematic. Some
archaeologists have advocated using a separate definition of households for archaeological
analyses (Nash 2009), others have argued that a careful consideration of the taphonomic
processes which effected the archaeological record of living spaces can help pinpoint household
assemblages (LaMotta and Schiffer 2002), but most have simply accepted that matching up
assemblages of objects to discrete social groups is a flawed methodological practice from a
theoretical perspective, but it is essential to comparative analyses of the past (Hirth 1993;
Beaudry 2015). In this work, I draw upon theoretical observations on the ways that households
interface with markets and shape consumer behavior to develop a method to do a better job of
matching archaeologically-recovered objects to self-defined social groups.

The recognition that households are fragile social constructions and prone to change with
little formal ceremony, as well as emic, functional groups shapes the household assemblage
analysis method I developed. Since, at any given moment, each household in a community is at a
different stage of its household cycle, a comparative archaeology of households must take a
multi-scalar approach to the identification of household groups. For example, historians and
archaeologists have identified enslaved households which occupied less than one room, a room,
a multi-roomed structure, or multiple single- or multi-roomed structures (Malone 1992; McKee
1992; Morgan 1998; Barile 2004; Battle-Baptiste 2007). Moreover, household groups are emic
constructions. Individuals recognize and explicitly participate in households according to their
own understanding of the term. Therefore, to define the spatial extent of each household in my study, I tested a series of potential households associated with society-dependent spatial loci. Hearths, being essential places of meal preparation, an almost-universal domestic task (Allison 1998; Ellickson 2008), were used as loci in all three localities examined in this analysis. However, other loci include storage spaces, legally-defined property boundaries, and burials, depending on the importance of each loci to the society in question. This method is the most appropriate means of identifying objects which belonged to the same household, rather than a co-resident group or a kinship group, in the archaeological record.

In order to determine which of the potential household assemblages defined using this multi-scalar approach most likely represented historical reality, I performed an analysis of the material nature of each group of objects. If, as Wilk and Rathje (1982) argue, consumption is an essential household task, then objects acquired by a household should come from the same range of suppliers. Members of households strategically accessed particular sources of commodities to a greater or lesser extent than their neighbors. Therefore, each potential household locus can be evaluated by the similarity of the sourcing patterns of the artifacts it is associated with, when placed in context of the overall similarity of objects in the locality. Specifically, inherent qualities of objects that vary according to their source, but are difficult or impossible for a consumer to perceive, can be used to evaluate which objects belong to which household locus. As I will discuss in chapter 5, this method has its limitations, it is unable to evaluate contexts consisting of the refuse of multiple households mixed together, and it cannot distinguish between households who have access to the same set of suppliers, but it does represent a more theoretically-sound method of connecting the archaeological record to a meaningful social grouping. By drawing upon the scholarship of households and the physical attributes of
consumer goods, I propose that archaeologists can do a better job of defining assemblages of objects which were consumed by the same household, and therefore better interpret large-scale archaeological datasets.
Chapter 3: Buttons in the 18th-Century Atlantic World

Introduction

Theoretically, the relative freedom of household constituents to acquire objects according to their tastes is evident in the physical attributes of every artifact associated with the household. However, given the number of households that it is necessary to include in this analysis, and the amount of material recovered from each site, I chose to select a single artifact type, copper alloy buttons, as the basis of my analysis. Copper alloy buttons are well suited for my purposes for several reasons. First, they are found at all three localities in large enough sample sizes to support statistical analysis, while not being too numerous to analyze in the available time. Second, copper-alloy objects are fairly stable in soils after the first layer of corrosion covers their surface and are strong enough that they rarely break into multiple pieces (Rodgers 2004), allowing for the observation of attributes that were apparent to their original consumers without having to take the time to refit fragments together. Finally, and most importantly, the vast majority of copper-alloy buttons recovered from 18th-century archaeological sites in each of the three localities I examined were manufactured in the British Isles. Some small percentage of buttons from each assemblage was likely manufactured in France, despite the best efforts of the British imperial government to prohibit their export to the colonies, but few, if any, of the buttons were manufactured in the New World (South 1964; Noel Hume 1969). Therefore, no matter where the artifacts were found in America, they were likely manufactured by the same group of individuals and firms who were in contact and competition with each other in London, Birmingham, and Bristol.

Since I could be certain that similar processes dictated the acquisition of raw materials, the manufacture of the buttons, and the transportation of the finished products across the
Atlantic, I was able to categorize all of the buttons in this analysis according to a single methodology. Drawing upon historical documentation of the button trade, the observations of material cultural analysts, and other button classification systems developed by archaeologists, I selected 24 separate qualitative features and quantitative measurements to observe from each button (Table 1). Additionally, since there were no local manufacturers of copper-alloy buttons in 18th-century North America, buttons found at each household had to have been acquired, either primarily or secondarily, through the highly-commodified mercantile networks which spanned the North Atlantic basin in the second half of the 18th century. Therefore, I could ensure that the patterns of similarity and difference between the physical aspects of copper-alloy button assemblages are highly comparable across societies who held very different conceptions of the function of these objects and the messages that their physical traits communicated.

In this chapter, I provide an overview of the historical processes which were responsible for the physical variation in copper-alloy buttons that consumers selected among in Williamsburg, Chota, and Brunswick. First, I will examine how the raw materials used to form the buttons were mined, refined and distributed to manufacturers. These processes guided my interpretation of the pXRF data from the buttons and my analysis of household boundaries. Next, I describe the various button manufacturing processes in use during the second half of the 18th century, and how the industry changed over this time period. Finally, I outline how I drew upon this research, and the button cataloging methods developed by other archaeologists, to create the classification system used in this analysis.
### Table 1: Button Attributes Captured

<table>
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<tr>
<th>Attribute</th>
<th>Data Type</th>
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</thead>
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<tr>
<td>Completeness</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Manufacturing Style</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Shank Morphology</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Domed</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Button Shape</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Decorative Technique</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Decorative Motif</td>
<td>Free Text Entry</td>
</tr>
<tr>
<td>Minor Manufacturing Flaws</td>
<td>Free Text Entry</td>
</tr>
<tr>
<td>Moderate Manufacturing Flaws</td>
<td>Free Text Entry</td>
</tr>
<tr>
<td>Major Manufacturing Flaws</td>
<td>Free Text Entry</td>
</tr>
<tr>
<td>Flaw Significance</td>
<td>Observation with controlled vocabulary</td>
</tr>
<tr>
<td>Conservation</td>
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</tr>
<tr>
<td>Post-Manufacture Modification</td>
<td>Observation with controlled vocabulary</td>
</tr>
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<tr>
<td>Length</td>
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<td>Thickness</td>
<td>Measurement</td>
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<tr>
<td>Shank Thickness</td>
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<tr>
<td>Shank Height</td>
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<tr>
<td>Shank Width</td>
<td>Measurement</td>
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<tr>
<td>Shank Hole Diameter</td>
<td>Measurement</td>
</tr>
<tr>
<td>Applied Decoration</td>
<td>Observation based on pXRF analysis</td>
</tr>
<tr>
<td>Material Type</td>
<td>Observation based on pXRF analysis</td>
</tr>
</tbody>
</table>
**Raw Materials**

In the 17th and early 18th centuries, a revolution was taking place in the extractive industries the British Isles. Some rural landowners, particularly those who had significant connections to mercantile networks in cosmopolitan London, began to re-conceptualize their relationship to the lands they owned. For these new elites, the value of the natural resources they owned lay in what could be extracted and sold on the market rather than what could be used to support a large tenant community (Johnson 1996; Horning and Schweickart 2016). Additionally, in 1689 the English parliament passed the Mines Royal Act, abolishing the Royal monopoly on the mining and smelting of precious metals (Hamilton 1967; Day 1973). While this act had only minor effects on the production of tin, which for the most part had not been included in the royal monopoly, it was very significant to the English copper and lead industries. Wealthy landowners and merchants quickly began investing in copper ventures, pouring capital into building large refineries and bringing over skilled workers from Europe (Day 1973; Rees 2000). Over the course of the first half of the 18th century, English manufacturers in the copper and brass trades went from importing the majority of their raw materials from the continent to relying almost entirely on copper-alloys mined and refined in England (Hamilton 1967). Therefore, this section will focus on the organization and processes used by the English brass industry, and to a lesser extent tin and lead industries, in the second half of the 18th century in order to define the variety of raw materials available to the button makers who crafted the buttons used in this analysis.

The 18th-century process of creating a copper alloy object, such as a button, can be separated into five basic steps: mining the raw material, smelting the ore, alloying the raw copper with other metals, forming the alloy into saleable units and working the raw material into the finished product (Hamilton 1967). In this section I will focus on the first four steps, which
became more centralized and mechanized over the course of the first three quarters of the 18th century. Copper’s atomic nature, and its relatively high melting point in particular (1,984 °F), shaped the industry which was built up to extract it, and incentivized manufacturers to create standardized forms of brass raw materials, which in turn affected the organization of the button industry.

**The Copper Alloy Production Process**

Copper ore can be found throughout England, but for most of the 18th century copper was principally extracted from Cornwall’s extensive mineral fields (Hamilton 1967; Rees 2000). Copper mineralization in the region is associated with the Cornubian Batholith, a felsic magma intrusion that occurred in the Early Permian in Southwest England. This intrusion caused significant hydrothermal activity in the surrounding strata, depositing mineralized veins of Sn, Cu, Fe, Zn, Pb, As and W (Pirrie and Shail 2018). Archaeological evidence indicates that these outcrops have been exploited for millennia, but in the Middle Ages Cornish miners focused primarily on tin and lead, ores with relatively low melting points (449.5°F and 621.4°F respectively), which could be refined using locally available peat and charcoal in an open furnace (Pulsifer 1888; Lewis 1924). When the English copper industry began to take off in the early 18th century, the Cornish mines supplied the majority of the raw ore (Day 1973). To feed to the ravenous copper industry, several technological advances were made to drain and ventilate mines during the 18th century, allowing (and/or forcing) Cornish miners to follow mineral veins deeper into the bedrock (Lewis 1924; Hamilton 1967).

While 18th-century tin mines were primarily located in Cornwall as well (Lewis 1924), galena, the most common lead ore, was found throughout England, with especially large deposits in and around the Peak District. By the mid-18th century, lead was being mined from deposits
throughout England and Wales (Pulsifer 1888; van Duivenvoorde et al. 2013). Calamite, an ore containing mineralized zinc, is also fairly common in England, particularly in the Mendip Hills south of Bristol and in the Peak District of Derbyshire (Watson 1787).

In order to extract copper from its ore, the stones were first broken into small pieces and then calcined, or baked at a temperature high enough to release sulfur and arsenic gases but not high enough to melt the metal. While the ore was still hot, cold water was thrown on it to release more sulfur and arsenic (Rees 2000). In the early 18th century, ore was calcined for only a day or so, but by the 1770s some copper smelters calcined their ore for up to six months in order to remove and capture as much sulfur as possible (Day 1973). Next, the ore was placed into a closed furnace along with lime, silica, and slag, or the remaining material from earlier batches of copper, and fired with coal to a high enough temperature to melt the copper. The furnace was fired for several days and every 12 hours the slag floating on top of the heavier liquid copper was skimmed off. Next the copper was drained from the bottom of the furnace into sand molds and allowed to cool.

The material was then returned to the furnace, fired again for 12 to 14 hours at a lower temperature, and then tapped into molds and allowed to cool again. This process was repeated from 8 to 20 times depending on the quality of the ore. Finally, in order to produce the highest quality copper, the material was placed in a smaller furnace which was coated with a few inches of bone ash and fired again for 12 to 16 hours at a higher temperature, then fired at a lower temperature for a few hours with a little sulfur re-added to capture as much intrusive material as possible (Day 1973; Rees 2000). It took significant amounts of time, labor, and expertise to maximize the amount and quality of copper extracted during the refining process and in order to
maintain the high temperatures necessary to smelt high-quality copper, copper foundries required significant amounts of fuel, particularly coal.

Tin and lead can be refined in open furnaces without the need for coal, though some mid-18th-century tin and lead smelters did use closed furnaces, particularly for refining poorer-quality ore (Pulsifer 1888; Lewis 1924). Since lead deposits, particularly those from northern England, were often mixed with silver, they were often subject to cupellation processes wherein the lead was melted and oxidized, leaving the silver to be tapped (Pulsifer 1888; Dungworth and Wilkes 2002). Therefore, while the processes of refining high-quality tin and lead ingots from their raw ores were often as complicated and time consuming as smelting copper, they required considerably less expensive equipment and fuel.

Unlike the other three metals, metallic zinc is highly volatile and will combust if placed in an open furnace hot enough to melt the metal (787.2°F). In the 18th century, the only way to refine metallic zinc from its ore, known as calamite, was to heat it in sealed ceramic containers and force the vaporized zinc into a tank of water where it would crystalize and sink in pellets to the bottom of the tank (Watson 1787; Day 1973). This process was not discovered in Europe until the 1730s and even in the second half of the 18th century purchasing metallic zinc, also known as spelter, was considerably more expensive than alloying refined copper with the calamite directly (Day 1973), so most zinc ore was not refined until the middle of the 19th century.

In order to alloy refined copper with calamite ore, the calamite was first calcined and crushed until it was a fine powder and then mixed with charcoal (Watson 1787). Next, the furnace was heated to a temperature high enough to melt the zinc without quite melting the copper, and crucibles filled with calamite, charcoal and refined copper in proportions dictated by
the smelter were placed inside the furnace. The fire was kept steady for several hours to allow the copper to pick up the vaporized zinc, and then it was increased to fully melt the copper. Finally, any impurities were skimmed off the top of the melted brass and the liquid was tapped into sand molds (Hamilton 1967). Since the vaporized zinc only adhered to the outside of the copper, brass makers found that the smaller the pieces of copper placed in the crucible were, the more zinc was incorporated into the final product. By using small copper balls, created by pouring molten copper into cold water through a ladle with small holes drilled into it, brass refineries in the second half of the 18th century were able to make the highest quality brass, consisting of about 1/3 to ¼ zinc (Watson 1787; Day 1973).

In cases when brass makers wanted to control the ratio of copper to zinc more carefully, they had to use refined zinc. This was usually the case when producing low-zinc alloys, known as pinchbeck, tombac, Prince’s metal, or Mannheim gold, which ideally contained about 8-9% zinc and had a shiny gold luster often used by button, buckle and other “toy” makers (Watson 1787; Day 1973). To create these alloys, brass makers either added solid spelter to a crucible of molten copper and then covered the mixture in ground charcoal to prevent the zinc from oxidizing (Watson 1787), or they granulated the spelter, mixed it into a crucible with copper granules, ground calamine, and charcoal, and then fired it in a closed furnace (Hamilton 1967).

Other alloys of copper included gunmetal, which contained about 10% tin, bell-metal, which contains anywhere from 8% to 20% tin as well as a small amount of brass, and pot metal, which contained lead (Watson 1787). Each of these alloys were made by adding the alloying element (either tin or lead) to molten copper, sometimes with some brass mixed in as well. Thus, once the metals are refined out of their ores, alloying them did not require specialized methods or
tools. Instead, the skill of the alloy-maker lay in knowing the correct proportions of metals to combine to create a metal with the appropriate properties.

In some cases, particularly with tin and lead, the metal was sold on the market in ingot form. The refined metal was poured into standard-sized/shaped molds, allowed to cool and then taken to a local official who would evaluate the quality of the metal and, if it met their standards, mark it with a seal (Watson 1787; Lewis 1924; van Duivenvoorde, et al. 2013). Manufacturers would purchase these ingots, or pigs, divide them up, and melt them down before working them into their finished forms. However, since it required so much heat to melt copper and brass, it was often more cost effective to shape the metal into standardized forms, such as flat plates and wire of various thicknesses, before they were sold to manufacturers.

The earliest method developed to produce flat plates of brass or copper, known generally as latten, was to run the metal through a hammer mill. These water powered mills pounded the metal ingots with hammers until they were formed into flat sheets with the desired thickness, known as battery (Hamilton 1967; Day 1973). Latten was also made in rolling mills in the 18th century, which involved heating the metal and then rolling it between heavy water-driven rollers to form a plate of the desired thickness. The latten could then be cut into standardized shapes and sizes with shears, which were often also water driven (Hamilton 1967). English customs duties distinguished between three types of latten in the 18th and early 19th centuries. Battery, which was formed by hammer mills and still had the hammer marks on it, metal prepared or black latten, which was made by rolling mills, and shaven latten, which had been scraped or lathed to make it thin and shiny (Smyth 1812). Copper wire was made by slitting latten plates into long strips, heating them, and pulling them through different sized holes (Hamilton 1967; Day 1973). Due to the high fuel cost, skill level, time and specialized equipment necessary to produce high-
quality brass ingots, latten, and wire, English brass makers found it most cost effective to carry out the refining, alloying and shaping steps in the same factory.

The Organization of the Copper-Alloy Industry

Following the abolition of the royal monopoly on precious metals, English copper and brass production skyrocketed. The early 18th century saw the rise and fall of innumerable merchant companies as wealthy London merchants and elite landholders sought to carve out pieces of the increasingly lucrative worldwide trade networks of the mercantilist world (Paul 2011; Nordin 2012). The manufacture of copper and brass was an attractive area of investment for many of these companies since raw copper and brass were in high demand among tradesmen in urban areas, a need that was supplied by imports from Germany and Scandinavia for most of the 17th and early 18th centuries (Hamilton 1967). Unlike the processes carried out in tin and lead refineries, the processes involved in copper refining required large-scale investments in substantially-built, expensive furnaces well before the first batch of copper was produced. Additionally, the battery, rolling and wire-drawing processes required water powered mills, another expensive start-up cost well beyond the means of all but the wealthiest members of English society. Therefore, while the first and last stage of the 18th-century copper-alloy object’s production, the mining of the ore and the crafting of the finished good, were undertaken by a variety of small firms and workshops, the middle three steps were mostly undertaken in a small number of large-scale industrial refineries financed by wealthy mercantilists.

Most 18th-century English brass works combined the copper smelting, copper-alloying and battering/rolling/drawing processes under a single roof (Watson 1787). Given the high fuel costs of the copper smelting process, these refineries tended to be located near large coal outcrops, mostly in western England and Wales. In particular, Bristol, Cheadle, and Macclesfield
were each home to several brass works (Hamilton 1967; Day 1973). By 1750, the companies in charge of these foundries had formed a trade group, known as the “Associated Smelters,” who were able to exert control over the brass trade as well as stifle competition from both foreign and domestic sources.

The Associated Smelters relied upon the already established Cornish mining industry to find and excavate copper ores, since the tin veins which the Cornish miners had long exploited also contained mineralized copper (Lewis 1924; Day 1973). However, by acting in unison and refusing to purchase ore over a set price, the Associated Smelters were able to keep raw material prices low, since there were no other buyers of copper ore on the market. Similarly, the Associated Smelters worked together to set the prices of brass ingots, latten, and wire and successfully petitioned the English parliament to raise tariffs on imported brass to ensure that the workshops that manufactured brass objects had no choice but to buy from them (Hamilton 1967). Therefore, by the mid-18th century, a relatively small number of refineries produced the majority of the brass raw material used by button-makers throughout England.

Given the relatively lower fuel costs and initial investments required to refine tin and lead, their refining industries were both less centralized and more widespread, preventing them from controlling the trade in the same way as the brass smelters could (Pulsifer 1888; Lewis 1924). Additionally, since the addition of tin to copper reduces the melting point of the alloy drastically the manufacturers of objects which used gun-metal, bell-metal, and pot-metal were usually able to create the alloys in their own workshops (Watson 1787). Richard Watson (1787) notes that in the late 18th century there was only one factory-sized operation in England that produced gunmetal, which also served as the country’s premier cannon manufacturer. Most other manufacturers who worked with non-brass copper alloys, including button makers, acquired their
brass from the centralized Associated Smelters and mixed it with other metals acquired from more varied sources.

The power of the Associated Smelters held throughout the third quarter of the 18th century but in the 1780s several rival refineries were founded in England by both copper mining companies and brass manufacturers who chafed under the rule of the Associated Smelters (Hamilton 1967). Thus, the brass industry was considerably less centralized during the last two decades of the 18th century, just as the Birmingham brass manufacturing industry was becoming an important and powerful player in the burgeoning industrial revolution. In the next section, I will describe the different button manufacturers who were operating in the second half of the 18th century and chart how the changes wrought by the industrial revolution affected the button production process.

**Button Manufacturing**

In the first few decades of the 18th century, buttons gradually gained popularity as a clothing fastener in western Europe. In the aftermath of William and Mary’s ascendancy to the English Throne in 1688, the three-piece suit gradually began to replace the tunic and hose as the most formal outfit in most English men’s wardrobes (Kuchta 2002; McKenzie 2012). English colonists around the world sought to follow these metropolitan trends (Baumgarten 2002). Buttons, sewn onto great-coats, waistcoats, shirts and trousers, were an integral part of this type of outfit from the beginning and have been attached to these articles of clothing ever since, changing their size, shape, color, and material, in accordance with each new trend. Buttons, both then and now, are made of a great variety of materials, including bone, horn, textiles, glass, metal, ceramic, rubber and plastic (White 2005). Copper-alloy buttons had become moderately popular among both producers and consumers by 1750 and continued to make up a sizable
portion of the button market until the mid-19th century, but they never completely dominated the marketplace (White 2005). Therefore, button manufacturing was never a trade into itself. Craftspeople specializing in the working of a variety of raw materials produced buttons, each in their own way. Even the manufacture of copper-alloy buttons was divided between two different types of craftsmen for most of the 18th century: brass founders and braziers.

The essential difference between these two industries, from which all other differences stem, was the type of raw brass material they used. Brass founders melted down brass ingots and scrap brass to cast items in sand molds whereas braziers reshaped brass latten using stamps, shears and hammers. Neither brass founding nor brazing was as expensive or time consuming as refining raw copper or alloying it with zinc, so for the first three-quarters of the 18th century most English copper-alloy buttons were made in small-scale workshops by skilled craftsmen. These workshops and manufactories were scattered throughout the British Isles, but tended to be more prevalent in urban centers (Hamilton 1967). However, there were a few large-scale factories manufacturing buttons (using either or both processes). One, founded in Birmingham in 1730, employed about 500 people by 1755 and manufactured large batches of gilded buttons and enameled snuff boxes (Hamilton 1967). Button manufacture on this scale was the exception, not the rule, throughout this time period.

While many blacksmiths dabbled in brass- and bell-metal-casting (Watson 1787), dedicated brass founders were relatively uncommon in early 18th-century England. Over the course of the century they became more and more prevalent, with their numbers in Birmingham increasing from one in 1715 to 71 in 1797 (Hamilton 1967). Brass founders had two primary methods of making buttons, which I have termed “flat disc cast” and “two-piece brazed.” Flat disc cast buttons were the simplest to make. Raw brass, either in the forms of ingots, latten, or
scrap from other processes, was placed in a furnace and melted. Next, a rectangular iron case with two halves was filled with a special type of damp sand and replicas of the buttons, made of wood or metal, were pressed into the sand between the two halves and the sand was rammed around them. Then the halves were separated and the replica(s) were removed, leaving a hollow space in the exact shape of the button to be made. The two halves of the case were then firmly sealed together and the molten metal was poured into the mold through a tube leading to the hollow space known as a sprue. After the metal cooled the mold was opened and the button was removed. Any extra metal in the sprue was clipped off with shears, and files and lathes were used to remove any imperfections and shine the button (Figure 3) (Hamilton 1967; Jan van der Heide 1991).

Two-piece brazed buttons were made in a similar manner, except that the two pieces, face and back, were cast separately. A sand support, called a core, was placed in the mold with the faces so that they formed hollow domes. After cooling, the place where the face and the back were to join was filed smooth and a small amount of solder ¹ and flux ² was placed along the join. The face and back of the button were then bound together with wire and placed in a charcoal fire (Jan van der Heide 1991). ³ In this way, fully metal buttons with hollow spaces on the inside could be created, allowing brass founders to make larger buttons without using as much brass. Finally, “sleeve-link” buttons are a special type of button that consists of two small buttons linked together by a metal wire (White 2005). All of the sleeve-link buttons I observed in this

¹ usually containing some mixture of Sn, Pb, Ag and Cd) with a melting point much lower than bronze
² a chemical compound to prevent oxidation, usually containing borax.
³ Metals of different types that are in contact with each other will liquidize at a lower temperature than either of them alone, at a temperature called the eutectic point, binding the face and back of the button together without having to place the button in a furnace and re-melt it.
Figure 3: Brass Casting Process (Image courtesy of Wikimedia)
analysis were made with cast brass, though most of them were made with a special process that incorporated a jewel into the face of the button, and therefore seem to have been made by brass founders.

During data collection, I noted a distinction in two-piece brazed buttons. Some of them, which I called “two-piece soldered,” had holes drilled into the button back and were soldered together much more tightly. Unlike the brazed buttons, the face and back of these objects had been heated at a high enough temperature to fully fuse them together, a process that apparently required holes to be drilled in the back of the button to allow gases to vent during soldering. These type of buttons were found in small amounts at all three localities and often appeared in the earliest dating contexts, suggesting that the process used to make them may be an earlier method that had become uncommon by the second half of the 18th century. Since two-piece soldered buttons were sometimes made with latten, they could have been made by braziers, who more regularly used copper latten, though they required significant heat to solder together, something to which not all braziers had access.

Of the two branches of the industry, braziers were more common in early-18th century England, with the Company of Armourers and Braziers founded in 1708 and given permission to inspect all brass and copper wares made in London (Hamilton 1967). Though the raw material used by braziers, latten brass, was more expensive than the scraps and ingots used by brass founders, their fuel costs were significantly lower since the thin plates could be worked into shape without the need for fully re-melting the metal. One method for making buttons used by braziers was to form what I have termed “two-piece crimped” buttons. This process involved stamping out circles from shaven latten; hammering the circles into concave molds, often with decorative patterns carved in relief on the inside; filling the inside of the button with some sort of
resin or glue; placing a wooden, bone, or metal back with holes drilled through it to hold a metal
or catgut shank, into the resin; and crimping the metal front over the back (Hinks 1988; White
2005). Illustrations in Diderot’s *Encyclopedia* demonstrate that this process could be undertaken
entirely by hand in the mid-18th century, and only required a small fire to heat the resin or glue
(Figure 4). If very thin latten sheets were used, this method could produce intricately designed
buttons which were considerably lighter than cast buttons of the same size.

In the early 1770s, a new method of working brass was invented in Birmingham. This
process involved using heavy stamps and dies to cut intricate shapes out of brass latten and shape
them into standardized patterns (Hamilton 1967). Since this method used machines rather than
hammers to cut and stamp the brass, thicker pieces of latten could be used. Buttons made using
this technique, which I called “flat disc stamped,” were made by stamping discs out of brass
latten, placing them in carved dies to stamp designs into them, and then lathing them to remove
burrs and imperfections. Since thicker latten was used, these buttons did not have to be crimped
around a back. This process became more and more prevalent over the last quarter of the 18th
century as specialized button workshops, primarily in Birmingham, began to dominate the
domestic and foreign button markets (Hamilton 1967; White 2005; Schweickart 2019).

Once the brass button was formed through any of these processes, manufacturers could
choose to coat it with another metal, usually either tin, silver, or gold gilt. The process of
applying a metallic coating to a button was similar no matter which process was used to form the
brass. Tinned buttons were made by pouring liquid tin onto the surface of the brass button once it
had cooled (Watson 1787). Tinning copper, brass, and iron latten was common in the mid-18th
century as it was believed that eating or drinking off of un-tinned dishes was harmful to the
health of consumers (Watson 1787). Thomas Bolsover of Sheffield patented a method of plating
Figure 4: Maker of Metal Buttons (Crimped). Diderot Button Plate 3 (Diderot 1777 [1978])
copper-alloy objects with thin sheets of silver in 1743, and his “Sheffield plating” process was used by button makers for the rest of the 18th century (Hamilton 1967; White 2005). Finally, gold could be applied to a button in two ways, leaf gilding and mercury gilding. Leaf gilding involved heating the button in a brazier, applying thin gold leaf to it, and then carefully burnishing the piece until the gold leaf shone brightly. Mercury gilding, on the other hand, required the gold to be ground to a powder and mixed with mercury. This mixture was then applied to the button with a wire brush (low-zinc brasses took to the mixture the best hence their modern name “gilding metal”) and then heated to vaporize the mercury, after which the button was burnished to bring out the golden shine. Leaf gilding was less expensive than mercury gilding in the mid-18th century but it was less durable, and was the less popular of the two methods (Chapman 1994; White 2005).

Brass founders and braziers catered to British fashion trends, making buttons in different sizes to fit on particular pieces of apparel and changing their designs to entice English consumers. In his thesis, Stephen Hinks (1988) examined how Virginian merchants in the second half of the 18th century described their button stock in their store inventories. He found that many buttons were associated with a particular article of clothing. For example, “shirt buttons” were usually associated with descriptors such as “wire” or “thread,” suggesting that there was a particular type of button made to be placed on shirts, which were likely made by wrapping thread around solid cores. However, buttons described as “metal” in the inventories were not typically associated with an article of clothing but were instead usually associated with a description of their composition or decoration (“white,” “yellow,” “gilt,” “yellow gilt,” “double gilt,” “silvered,” “tin” and “pewter”) and a size marker (“big” or “small”). According to Hinks, merchants purchased metal buttons in matched sets, one big set and one small set, and sold them
to customers as such, though customers could buy either big or small buttons separately. This practice, he argues, enabled men to wear the larger sized buttons on their great coats and frocks and the matching smaller sized buttons on their waistcoats and vests. However, metal buttons were worn on breeches, banyans, trousers and jackets as well (Hinks 1988; White 2005).

In the mid-18th century, ostentatiously dressed men, known as macaroni, were fashionable in British society. One of the most expensive and desirable types of button for the macaroni were was from patterned silk, so braziers began to stamp their buttons with textile patterns, imitating the look of silk buttons (Kuchta 2002; White 2005). Thus, buttons were made to cater to the desires of the English marketplace, even those that ended up being sold to merchants bound for foreign ports, such as the North American colonies. Historic documents discussing buttons and fashion, even when they exist, are biased towards European consumption patterns and even the most detailed merchant ledgers only contain tantalizingly vague descriptions of the physical nature of buttons. Therefore, in order to decide what data to collect from each button, I turned to the work of previous archaeologists.

Data Collection

The earliest method of copper-alloy button classification used by historical archaeologists involved sorting large assemblages of buttons into types, based on whatever set of physical characteristics were deemed to best distinguish between groups. Archaeologists would then list the number of buttons of each type found at a site and perhaps describe some of the variation within each type in terms of decoration or size (Stone 1974; Polhemus 1985; Schroedl 1986; Kuttruff 2010). While some analysts attempted to use the relative abundance of button types to investigate questions regarding the everyday lives of people living on the site (Otto 1984), the
The typical focus of this methodology was to date the site based on known changes in button morphology over time.

The most popular button typology using this methodology was developed by Stanley South (1964) based on the buttons found during his excavations at Brunswick town in the 1950s and 1960s. South divided the button assemblage recovered from the colonial contexts and the later Civil War fortification at the site into 32 distinct types, with three additional sleeve link types, based on qualities such as their material makeup, manufacturing style, and shank morphology. In his thesis, Stephen Hinks (1988) refined South’s typology into 11 types (of which types 1-8 can include copper-alloy elements), each with between 1 and 7 sub-types. Hinks’ main types each refer to a manufacturing style whereas his sub-types refer to the material makeup and shank morphology of the buttons. By using a multi-tiered typology, Hinks’ system is easier to comprehend than South’s, in addition to better representing the way button manufacturers and merchants categorized 18th-century buttons.

More recently, some archaeologists have begun to move away from broad typologies and instead begun to categorize each button element separately. This involves splitting each button into a number of elements and/or attributes, such as material makeup, manufacturing technique and shank morphology, and then cataloging or measuring each element. This is the approach taken by Carolyn White (2005) in her book *American Artifacts of Personal Adornment*, recognizing that the individuals who purchased and/or wore these items may have conceptualized them in a different way than their producers. While this method increases the amount of time it takes to catalog each button, it has two major benefits. First, it does not build any assumptions about which elements of buttons are more important than others into the data, allowing archaeologists to analyze consumer behavior more easily (Breen 2013; Smith 2017;
Schweickart 2019). Second, the multi-variate data this method produces is more useful for statistical analyses. For instance, Jillian Galle (2010) was able to pick out trends in the abundance of buttons with particular types of decoration over time, since the dataset she used, DAACS, records decorative style as one of the button elements of interest.

Since my research question revolves around consumer behavior and I used multivariate statistical analyses to answer the question, the dataset that I developed for this analysis was based on the second methodology. I drew heavily on the DAACS cataloging manual, in addition to earlier work by South and Hicks, to create a set of 22 elements to analyze for each button. In addition to these elements, which were measured with visual analysis, spreading calipers and a balance, I also evaluated the material type and the applied decoration of each button based on the pXRF analysis I performed. Below, I describe the controlled vocabulary I used and dimensions that I measured during data collection.

Manufacturing Style

The first element that I captured was manufacturing style, with the types based on Hink’s (1988) typology (Figure 5). **Flat Disc Cast** and **Flat Disc Spun Back** buttons were both cast by brass founders as a single piece (face), the difference being that spun back buttons were shaped with a lathe creating a cone of non-lathed material in the center of the underside of the face. **Two Piece Brazed** and **Two Piece Soldered** were made as two separate metal elements (face and back), with the difference being that two piece brazed buttons were always cast and were brazed together leaving a seam whereas two piece soldered buttons were usually made from latten (though they may have sometimes been cast) and the face and back were totally bonded together. **Two Piece Crimped** buttons consist of a metal face element made from latten crimped over a back element which could be made of bone, wood, antler, or metal. **Flat Disc Stamped** buttons
<table>
<thead>
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<th>Flat Disc Spun Back</th>
<th>Flat Disc Stamped</th>
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<table>
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<th>Two Piece Brazed</th>
<th>Two Piece Crimped</th>
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<td><img src="two-piece-brazed.png" alt="Image" /></td>
<td><img src="two-piece-crimped.png" alt="Image" /></td>
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*Figure 5: Button Manufacturing Style (Adapted from Hinks 1988)*
consist of a single element which was stamped out of a piece of latten. Finally, Sleeve Link buttons were typically cast and contained the unique metal loop linking them together.

**Material Type**

I divided the buttons into three material types based on the raw materials that were used to create them: Brass Ingots, Latten, and Bell-Metal. Buttons and button elements made using a casting process were classified as brass ingots and buttons and button elements made using brazing were classified as latten. During pXRF data collection it became clear that some of the cast buttons and button elements had unusually high levels of tin (roughly between 2-30%) placing them roughly into the range of bell-metal (Table 2). Flat disc spun back buttons and the backs of two-piece brazed buttons were usually, but not always, made from bell-metal. Any buttons which contained more tin or lead than copper were called either Pewter or Britannia and were not used in this analysis.

While Watson (1787) defines bell-metal as an alloy of copper and tin alone, with maybe a little scrap brass thrown in, bell-metal buttons contained, on average, about 9% zinc and about 7% lead (Table 2). The high zinc percentage suggests that button makers used bell-metal with a base of brass rather than copper. The lead may have been intentionally added to improve the workability of the material or it may have been incidentally added because it was mixed into the tin ingots available to brass founders. Watson (1787) found that most raw tin that could be purchased on the market in the late 18th century was mixed with some amount of lead. He states that while tin ingots made by the refiners were carefully tested and marked to ensure their purity, pewterers were in the habit of melting down tin ingots, mixing them with lead to create more product, and selling the resulting alloy on the market. On the other hand, adding small amounts of lead to copper alloys is one way to improve their machinability. Only small amounts of lead
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can be incorporated into copper crystals, so lead tends to solidify along crystal boundaries. These clumps of lead serve to lubricate the material when it is shaved in a lathe, preventing it from cracking and making it easier to shape (Copper Development Association Inc 2019). The vast majority of flat disc spun back buttons, which required significant lathing to produce, were made of bell-metal, suggesting that lead may also have been intentionally added to these button types.

**Shank Morphology**

Shank morphology was often dependent upon which manufacturing style and material the button was made of, but most shank morphologies were used on buttons manufactured in different styles (Figure 6). **Drilled** shanks were made by drilling holes through thin fins cast into the material. They were typically only found on flat disc cast, two-piece brazed and sleeve link buttons, though in rare cases two-piece crimped buttons with a metal backs and cast two-piece soldered buttons had drilled shanks. **Cast Loop** shanks were made by pressing a loop of wire into the button or button back while it was still partially molten. Flat disc spun back, two-piece brazed, two-piece soldered, and two-piece crimped buttons with metal backs had cast loop shanks. **Soldered Loop** shanks were made by soldering a loop of wire onto the button or button back. Only flat disc stamped buttons had soldered loop shanks since this technique was not invented until the 1770s. Two-piece crimped buttons with backs made of wood or bone were called **Loop in Hole** shanks if they had a single hole with a wire loop, or **Holes** shanks if they had multiple holes through which thread was looped. If the back of a button was missing the shank morphology was **Unknown**.
Figure 6: Shank Morphologies (Adapted from Hinks 1988)
**Applied Decoration**

Utilizing the qualitative pXRF methodology outlined in Appendix 1, I determined whether the button face element had been plated with **Silver**, **Tinned**, or **Gilded**.

**Decorative Technique**

There were a variety of techniques used to decorate copper-alloy objects beyond the application of other metals. For this variable I captured the decorative technique used on each button. **Cast** represented button designs carved into the molds of cast button elements. Embossed was used for buttons decorated with small hand stamps which impressed a single pattern multiple times into the button. **Stamped** is the term I used for buttons that had been hit with a single decorative stamp once during the production process. **Engraved** represents decorations that were cut into the metal. **Double Layered** buttons were two piece crimped buttons with two face elements, the uppermost with an openwork design, exposing the plain lower layer. **Jewel Setting** is the term I used for buttons made with a place for paste jewels to be placed in the button. **Enameled** buttons had decorative enamel applied to them. The last two decorations were almost exclusively found on sleeve link buttons.

**Manufacturing Flaw Significance**

The number and severity of manufacturing flaws on buttons can be an important factor that consumers considered when making purchasing decisions (Schweickart 2019). Drawing upon my earlier work on classifying manufacturing flaws, I made a list of manufacturing flaws which could occur at each step of the button manufacturing process. For instance, for two-piece brazed buttons, manufacturing flaws included mis-cast, asymmetrical button faces, incomplete lathing on the face or back leaving burrs or raised areas around the shank, file marks on the
shank and back, misaligned drill holes in the shank, and uncentered decoration on the button face. Each manufacturing flaw was rated as minor, moderate or major depending on its location and visibility when attached to a garment. In general, flaws on button faces were rated more significant than flaws on the button backs and flaws in the application of decoration were rated as more significant. Finally, each button was categorized as Unflawed, Minorly Flawed, Moderately Flawed, or Majorly Flawed based on the most significant flaw it contained.

*Domed*

For this variable I assessed whether the button face element was Concave, Convex, or Flat.

*Button Shape*

This variable recorded the button’s face shape when viewed directly from the front as it would appear when attached to an article of clothing: round, oval, octagonal, rectilinear, or lobed (Figure 7).

*Measurements*

Finally, I took a series of qualitative measurements from each button. With the exception of weight, I only took the measurement if it was an accurate representation of the variable when the button was manufactured. For instance, if a button’s face element had been bent, changing its diameter, then I put an “N/A” in the diameter field rather than record a measurement that did not represent its original dimensions. Weight was the weight of the button in grams, I weighed all buttons and button elements even if they were incomplete. Diameter was calculated by averaging two measurements of the buttons face, taken as perpendicularly from one another as
Figure 7: Button Shape
possible. If the button had an oval or rectilinear shape then I did not average the two measurements but kept them separate with Length representing the longer dimension and Width representing the smaller one. If the button had a concave or convex face element then the Face Height was measured as the vertical distance between the edge of the button face and the apex of the face curvature. Thickness was measured as the thickness of the face element at the edge. Shank Thickness is the thickness of the shank at the point furthest from the button face where it would be sewn to the cloth. Shank Height is the greatest vertical distance between the back of the button and the edge of the shank. Shank Width is the measurement of the shank at its greatest extent perpendicular to the shank height. Finally, I measured the Shank Hole Diameter using metric drill bits, with the diameter represented by the largest drill bit that could fit all the way through the shank hole. For two-piece crimped buttons with holes-style shanks I measured the diameter of the hole drilled through the bone or wood button back.

Conclusion

Drawing upon the historical record and the work of previous archaeologists I focused on 24 separate physical aspects of copper-alloy buttons which were potentially meaningful variation to consumers in the second half of the 18th century. By comparing the similarity of the distribution curves of these variables between households and localities, the relative freedom of consumers in each household to acquire objects according to their personal tastes is preserved in the physical aspects of these objects. Comparisons between localities with known differences in household complexity, as I will discuss in the next chapter, can then be used to examine the effect of household complexity on consumer freedom.

Since the material makeup of button elements was determined by the particular recipe used by a copper foundry and/or the brass founder who manufactured the button, variation in
ratios within material type (brass ingots, latten, bell-metal) should be more indicative of who manufactured the button rather than consumer taste. As I will discuss in Chapter 5, I can therefore use the similarity of material makeup between buttons with the same material type to help guide my decisions about which buttons belonged to which household.
Chapter 4: Localities

Introduction

In this chapter I will examine each of the three localities used in this analysis in detail. I will first provide a short history of the sites used in this analysis over the course of the 18th century until the American Revolution. Then, drawing on the work of historians and archaeologists, I will discuss the household complexity, local marketplaces, and personal adornment practices unique to each set of sites. By examining the unique historical factors that shaped the lives of individuals who lived in these places, their button consumption practices can be placed into context. First, I will focus on Williamsburg and the enslaved laborers who lived along a short stretch of the James River directly south of the town. I will show how a stable cross-plantation community grew over the course of the 18th century and how they were torn apart following the Revolution. I will explore the avenues of consumption available to these enslaved consumers and how they chose to clothe themselves in the face of racism and brutal oppression. Next, I will examine the households who lived in the shoreline lots in downtown Brunswick, North Carolina. I will follow the growth of the town from the early 18th century until it was razed in the Revolution, examine the mercantile connections its inhabitants had with the greater Atlantic World, and discuss how the colonial families who lived in these places dressed themselves. Finally, I will examine the people who lived in the nucleated settlement of Chota, the mother town of the Overhill Cherokee people in the third quarter of the 18th century. As the Cherokee settled into their new role as intermediaries in the Atlantic fur trade following the end of the Yamassee War, the Overhill towns grew in population and power until they were sacked by American forces in the opening months of the American Revolution. I will examine how
these historical events affected the household structures, mercantile connections and personal adornment practices of Cherokee individuals in Chota during this time.

**Williamsburg**

In 1750, the section of land south of Williamsburg, Virginia along the James River was some of the most desirable property in the colony. It was both prime land for the growth of the sweet-scented strain of tobacco, which was in high demand by consumers in England (Walsh 1999; Walsh 2010), and was in close proximity to the political and economic core of the colony in Williamsburg. There were several landings providing access to river shipping, and in the 18th century a ferry stretched across the James from one of the landings, providing one of the few links between the city of Williamsburg and the relatively densely populated southern shore of the James (Kelso 1984). For these reasons, this area became an attractive place for the colonial elite to demonstrate their power through the construction of large manor houses. The 1751 Fry-Jefferson map of Virginia notes that the small stretch of riverside property bounded in the west by College Creek and in the east by Schiff’s Creek held three separate manor houses owned by two powerful Virginia families, the Brays and the Burwells (Figure 8). Though the land had long been sub-divided into small sections, called quarters, for the sake of agricultural production, by mid-century these wealthy lineages had loosely conglomerated several quarters into three larger plantations, Kingsmill, Littletown, and Carter’s Grove.

Like so many other aspects of an enslaved African’s life in the British Colonies, their ability to live in the household of their choosing was limited by the decisions of property owners and the whims of a legal and political system which treated human beings as chattel. The attempts by enslaved African Americans to form complex households with their extended family were stymied by estate divisions, re-assignments to far-flung landholdings, and, most
Figure 8: 1751 Fry-Jefferson Map Detail (Fry and Jefferson 1751)
significantly, the sale of property (Morgan 1998). Since the historical trajectory of each estate has a significant effect on the ability of its enslaved community to form households, I will examine the chain of property ownership of these three plantations from their formation in the early 1700s to their sale or dissolution in the last quarter of the 18th century (Figure 9).

History

Plantation History to 1750

These three plantations had very similar trajectories over the course of the first half of the 18th century. Their constituent quarters were all purchased around the turn of the century by members of Virginia’s political elite, who proceeded to build large, brick manor houses on them for the express purpose of being given to one of their children upon their death. They were all worked by an enslaved population that was made up of a mix of second or third generation enslaved Americans who were inherited from the original patriarch and newly captured Africans purchased from slave ships owned by London and Bristol merchants in the 1720s and 30s. Finally, each of the quarters at these plantations were legally entailed under the law of 1705, meaning that the enslaved individuals working the quarters could not be sold separately from the property on which they lived and worked.

The Bray family were first to start buying up land in this area. In 1700 James Bray II purchased the Littletown and Utopia Quarters, which he added to the land he inherited on Tutty’s Neck to create the Littletown Plantation (McCartney 2000; Pullins, et al. 2003). Soon afterward, he built a manor house for himself and his wife on the Littletown property (Kelso 1974). When James Bray II died in 1725 he stipulated in his will that his Littletown property, including the enslaved laborers living there, was to go to his grandson James Bray III, but his son, Thomas
Figure 9: Chain of Kingsmill/Littletown/Carter’s Grove Plantation Ownership
Bray II, took charge of operating the plantation until James III came of age in 1736 (Kelso 1984; Fesler 2004).

Another member of the 17th-century Virginian elite, Lewis Burwell II, also bought land in the area in the early 18th century, though he never lived on it. Instead, in his 1710 will he gave the Farley/Kingsmill, Harrop, and North Quarter properties to his youngest son Lewis Burwell III along with a third of his enslaved population (Kelso 1984; Walsh 1997). Another third of Burwell II’s captive laborers were given to his eldest son, Nathaniel Burwell I, some of whom were passed down to his own son Carter Burwell upon his death in 1721 (Walsh 1997). Around the same time, Nathaniel’s father-in-law, Robert “King” Carter, purchased the Merchant Hundred plantation for his grandson, renaming it Carter’s Grove after himself (Kelso 1971; Walsh 1997). Lewis III began building a manor house at Kingsmill a few years after taking control of the plantation in 1719, and the archaeological evidence suggests that it was completed by the early 1730s (Kelso 1984). Similarly, his cousin Carter Burwell began construction on a brick manor house on the Carter’s Grove property soon after he came of age in 1737 which he continued to work on until 1755 (Kelso 1971). Thus, by 1740, Lewis Burwell III, James Bray III, and Carter Burwell each owned a plantation, which they at least occasionally occupied, consisting of at least a thousand acres along the James River near Williamsburg (Figure 10).

The enslaved communities living at these three plantations were, by 1740, a mixture of second-generation creoles and recently captured Africans. The Kingsmill plantation’s workforce mostly consisted of the men, women and/or their descendants who Lewis II had entailed there around 1700 when he purchased the individual quarters (Walsh 1997). While Lewis III likely bolstered his enslaved community with newly captured Africans in the 1720s and 1730s, brought to the mouth of the York river by English slave ships (Walsh 2001), the Kingsmill community
Figure 10: Quarters and Sites in the Kingsmill/Littletown/Carter’s Grove Planation
does not appear to have been subject to the same wave of newcomers as the Littletown and Carter’s Grove communities were. During the period Thomas Bray II managed the Littletown plantation (1725-36) he purchased 44 individuals from English slavers who were distributed amongst his many landholdings (Fesler 2004). The entailed individuals placed on the quarters by James Bray II were forced to accommodate these new unwilling immigrants into their houses and communities. In contrast, African-born laborers purchased by Robert Carter in the 1720s and 1730s to work the fields at Carter’s Grove were imposed upon by second and third generation African Americans brought by Carter Burwell from the Burwell estates in Gloucester County when he took charge of the plantation in the late 1730s (Walsh 1997).

*Plantation History through the American Revolution*

The next 15 years was one of significant upheaval amongst the landowning families of these three plantations, but comparative stability amongst the enslaved communities. All three of the original patriarchs died during this time, Lewis III and James III in 1744 and Carter Burwell in 1756. Only Lewis III had an adult son, Lewis Burwell IV, to inherit his property. James Bray III had no children and Carter Burwell’s son Nathanial Burwell II was only 6 when his father died (Kelso 1971; Kelso 1984). Therefore, while Lewis IV continued to occupy the Kingsmill plantation, both the Littletown and Carter’s Grove quarters were managed by absentee trustees, who were legally prevented from selling the entailed enslaved laborers, until their owners came of age (Walsh 1997; McCartney 2000). Lewis IV increased his landholdings during this period, including the acquisition of the Utopia Quarter, but the transfer of land between plantations had little effect on the lives of the enslaved laborers who worked it. The same 29 individuals who lived on the Utopia Quarter during Bray ownership were transferred with the property to the Burwells (Fesler 2004). While plantation owners were free to move enslaved individuals
between properties they owned, the Kingsmill/Littletown/Carter’s Grove enslaved community were seemingly left in place during the 1750s and 1760s.

Beginning in the last few years of the 1760s however, the owners of these plantations began to move large contingents of enslaved laborers further west, placing considerable strain on the enslaved communities’ households. While the settlement of the Piedmont began much earlier in the 18th century, Virginia’s power base continued to be centered in the Southeastern tidewater until the American Revolution (Walsh 1999). However, as new land opened up in the west following the Seven Years War, wealthy planters began to invest more heavily in the development of their Piedmont landholdings.

Lewis Burwell IV had purchased land along the Roanoke River in what is today Mecklenburg County in 1742, but it was not until the late 1760s that he began to move enslaved laborers from his Kingsmill plantation to these quarters in preparation for his own move in 1775 (Fesler 2004). While Burwell IV left his James City County estates and associated laborers to his son, Lewis Burwell V, when he moved west, he took some of the enslaved laborers with him (Walsh 1997). Similarly, Nathaniel Burwell II, who took control of the Carter’s Grove plantation in 1771, inherited lands in the upper Shenandoah valley, in what is today Clark County, and began moving significant portions of the Carter’s Grove community west as soon as he took over control of the plantation (Walsh 1997). The enslaved community at the Littletown home quarter alone appear to have been spared this divisive transition since its owner in the second half of the 18th century, James Bray Johnson, does not appear to have purchased any extensive landholdings in the west and continued to live in nearby Williamsburg throughout the last quarter of the 18th century (McCartney 2000).
In April 1781, a contingent of British forces landed at Kingsmill plantation, attacking the Colonial militia’s fortification at the Burwell Ferry terminal and causing them to flee (Kelso 1984). This action precipitated the arrival of British forces under the command of General Cornwallis into the Williamsburg area later that summer. While Cornwallis’ Virginia Campaign turned out to be the final chapter in the English control of the North American colonies, with his surrender at Yorktown representing the end of the Revolution, it succeeded in altering Virginia’s political landscape forever. In 1780, fearing the fall of Williamsburg, then-Governor Thomas Jefferson officially moved the capitol from Williamsburg to Richmond, transforming the lower James River Valley from heartland to backwater virtually overnight.

Even before the British raiders stormed his property, Lewis Burwell V had left his plantation home in Kingsmill and moved to Richmond, staying close to the political core of the rebellious state (Kelso 1984). Lewis V placed the Kingsmill property on the market in the winter of 1780 and seems to have moved most of the enslaved population to safer properties by the time of the British raid (Fesler 2004). Advertisements for the plantation in the *Virginia Gazette* mention the land and the manor house plus outbuildings, but don’t mention any enslaved laborers (Kelso 1984; Pullins, et al. 2003), likely because the Virginia government passed laws during and directly after the Revolution which made breaking entail considerably easier for property owners (Walsh 1997).

Some of the Kingsmill quarters appear to have been sold separately, potentially including the parcel of land marked as Southall’s Quarter on the 1781 Desandroüins map (Figure 11). While Louis IV owned almost 3000 acres of land in James City County in the 1770s, the
advertisement for the Kingsmill plantation in the *Virginia Gazette* only mentions about 2000
acres of land (Kelso 1984). James Southall, the owner of Raleigh Tavern in downtown
Williamsburg in the late 18th century, purchased a 920 acre tract of land in James City County
sometime in 1779 or 1780, the same time that Louis V was moving to Richmond but before he
put the rest of Kingsmill for sale (Pullins, et al. 2003). While there is no direct evidence that
Southall’s quarter was once part of Kingsmill plantation, the proximity of the property to the rest
of Louis IV’s landholdings, the size of the lot, and the similarity of the archaeological evidence
between the pre-Revolutionary structure at Southall’s Quarter, the Utopia Quarter and the
Kingsmill Quarter, suggest that it may well have been. Whether or not Southall purchased the
land from Burwell, he uprooted an enslaved community which, according to the archaeology,
had lived at the site for at least a couple of decades, and replaced them with his own enslaved
laborers in the early 1780s (Pullins, et al. 2003).

The core of the Kingsmill property was purchased in 1783 by Henry Martin (Pullins, et
al. 2003). A plantation owner from Tortolla, Martin moved to Virginia soon after his purchase of
Kingsmill, bringing at least 12 enslaved laborers with him. According to tax records, Kingsmill’s
enslaved community grew to contain 31 individuals by 1787 when Martin suddenly died. It is not
clear what happened to these people upon Martin’s death, but they were likely removed from the
property by 1790, when it was purchased by Henry Tazwell, who brought his own enslaved
community to live on the property and work the plantation until the end of the century (Pullins,
et al. 2003).

While Nathaniel Burwell II did not immediately sell Carter’s Grove, he increasingly
focused his attentions on his western properties after the Revolution, moving more and more
enslaved laborers to Clark County until, sometime in 1796 or 1797, the last agricultural workers
left Carter’s Grove (Walsh 1997). Littletown Plantation, reduced to a single home quarter, weathered the Revolution as the most stable of the three properties, since its owner did not sell it or transfer enslaved laborers away until 1796 when it was purchased by William Allen (Stephenson 1963). While the Carter’s Grove and Littletown properties were not transferred as many times as the Kingsmill plantation was in the last quarter of the 18th century, their enslaved communities were still deeply affected by the sale.

**Household Complexity**

The first few decades of the 18th century were not favorable to the development of complex households among the enslaved populations at Littletown and Carters Grove, though they were slightly better for the Kingsmill community. The initial movement of workers onto the properties after they were purchased would have been a time of significant household dissolution as individuals were moved out of their kinship groups to work the newly acquired quarters. The sense of disconnect experienced by these individuals would have paled against the feelings of their African-born compatriots however, especially those purchased by Robert Carter, whose merciless treatment of newly captured Africans is well documented (Walsh 1997). By the 1740s however, the respective patriarchs of the three plantations mostly stopped purchasing newly captured Africans and seem to have left those entailed to their James River quarters in relatively stable conditions. The gender ratio of enslaved laborers at these plantations is about equal by the 1740s and 1750s, an ideal situation for the formation of family groups, and the Kingsmill plantation contained at least three nuclear families living at the same quarter by 1736 (Walsh 1997; Fesler 2004).

The construction of manor homes at these three plantations, indicating that the plantation owner also resided there, also may have improved conditions for household formation among the
enslaved community. The gender ratio among the Littletown enslaved community at the time of James Bray II’s death in 1725 was much more even than the ratio at his other quarters (Fesler 2004). This ratio may be due to the seemingly typical practice of disproportionally settling outlying quarters, particularly those on recently purchased land in the Piedmont, with newly imported captives from Africa (Morgan and Nicholls 1989; Walsh 2001). This practice left the longer occupied plantations in the southeastern Tidewater with a greater number of second and third generation African Americans, who were more likely to form households than African-born individuals (Malone 1992; Walsh 1997). Additionally, enslaved artisans and craftsmen were more likely to reside on the home quarter of their owner, meaning that their enslaved populations were typically larger (Dunn 2014).

Additionally, there is good reason to believe that there were significant kinship ties across plantation boundaries by 1740. At least some members of the Kingsmill and Littletown communities had been living at these sites for almost four decades at this point. Given the relatively small numbers of individuals assigned to each quarter, typically between 8-15, and the propensity for enslaved laborers in the Chesapeake to engage in abroad marriages, it would be expected for these two groups to begin to form kinship connections with one another (Carr and Menard 1989; Morgan 1998). Additionally, many of the second and third generation African Americans moved onto the Carter’s Grove plantation when Carter Burwell took up residence in the late 1730s had either once been owned by Lewis Burwell II or were descended from that community, and may have already had kinship ties to individuals living at Kingsmill (Walsh 1997). Therefore, beginning in the late 1730s, the enslaved inhabitants of these three plantations began to form a single, cohesive community, bound together by the ties of kinship. This situation
provided fertile ground for the development of complex, multi-generational households among the enslaved community and would continue until the late 1770s.

The enslaved community of the three plantations weathered the potential storms of estate transfer with relative stability in decades leading up to the American Revolution. Both Littletown and Carter’s Grove were managed by trustees who were either unwilling or legally unable to divide the estate for most of the 1750s and 1760s. The properties, and entailed laborers, who did change hands were acquired by the expanding Kingsmill plantation, meaning that they were not moved long distances away from their kin. Scholars studying these plantations have argued that this period marks the peak of household complexity amongst the enslaved laborers (Walsh 1997; Fesler 2004). Founding members of this community had lived in place for over half a century, forming the basis of complex, multi-generational households. Generations of abroad marriages knit the community together into a cohesive unit, blurring the boundaries between properties defined by surveyors and the colonial legal system.

The drain of community members westward beginning in the late 1760s must have placed significant strain on the enslaved households that had developed in the Kingsmill/Littletown/Carter’s Grove community. However, the nucleus of this community appears to have stayed in the old quarters south of Williamsburg. Over the course of the 1770s the Burwells placed over 20 runaway advertisements in the Virginia Gazette, most of which noted that runaways were likely returning to the old home quarters to be with their families (Walsh 1997). Like other plantation managers in the Chesapeake, Nathaniel Burwell II and Lewis Burwell IV seem to have preferentially moved young and relatively unskilled enslaved individuals onto their new quarters (Morgan and Nicholls 1989; Dunn 2014), leaving elderly parents and grandparents, the patriarchs and matriarchs of complex enslaved households, in
place. Therefore, while the circumstances did not support increasing household development in this particular enslaved community over the course of the American Revolution, it was not until the Kingsmill plantation was broken up and sold in the late 1770s and early 1780s that household complexity in these quarters was significantly reduced.

The dissolution and sale of the Kingsmill property would have been devastating for Burwell’s enslaved laborers, who were forced to leave their homes of the past half-century; for the larger Kingsmill/Little town/Carter’s Grove community, who lost contact with all of their family members owned by Lewis V; and for Henry Martin’s Caribbean laborers, who were forced out of their own kinship networks and into this new, strange land. Complex, multi-generational households, spanning plantation boundaries, were suddenly broken into pieces, leaving simple nuclear and singleton households in their place. This process was exacerbated by the steady movement of enslaved community members west from Carter’s Grove. The last remnants of the thriving community who had occupied these plantations for most of the 18th century were moved out of their homes by 1797. The enslaved laborers who were brought in, and sometimes placed in the same structures which once housed large, complex families, were ripped out of their own communities and mixed together with strangers, historically poor conditions for household growth. Therefore, the inhabitants of the Kingsmill, Little town, and Carter’s Grove quarters after the American Revolution lived in considerably less complex households than their predecessors before the war.

**Local Marketplaces**

The enslaved individuals who lived in the Kingsmill/Little town/Carter’s Grove community, both before and after the revolution, could have acquired the buttons they wore from a variety of sources. By the middle of the 18th century, Britain’s North American colonies were
deeply enmeshed in a culture of consumerism (Breen 2004; Breen 2013; Schweickart 2014). Archaeologists of colonial Virginia have noted a change in the type and variety of goods imported from England in the 18th century. Scholars have proposed several explanations for this shift in material culture: the adoption of a new, Georgian worldview (Deetz 1996); a strategy by elite members of society to stabilize and naturalize their power (Leone 1988; Shackel and Little 1994); or the traces of the consumer revolution on the other side of the Atlantic (Martin 1993; Pogue 2001); or perhaps some combination of the three. Whatever the explanation, two things are evident: this change affected all levels of Virginian society more-or-less simultaneously, and that enslaved laborers also participated in consumer society to the extent that they were able (Heath 1997; Heath 2004; Galle 2010). The copper alloy buttons found in and around Williamsburg traveled through a complicated network of mercantile connections, developed to serve consumers at all levels of society, before they arrived at their respective sites.

By 1750 there were two processes by which most consumer goods were brought over the Atlantic to the Chesapeake Bay region: consignment and direct trade. The consignment system was, for the most part, only available to wealthy planters. These men had cultivated long-term business relationships with the merchant factors who purchased the tobacco grown on their properties and shipped it to England (Martin 2008; Breen 2013). They directed their factors to purchase items in England and ship them to their Virginian plantations, allowing wealthy Virginians to directly access markets in London and Bristol at the expense of slower delivery times. The consignment system allowed planters to purchase items according to their exact taste and in as large an amount as they needed, options not available through the direct trade (Breen 2013). This system was particularly popular among wealthy plantation owners in the Williamsburg area, who primarily cultivated sweet-scented tobacco for the English home market,
and therefore had strong connections with London-based merchants (Walsh 1999). It was customary in Virginia for large planters to provide enslaved laborers with two sets of clothing per year. Nathaniel Burwell, at least, appears to have followed this tradition, as there are records of him paying a local tailor to make sets of clothes for his “Crop People” (Baumgarten 1988). The materials for these clothes, including buttons, were purchased through the consignment system, so some of the buttons recovered archaeologically from these sites were acquired from a merchant factor by the plantation owner (Baumgarten 1988; Baumgarten 2002; Breen 2013).

By the 1740s, direct trade had become the norm. Merchants, primarily from Scotland, sent employees to open stores in small towns and frontier outposts where they targeted smaller planters who did not have the production capabilities to interest a tobacco factor. They stocked these stores with consumer goods to exchange for tobacco and cash (Martin 2008). Since these stores served more consumers, they tended to carry a greater variety of goods in smaller numbers to appeal to a wider variety of tastes, but they were less likely to have an object that fit a consumer’s exact specifications (Breen 2013). Shopkeepers rarely only acquired objects from one supplier in Britain; they were usually empowered to purchase goods from wholesalers, other merchants, and similar middlemen in order to keep their shelves stocked with desirable objects (Martin 2008). While these store keepers tended to focus on areas where Oronoco tobacco was grown, such as Maryland, the Potomac River valley, and the Piedmont, there were several stores operating out of Williamsburg at the time (Hinks 1988). While the law prohibited enslaved African Americans from purchasing items from shops, shopkeepers tended to disobey the law when it was useful for them, allowing enslaved individuals to purchase objects from their stores though usually only at limited times (Heath 1997; Heath 2004; Martin 2008).
Therefore, enslaved individuals had limited access to the Williamsburg marketplace through formal channels. However, these two methods did not exhaust the opportunities for consumption in Williamsburg. Some objects were imported to the Chesapeake, either through consignment or the direct trade, and then sold directly to consumers, but many continued to circulate through the markets along more shadowy paths. Objects could be purchased at estate sales and auctions, from peddlers traveling the roadways, or at market houses such as the one built in Williamsburg in 1757 (Martin 2008). While Williamsburg was not the largest or most economically bustling town in 18th-century Virginia, it did serve as a hub for local mercantile activity, and enslaved individuals living on the Kingsmill/Littletown/Carters’ Grove plantations were within a day’s walk of the urban center, allowing them access to the market unavailable to their contemporaries living in more rural settings. Enslaved consumers may have accessed these sources to acquire buttons for their clothing.

**Personal Adornment**

The majority of the buttons consumed by enslaved laborers in and around Williamsburg in the second half of the 18th century were acquired to be sewn on to European-style men’s clothing. Metal buttons were most often placed on outerwear, such as coats, jackets, waistcoats and breeches (White 2005). Enslaved laborers were typically provided with a jacket or waistcoat as part of their provisioned clothing, but other outerwear articles would likely have been purchased and/or tailored by the enslaved unless they worked as domestics and were expected to wear livery (Baumgarten 1988; Smith 2017). Clothing provisioned to enslaved field workers differed from the clothes of free men primarily by the quality of the materials from which it was made, rather than the articles of clothing themselves (Baumgarten 2002). Hope Smith’s (2017) analysis of runaway advertisements in 18th-century Virginia demonstrates that observers
distinguished between free and unfree African Americans by the quality of the cloth, the nature of the decorative elements, and the value of the accessories that made up their clothing. The type and quality of buttons one wore played a small but significant role in these judgements.

It is not clear how typical it was for 18th-century plantation owners to provision their enslaved workforces with metal buttons. For field laborers, men’s jackets/waistcoats would typically have been closed with buttons, but an analysis of inventories from a local store near Fredericksburg in the 1760s and 1770s found that waistcoat-sized horn and mohair twist buttons were cheaper to purchase, on average, than metal buttons (Hinks 1988). On the other hand, while most historic references to provisioned clothing do not go into detail about button purchases, both George Washington and Robert Beverly purchased white metal buttons in large quantities to provision their enslaved populations (Baumgarten 1988; Breen 2013). Perhaps these men, as some of the wealthiest members of Virginia society at the time, were able to afford metal buttons. More likely, this particular type of metal button was particularly cheap to acquire through the consignment system. Interestingly, in both of these cases the plantation owner purchased matching sets of large and small buttons, even though they did not provision their enslaved populations with greatcoats. Some plantation owners requiring their enslaved laborers to purchase part of their own work outfits (Baumgarten 1988), so it is certainly possible that on some plantations no buttons were provisioned at all.

Among the upper echelon of 18th-century Virginia society, it was popular to require enslaved domestics to don elaborately decorated outfits known as livery. These uniforms were festooned with flashy design elements, such as golden buttons and trim, which informed viewers of the wealth and power that the plantation owner enjoyed (Baumgarten 2002). Livery was also provisioned through the consignment system, with comparatively smaller orders of more
expensive buttons associated with livery purchases (Breen 2013). Given the wealth and power of
the Burwell and Bray families, and given that all three of these plantations contained a large
manor house occupied by the owner, it is likely that some enslaved individuals living on the sites
examined as part of this analysis were provisioned with metal livery buttons.

Provisioned clothing, whether it was plain working clothing for field workers or flashy
livery for domestics, made the status of the wearer as property explicit to observers. Runaway
advertisements mentioned that when enslaved laborers sought to escape to freedom they often
took with them the best clothes they owned, seeking to blend in to free society (Smith 2017). It
was not just potential escapees who sought out their own clothes however; clothing-related
goods were the second most common item purchased by enslaved African Americans from local
stores, after foodstuffs (Heath 2004; Martin 2008). In a society that justified chattel slavery by
arguing that the black man could never be civilized like the white man, the simple act of wearing
a nice, fashionable coat was a statement of shared humanity. By spending their hard-earned
money on a set of metal buttons as nice as the ones worn by their free neighbors in
Williamsburg, enslaved individuals pointed out the hypocritical and arbitrary nature of slavery as
it was practiced in Virginia.

In addition to attaching buttons to clothing, there is some evidence that enslaved
consumers used them as part of other decorative items, in ways not necessarily intended by the
button’s manufacturers. Excavators of the African Burial Ground in New York found that a few
individuals were buried with linked sleeve buttons placed in areas other than the wrists. One
woman was buried with a single set beneath her upper left arm while another man had two sets
near his neck (Loren 2010). Thus, it is possible that some of the sleeve-link buttons recovered
from the sites were used as decorative adornment. Additionally, three buttons (Figure 11) from
<table>
<thead>
<tr>
<th>Button #: 539K, Site: 44JC52</th>
<th>Button #: 274A, Site: 31BW376**S25</th>
<th>Button #: 041B, Site: 40MR2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat disc spun back bellmetal button from Williamsburg with piercing near edge</td>
<td>Two piece crimped button face with two central piercings from Brunswick</td>
<td>Two piece brazed button face with central piercing from Chota</td>
</tr>
</tbody>
</table>

Figure 11: Pierced Buttons (Photos courtesy of author)
the dataset were pierced after manufacture in order to be strung. While a small number of pierced buttons were recovered from all three localities, two of these buttons were unusual in that they were pierced near the edge, rather than in the center of the face, and were made of white metal, rather than brass. These objects may have functioned in a way analogous to coin charms, which were preferentially made of silver-colored coins and pierced around the edge in 19th-century African American communities (Davidson 2004; Loren 2010).

Chota

In comparison to Williamsburg, Chota’s existence as a town was relatively brief. It is first mentioned in written sources in the early 1740s and ceased to function as a town after it was burned by American Revolutionary forces in 1780 (Schroedl 1986). However, unlike the other locality, Chota was one of the most politically and economically important places in all of Cherokee territory during the third quarter of the 18th century. Several factors contributed to Chota’s quick ascent from small obscure settlement to central place in the Cherokee political landscape. First, its physical proximity to Tanasee, one of the earliest settled Cherokee towns along the Little Tennessee River, provided it with cause to claim the title of “mother town” of the Overhill Towns. Second, its location on the other side of the Appalachian Mountains from both British colonial settlements and the Creek confederacy provided it with some protection from direct attacks from either group and attracted refugees from the wars of the early and middle 18th century. Finally, and most importantly, it was home to a cohort of elite men and women who were able to consolidate political power, both over the region and over the Cherokee as a group, from 1750 to the early 1780s. For the households who lived near the townhouse/plaza at Chota in the third quarter of the 18th century, these factors structured both their household complexity and their access to marketplaces and goods manufactured in Europe.
History

The 17th century was a time of significant upheaval among the Cherokee, and the settlement of the Carolina colonies beginning in the 1670s served to increase social and geographic unrest, despite the rarity of direct contact between Cherokee individuals and the British at that time. By 1685, South Carolinians had set up their first trading post in the Southern Appalachian piedmont, and they quickly began to make significant profits from shipping traded animal skins to leatherworkers in England and shipping captive Indians to other plantations in other colonies (Hatley 1993). The disruption of European-introduced diseases, warfare and the indigenous slave trade served to scatter the Cherokee people, who had previously lived primarily in densely-packed, nucleated towns (Rodning 2015). Responding to these hardships, many Cherokee families, particularly in the Eastern Tennessee region, migrated to more remote areas where they settled in small communities of widely-scattered farmsteads made of refugees from all around the Cherokee territory and beyond (Marcoux 2010). As the 18th century progressed, Cherokee communities re-coalesced, developing into five distinct regions by 1750, known as the Lower Towns, the Middle Towns, the Valley Towns, the Out Towns, and the Overhill Towns (Gragson and Bolstad 2007; Boulware 2011). As these regions names indicate, they each consisted of a handful of towns, usually laid out along a single river valley, which at some level shared a distinct identity. The Overhill Towns mostly lay along the lower Little Tennessee River, near its confluence with the Clinch River (Figure 12) While town affiliation was an important aspect of an 18th-century Cherokee’s political and social identity, regional affiliation was primarily driven by the recognition that one town was the “mother town” of the region and therefore was empowered to make certain limited decisions on behalf of all the towns in the region (Boulware 2011).
Figure 12: 1762 Map of the Overhill Cherokee Towns (Timberlake 2007)
Beginning around 1750, Cherokees began to describe Chota as the mother town of the Overhill Towns, but its status as such was not uncontested. On the 1721 census of Cherokee towns undertaken by the British Colonial government, the two largest towns in the area that would come to be called the Overhill Towns were called Tellico and Tanasee (Schroedl 1986; Gragson and Bolstad 2007). Both of these towns were founded in the late 17th century and by the early 18th century had significant political influence over other towns in the region (Benthall 1985; Schroedl 1986). Tanasee secured a full-time fur trading merchant by 1711 while an elite at Tellico known as Moytoy was able to secure an agreement with the South Carolina government that they would only negotiate with him in 1730. However, by 1746 a townhouse had been constructed at Chota, only a few hundred feet from Tanasee, and from that point on Chota was the most politically dominant town in the region until the Revolutionary War, with Tanasee quickly fading in population and importance (Schroedl 1986). Such was Chota’s political importance that it played host to several large councils where each Cherokee town sent representatives to discuss matters of importance to the whole people (Boulware 2011).

While large-scale councils such as these happened occasionally, for most of the 18th century each Cherokee town was its own independent governing unit. A town was defined as a place that had a townhouse and ceremonial plaza. Townhouses consisted of paired structures, a large round structure with a central fire and benches around the walls and a more open rectangular structure for use in the summer. Townhouses were the political and religious center of each town. Council meetings, religious ceremonies, feasts, diplomatic meetings, wedding ceremonies and important funerals all took place at the townhouse (Schroedl 1986; Rodning 2015). Chota only became a distinct entity after the construction of its townhouse, and despite the close proximity of Chota and Tanasee, they were considered two separate places so long as
they each had their own townhouse. Like most 18th-century Cherokee towns, Chota consisted of a small “downtown” area of relatively tightly-clustered household complexes around the townhouse/plaza and which was surrounded by a much larger region of more widely-spaced households and farming fields (Schroedl 1986). Since 18th-century Cherokee individuals were not legally able to privately own land, though they did hold that structures, fields and objects could be privately owned, any individual could theoretically build their house wherever they wanted (Perdue 1998). However, given the political importance of Chota’s townhouse, it is likely that the individuals who were living in the structures close to it were of elite lineages.

Chota’s political ascension coincided with a period of increased colonial interaction between the Overhill Towns and the South Carolinian colonists. While early interactions between the two groups were dominated by elites from the Lower and Middle Towns, who were much closer to the British settlements, by the 1740s the Overhill settlements began to demand more access to colonial fur traders (Hatley 1993). Overhill elites in the late 1740s and early 1750s sought to encourage as many sources of trade as possible, sending delegations to Virginia and French colonial outposts in addition to their trade with the South Carolinians. Following the outbreak of the Seven Years War, Overhill elites negotiated for more access to traders and manufactured goods in exchange for supporting the British cause (Hatley 1993; Boulware 2011). Seeking to further engage with the colonial trade, Overhill emissaries encouraged both Virginia and South Carolina to construct a fort in their region in 1756. While the South Carolinian fort lasted longer, it was besieged and eventually destroyed by Cherokee forces in 1760 in retaliation for the murder of Cherokee warriors returning from fighting in the Seven Years War by Virginians who failed to distinguish between friendly and hostile indigenous forces (Boulware 2011). This attack led to the devastating Anglo-Cherokee war, wherein South Carolinian forces
sacked and burned dozens of Cherokee towns in the Lower, Middle, and Out regions, whose occupants fled to the Overhill Towns.

Trade with South Carolina was cut off during the war, and afterwards South Carolina set up a factory system wherein Cherokee consumers could only trade for goods at Fort Prince George near the Lower Towns, almost a hundred miles from the Overhill region. Overhill elites, unhappy with this arrangement, argued against it and it was eventually repealed, but the fur trading connections between the Overhill Towns and the British colonial settlements never returned to vibrancy that they had in the 1750s (Hatley 1993; Boulware 2011). With the outbreak of the American Revolution, the Cherokee almost unanimously sided with the British, hoping that the British crown would prevent colonial settlers from continuing to settle on their lands. In retaliation, American militias attacked and burned Cherokee settlements in all of the regions until a truce was negotiated in 1777 (Schroedl 1986). Chota was spared during this initial attack, but was later burned in 1780 by American forces as part of their campaign against the Chickamonga faction of the Cherokee, ending its designation as a town.

**Household Complexity**

The Cherokee kinship system played an important role in social organization during the 18th century. While town affiliation structured the political and economic identities of 18th-century Cherokee individuals, clan affiliation structured their social, domestic and legal identities (Boulware 2011). Each Cherokee individual belongs to one of seven clans based on the clan affiliation of their mother (Adair 1930; Bartram 2002). In the 18th-century, Cherokee citizenship, and even humanity, meant belonging to a clan and legal matters were based upon clan affiliation (Perdue 1979; Perdue 1998).
Therefore, 18th-century Cherokee claims to property were based on an individual’s descent from a clan founder through their female line. Ensor (2013) argues that in matriarchal societies, individuals tend to bury their ancestors near their domestic complexes in order to create an explicit connection between their ancestor, from whom they inherited their property, and the property they inherited. This pattern has been observed at many Cherokee sites. Rodning and VanDerwarker (2002) found that most of the burials in the 16th- and 17th-century Coweeta Creek site near domestic structures contained older women, whereas burials in the public townhouse were much more likely to contain men. They argued that this gendered spatioal arrangement of graves represented the differing sources of power for men and women in Cherokee society, with women deriving their power from their status as matrilineal heads of households and men deriving power from their participation in public activities of diplomacy and warfare in the townhouse (Rodning 2015). By burying matriarchs beneath their houses, their dependents reinforced their connection to the land and structures that they inherited.

At Chota, each household dating from the third quarter of the 18th century consisted of a paired rectangular summer house and round winter house (Schroedl 1986). Each rectangular structure also contained at least one subfloor burial, following the pattern found by Rodning at Coweeta Creek. Several older men, including Ocanacasta, an elite member of Overhill Cherokee society in the mid-18th century, were buried in and around the Council house, whereas individuals buried within domestic structures tended to be women and children (Schroedl 1986). Thus, at Chota subfloor burials were used as a loci of household behavior
Local Marketplaces

After the Yamasee War, in an attempt to better control the Indian trade, the South Carolina colonial government required fur traders to pay for a license to trade with a particular town. These licensed traders would often live for at least part of the year in the town they were assigned and tended to form long-term economic and political alliances with the native elites of their town, including marrying into their families. These traders purchased trade goods from stores in Charlestown and employed packhorse men to transport trade goods to their trading posts/houses in Cherokee towns and bring bundles of deerskins back east (Doan 1999; Braund 2008). As early as 1711 there was a full-time merchant living at Tanasee (Schroedl 1986), though other unlicensed traders likely came through town on an irregular basis (Hatley 1993). Overhill Cherokees who lived in towns with a resident fur trader were able to buy goods all year round on credit for the next winter’s deer skins, providing much more access to trade goods. Fur traders in turn bought trade goods on credit from shop owners in Augusta, Savannah, and Charlestown who acquired their goods from wealthy merchants who imported shiploads of trade goods across the Atlantic basin into the port of Charlestown (Rothrock 1929; Braund 2008). While this provisioning system was common across the Southeast in the mid-18th century, the geographic location of the Overhill Cherokee towns had a significant effect on its structure as they interacted with it.

Unlike traders to the Creek Towns or the Lower and Middle Cherokee towns, fur traders to the Overhill Towns were unable to transport their goods in boats or wagons. The steep, winding mountain paths over the mountains to the lower Little Tennessee River Valley, where the Overhill Towns were located, could only be navigated on foot or on horseback. The additional expense of transporting trade goods and skins cut into the already razor-thin profit
margins of the fur traders. While the most successful merchants to the Creek such as John Rae, George Galphin, and Lachlan McGillivaray were able to make enough money to consolidate their operations into mercantile companies which held the license to several Creek towns, Overhill Cherokee fur traders tended to only work with a single town (Cashin 1992). Additionally, while the Augusta-based Creek traders were eventually able to open stores of their own and sell goods to other fur traders as well as to natives, the Overhill traders tended to be so in debt to the merchants and stores that supplied them with trade goods that they were never able to diversify (Hatley 1993). These geographical and historical circumstances significantly reduced the number of sources of trade goods that the Overhill Cherokee towns had access to, prompting their complaints of poverty and their attempts to open trade relationships with merchants from Virginia and the French Fort Toulouse on the Mississippi River. There is no evidence that either of these trade connections was ever as productive as their connections with Charlestown, and after the Seven Years War even fewer traders were willing to risk the expense and difficulties of traveling to the Overhill towns (Boulware 2011). Nevertheless, as the most populous town in the region, Chota had the best connections with the Atlantic world among the Overhill towns.

**Personal Adornment**

When William Bartram traveled around the American Southeast in the early 1770s, he took copious notes on the physical environment and the traditions of the Native Americans who occupied it, which he eventually published as a book. In this book, he described the garb of the Cherokees and Creek with whom he spent the most time. Bartram explained that men wore “shirts of fine linen” and a flap or “a piece of blue cloth, about 18 inches wide, this they pass between their thighs, and both ends being taken up and drawn through a belt around their waist,
the ends fall down, one before, and the other behind.” On their feet they wore leather moccasins and their calves were covered with “cloth boots” secured with gartering. Over these clothes, men wore “a large mantle of the finest cloth they are able to purchase… fancifully decorated, with rich lace or fringe round the border, and often with little round silver, or brass bells.” According to Bartram, women’s flaps were “larger and longer, reaching almost to the middle of the leg,” and rather than wearing European-style shirts they wore “a little short waistcoat, usually made of calico, printed linen, or fine cloth.” Bartram writes that women did not wear moccasins or cloth boots but they did wear mantles (Figure 16). Following this long and detailed description of dress and ornamentation Bartram added the following disclaimer: “these decorations are only to be considered as indulgencies on particular occasions, and the privilege of youth… usually they are almost naked, contenting themselves with the flap and sometimes a shirt, boots and moccasins” (Bartram 2002).

Bartram and other European visitors to the Cherokee towns in the mid-18th century found that rather than wearing coats or jackets, both Cherokee men and women wore mantles as their formal outerwear which they wrapped around their bodies and secured with ties (O’Niel 1995; Timberlake 2007). While some European-style coats were gifted or traded directly with the Cherokee, it does not appear that they became fashionable to wear until the 19th century. Therefore, unlike contemporary European and enslaved African consumers, Cherokee individuals did not primarily use buttons to secure pieces of clothing together. The majority of burial contexts in Chota and Tenasse that included buttons only contained a few (typically from 1 to 14, with an average of about 6) which were found in clusters around the neck/wrists or in a line starting at the back of the skull and extending down the spinal column. Most of the time, therefore, buttons appear to have been strung together to adorn necklaces, bracelets, and perhaps
hair ornaments. In one case careful excavators found buttons and beads interspersed on what was once the same necklace and several buttons recovered from these sites contain small amounts of leather in the shanks, preserved by their contact with the copper.

In some cases however, buttons did appear to have been sewn on to cloth garments, though the nature of the garments is somewhat difficult to ascertain. One individual, an adult women buried underneath a structure, was covered with what appears to be a European-style match coat based on the number and style of buttons that were found by excavators (Schroedl 1986). Two burials from Chota contained considerably more buttons than would be necessary to secure one garment, one had a minimum of 51 and the other a minimum of 32. Moreover, all of the buttons associated with these two burials were small, two-piece brazed buttons. Two other burials from other Overhill towns contained individuals with large numbers of two-piece brazed buttons, one at Citico with 21 buttons and another at Tallassee with a minimum of 37. Given their prevalence at Overhill Cherokee sites, two-piece brazed buttons may have been used in much the same way as the bells Bartram noticed as decoration around the fringes of formal mantals. Whatever the case, Overhill Cherokee individuals primarily used buttons to decorate, not secure, garments.

The lone exception to this generalization may be sleeve link buttons. Bartram and others noted the Cherokee fondness for linen shirts, the sleeves of which, in the British tradtion, were secured with sleeve links (Baumgarten 2002). This button type is found in abundance at the Overhill Towns, though they have only been found in one burial context, a burial in Tomotley. While this burial contained two matching pairs of sleeve link buttons, the individual they adorned was a child between 10 months and 2 years old at death. Since no accounts mention
Cherokee children wearing shirts, these sleeve link buttons, like the ones found at the African Burial Ground in New York, were probably used for an alternative purpose (Loren 2010).

The Cherokee acquired copper-alloy ornaments through trade to use as decoration for generations. Tinkler cones, made from flat sheets of copper or brass rolled into a cone, have been found on archaeological sites in the Southeast dating back centuries and before European contact were made from copper ore found in outcrops far from the Cherokee homeland (Anderson and Sassaman 2012). Archaeological and ethnographic data indicate that these objects were suspended from strips of leather and used to ornament objects with their metallic gleam and distinctive noise when they struck one another. These same qualities of sight and sound are apparent in the small bells that Bartram mentioned, suggesting that the desirable elements of copper-alloy ornaments were their appearance when dangling and the metallic sound they produced. Two-piece brazed and soldered buttons have a much rounder cross section than either flat cast and two piece crimped buttons, making them much more appealing when viewed from the side. Additionally, these button types were the only ones that had a hollow center, meaning that they make a bell-like, metallic sound when struck together. Additionally, several pierced buttons were recovered from the Overhill towns. Most of these buttons were the faces of two-piece brazed buttons and were pierced through the center (Figure 11). They were likely strung together on to necklaces, perhaps with beads in between (Loren 2010).

In order to better understand the context of button use among the 18th-century Cherokee, I examined which factors, if any, significantly increased or decreased the probability that an individual would be buried with buttons. To do so, I broke all of the mapped historic Cherokee burials from Chota, Tanasee, Tomotly, Toqua and Citico into subsets representing particular social groups and compared the percent of individuals buried with buttons among each group to
the overall percent of burials with buttons-adorned objects in the Overhill towns. I examined two factors related to the associated skeletal remains, age and sex, and two factors related to the location of the burial, relationship to domestic structures and town association. Of the 186 burials excavated at these sites, 26, or about 14%, contained buttons. Therefore, if the 95% confidence interval around the estimate of button occurrence in any subset of burials did not include the overall rate of button occurrence (14%), then that subset of the population was significantly more or less likely to be buried with those objects (Figure 13).

Both the sex and age of the skeletal remains, when they could be determined, had little effect on the probability than an individual would be buried with button-adorned objects. The burials of subadults (ages 0-11) were slightly more likely than older cohorts to contain buttons, a likely result of the practice of intering beaded necklaces with the bodies of children as a sign of mourning and clan-based connections (Babin 2018). Adult men were less likely to be buried with buttons, though not significantly so, though this is likely driven by the effect of bural location. The location of the burial, either inside or outside a domestic structure, had a significant effect on the probability of that buttons would be included in burial contexts, but the town the individual was buried in had no significant effect on the likelihood of being intered with buttons. Individuals interred beneath house floors were significantly more likely to be adorned with button-decorated objects, whereas burials outside of structures or in public buildings were significantly less likely to contain buttons.

While it is certainly true that the objects that 18th-century Cherokee individuals were buried with are more representative of their social identities and the kinship networks that they were part of than the way they dressed in life, it does appear that buttons had less gendered uses in Cherokee culture than in British colonial styles. Both men and women adorned themselves
Figure 13: Cherokee Burial Analysis Results
with buttons, particularly during special occasions and ceremonies, rather than wearing them as an everyday clothing fastener. However, wearing buttons does appear to have had social significance since individuals who were buried within structures, and therefore were more important to the kinship networks which governed the transfer of property between generations, were more likely to be decorated in button-adorned articles of clothing. This pattern is not apparent with beads, at least in Chota and Tanasee, which were significantly more likely to be placed in the burials of subadults and in earlier burials, but did not significantly differ between subfloor and outside interments (Babin and Schweickart 2018). Therefore, while buttons were not as common as beads as an object of adornment, they were still used fairly commonly in 18th-century Overhill Cherokee fashion.

Brunswick

The town of Brunswick was a colonial port, a place where the natural resources of the American continent were packed and placed upon ships which crisscrossed the Atlantic Ocean in the service of England’s mercantile and imperial ambitions. This designation shaped the lives and households of the town’s inhabitants. The principle commodity produced and shipped from the Cape Fear region in the 18th century was known as naval stores. This term referred to several related products, turpentine, tar, pitch, and rosin, which were essential to the construction and maintenance of wooden ships and were made from the sap of coniferous trees (Robinson 1997). The global demand for this commodity played a central role in the founding and growth of Brunswick.
History

In 1705, the English government passed a law that paid English citizens to produce these products in an attempt to wean the English ship-building industry off of Scandinavian-produced naval stores, which could be intermittent in times of war (Lee 1952). Wealthy landholders in the Carolina Colony, who owned thousands of acres of coastal plain covered primarily in longleaf pine forest, took advantage of these legal and environmental circumstances and by 1720 were shipping tens of thousands of barrels of naval stores out of the port of Charlestown per year (Robinson 1997). While plantation owners near Charlestown soon found greater profits by focusing on rice production, a group of wealthy Carolinians lead by Maurice Moore recognized the Cape Fear region was a prime location for the production of naval stores since it was heavily forested, cross-cut by estuaries easing transportation costs, and had access to a deep water channel connected to the ocean for shipping. George Burrington, the colonial governor of North Carolina, opened the region for settlement in 1724 and Moore and his cronies soon patented large swaths of forest for exploitation (Lee 1952). Maurice Moore, knowing that he needed a local port from which to ship his naval supplies, petitioned the Lords Proprietor in 1725 to grant him 1500 acres of land on the west bank of the Cape Fear river about 15 miles upstream from the mouth of the river, divided into 82.5ft by 264ft rectangular lots, for a port town (South 2010).

The first people to purchase lots in Moore’s new town, like most of the first colonists in the area, were wealthy landowners and members of the colonial elite seeking to get in on a potentially lucrative endeavor. Eager land speculators quickly snapped up the lots closest to the river, hoping to re-sell them when they increased in value, and it was designated the seat of government for its precinct in 1729 (South 2010). Despite this early interest, Brunswick never became the bustling port town that Moore imagined. A visitor to the village in 1731 described it
as containing only 10 or 12 “mean Houses” and the orderly rectilinear roads laid out in the town plan were never built (Lee 1952). As the colonial population of the Cape Fear area increased, a new town, originally called New Town or Newton but renamed Wilmington in 1740, was founded a few miles further up the river from Brunswick, near the junction of the Brunswick and Cape Fear Rivers. Wilmington’s location was not ideal for trans-Atlantic shipping, since the river at that point was too shallow for the deep drafted craft from England to access, but it was much more centrally located within the colonial settlement. Local merchants chose to open stores in Wilmington rather than Brunswick since it was closer to most of the outlying plantations along the rivers and they could still import goods on smaller, shallow drafted vessels which carried out much of the inter-colonial trade with England’s other North American colonies (Lee 1952; Robinson 1997). Thus, while colonial port officials were stationed at Brunswick throughout the 18th century, by 1750 Wilmington was the commercial and political center of the region. In 1754 the Governor of North Carolina estimated that Wilmington was home to about 70 families, in comparison to Brunswick’s 20 (Lee 1952).

While the town itself grew at an anemic pace, the Port of Brunswick quickly became the most heavily trafficked port in the colony. By the 1750s more turpentine, pitch, and tar was shipped out of Brunswick than anywhere else in the world. From 1768 to 1773 alone, over 250,000 barrels of naval stores were shipped from Brunswick to England, making up about 40% of the total production from Britain’s North American colonies (Robinson 1997). All of this shipping activity provided work for carpenters, coopers, blacksmiths, sailmakers, and many other tradesmen who were involved with transport of goods and the maintenance of ships, in addition to tavern and public house keepers who profited off of the sailors and tar makers who came through town. Brunswick’s population peaked in the late 1760s or early 1770s when about 200 to
250 individuals lived there (Lee 1952), but the American Revolution marked the end of the town as an urban center. Most of the population relocated to Wilmington with the arrival of the British Navy, who blockaded and burned the town in 1776 (South 2010).

Even at its peak, Brunswick never resembled the proper English colonial town with evenly sized lots fronting on to orthogonally-oriented streets. A map of the town drawn in 1769 shows a much more organically laid out village, with houses clustered in areas of relatively flat ground, most with a small fenced yard and garden whose boundaries only vaguely followed the property lines as they were originally surveyed (Figure 14). While archaeological excavation has revealed that the map maker did occasionally mis-represent the exact size and shape of a structure, or occasionally omitted one entirely, he seems to have captured the general layout of town accurately (South 2010). According to the 1769 map, the town was effectively divided in two by a large ravine. The piers and warehouses are located south of the ravine, and the houses on this half mostly front on to a road running north-south along the river, known as Front Street. The courthouse and jail, likely built in 1764 when the city was named the county seat of the newly-created Brunswick County (Lee 1952), were located in the north half of town and sat at the southern end of a second north-south road. Most of the houses in this half of town fronted on this road, called The Alley. The properties that I used in this study all fronted on one of these two streets, four on Front Street, roughly aligning with lots 28, 29, 30 and 31, and two on The Alley, roughly aligning with lots 344 and 345/6 (Figure 14).

The southern half of town, being closest to the docks, was developed earliest and several of the “mean Houses” described by a visitor in 1731 were in this area of town (South 2010). As best can be determined from the spotty documentary record, in 1750 lot 28 was owned by William Dry III, lot 29 was owned by George Moore, and lots 30 and 31 were owned by Usher
Figure 14: 1769 Sauthier Map of Brunswick Detail with Sites Marked (Sauthier 1769)
Espy (Grimes 1912; South 2010). These men had many similarities. They were all descendants of wealthy Carolina planters, William Dry Jr., Roger Moore and James Espy, who had moved to the Cape Fear area in the early 1700s, patented large plantations in the hinterlands, and purchased several lots in Brunswick. Roger Moore, brother to Brunswick’s founder Maurice Moore, passed two plantations north of Brunswick to his two sons, George and William, at his death in 1747. In addition to giving each of his sons their own plantation, Roger gave them several other properties, including a lot in Brunswick “where Mr. Ross at present dwells” which matches the description of lot 29 (“running from the river as farr as the street before Doct. Fergu’s House [lot 71]”) (Grimes 1912). William Dry Jr. was married to Rebecca Moore, Rodger and Maurice’s sister. At his death in 1747, Dry left a sizable fortune in real estate, including at least five lots in Brunswick, to his son Willian Dry III (South 2010). Finally, while James Espy did not have a familial connection to the Moores, he was able to patent a 350-acre plantation on Broad Water in 1735 in addition to his three lots in Brunswick, which his son Usher received upon his death in 1739 (Clark 1886; South 2010). There are no surviving records of Espy selling his Brunswick properties, so they were likely passed on to his descendants upon his death in 1967.

Thus, it is unlikely that any of these three men or their families actually lived in the houses constructed on these lots. They each owned their own plantations, and if they were to live in a city, they would likely have chosen nearby Wilmington, the political heart of colonial southern North Carolina (Assembly 1756; South 2010). Instead, these properties, and the houses that were built upon them at some point in the second quarter of the 18th century, were rented out to others, most likely middling craftsmen, mariners and merchants, the sorts of people who lived and worked in Brunswick (Wood 2004). The lone exception to this pattern was lot 28,
which William Dry III sold to his cousin Judge Maurice Moore (the son of the town founder) in 1759. Rather than continuing to rent the property, Judge Moore moved his family to the town and lived there until the upheaval of the Revolutionary War. This property was one of only two in town that contained a pleasure garden on the 1769 map. Archaeological excavation of the property revealed a large detached kitchen and a brick smokehouse, outbuildings which have not been identified archaeologically at any other site in town except Prospect Hall and Russelborough, both large manor houses owned by wealthy North Carolinian elites (South 2010).

The northern half of Brunswick town developed much more slowly. While lots were purchased early on, most of them were not built upon until the middle of the 18th century (South 2010). One motivation for the growth of the north half of town was the construction of Russelborough, a plantation with a large manor house and outbuildings which was built around 1753 and served as the home of two successive Governors of North Carolina from 1758 to 1770 (South 2010; Beaman and Melomo 2016). Lots 337-351 were owned by Rodger Moore and his sons until they were purchased as a block by John Chalkhill, the owner of the merchant vessel Scorpion, in 1753 (South 2010). Sometime around the time of this purchase Chalkhill seems to have built a substantial house, detached kitchen and large bread oven on lot 337, a complex that came to be known as Prospect Hall (South 2010; Beaman and Melomo 2016). Prospect Hall changed hands several times over the course of the next decade, but lots 344 and 345/6 were always included with it until Christopher Wooten, a sailmaker, purchased them separately sometime after 1761 (Beaman and Melomo 2016). Wooten apparently built a house on lot 345/6, which appears on the 1769 map, and occupied it until his death in 1774. By 1764, Wooten had also built a “dwelling house and kitchen” on lot 344 when he sold it to Jonathan Caulkins, a
carpenter. However, Caulkins must have only occupied the house for a short while because in 1766 Wooten sold the land to a mariner, Thomas Marnan, who owned it until the town was abandoned (South 2010; Beaman and Melomo 2016).

**Household Complexity**

An analysis of the tax records from 1769 (Table 3) demonstrates the range of wealth among the Brunswick households used in this analysis. Judge Moore paid taxes on 4 white men over the age of 16 and 72 enslaved African Americans over the age of 12, most of whom likely resided at his many outlying plantations. Christopher Wooten, the owner of the only other lot used in this analysis with separate outbuildings, paid taxes for four white men and six enslaved laborers, three men and three women. Thomas Marnan, the owner of lot 344, paid taxes only on himself and one African American man. While the names of the individuals who rented lots 29, 30 and 31 are not known, their households are likely to have been similar to Marnan’s or even William Caulkins, the son of Jonathan Caulkins, who paid taxes on himself alone. Therefore, the households included in this analysis provide a reasonable approximation of the range of socioeconomic variation amongst the white population of Brunswick during the third quarter of the 18th century.

While each of these households sought to structure themselves according to the European marriage pattern, the colonial environment had some significant effects on their ability to do so. While no census records of the Lower Cape Fear survive, Bradford Wood (2004) was able to make some estimates about the demographics of the region using wills and other documents. Based on his analysis, over half of all testators had no living nuclear family when they wrote their wills and almost two thirds of them were childless. Wood argues that these high levels of
<table>
<thead>
<tr>
<th>Head of Household</th>
<th>No. of Chair Wheels</th>
<th>No. of White Men (over age 16)</th>
<th>No. of Black Men (over age 12)</th>
<th>No. of Black Women (over age 12)</th>
<th>No. of Negro Boys (under age 12)</th>
</tr>
</thead>
<tbody>
<tr>
<td>William Calkins</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Thomas Marnan</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maurice Moore</td>
<td>6</td>
<td>4</td>
<td>33</td>
<td>34</td>
<td>5</td>
</tr>
<tr>
<td>Christopher Wooten</td>
<td>0</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
singleton households and childless couples are due to a high mortality rate caused by infectious
disease epidemics. The semi-tropical environment of Lower Cape Fear made for a disease
environment similar to the South Carolina lowlands in the 18th century. Brunswick in particular
was referred to as a “sickly and unhealthy place” with several recorded epidemics in town over
the course of the 18th century. Moreover, since the region was not settled until relatively late,
most of the inhabitants were fairly recent immigrants, and therefore rarely had non-nuclear kin
upon whom to rely (Wood 2004).

While the ravages of diseases served to simplify Brunswick households, the addition of
non-kin household members, including life-cycle servants and enslaved African Americans,
made them more complex. Life-cycle servants were an integral part of the European Marriage
Pattern from the 17th to the 19th centuries. Most life-cycle servants were in their teens and early-
twenties, after they had left their parents’ house but before they had married and set up their own
household, and there was no expectation that they were socially inferior to their masters. These
men and women were paid to participate in the day-to-day productive activities of the group, in
return for a small wage. Some life-cycle servants were formal apprentices, whose parents paid a
master to teach and house them for several years, but most worked on yearly contracts and only
rarely renewed their contract with the same household.

Unlike many urban areas in the south, Brunswick does not appear to have had a
particularly large African American population, either enslaved or free. The available evidence
suggests that Brunswick’s white population was at least three times as large as its black
population throughout the 18th century (Wood 2004). Most Brunswick households had only a
few enslaved laborers, if any. Moreover, since Brunswick lacked a centralized marketplace like
Wilmington or Williamsburg, the enslaved residents of Brunswick lacked the ability to
participate in the market economy in the same way as their contemporaries in more formal cities could (Morgan 1998).

Most of Brunswick’s enslaved population lived in the same houses as their owners and contributed to the household economy in much the same way as a life-cycle servant would. Unlike life-cycle servants however, enslaved individuals would not be able to leave and start their own families, and in situations like this, where most slave-owners could only afford a few enslaved laborers, the opportunities for household construction among the enslaved were particularly limited (Dunaway 2003). Judge Moore’s household is the only exception to this pattern among the archaeologically-excavated Brunswick sites. His large enslaved population, though mostly living at other properties, increased the likelihood that the African American individuals who lived on lot 28 were able to form their own households relatively distinct from the white, free household.

Local Marketplaces

Free, white consumers living at Brunswick in the third quarter of the 18th century had direct access to the complex trade network that spanned the Atlantic during this period. Except for a few years in the early 1740s, all legitimate maritime trade in and out of the lower Cape Fear region was required to clear customs in Brunswick (Lee 1952). While the Port of Brunswick did not handle nearly the volume of trade as the major colonial ports such as Philadelphia and Charlestown, it was by far the busiest port in North Carolina, as it was the destination of about half of the ships which docked in the colony (Lee 1965; Robinson 1997). Large ships averaging over 100 tons, primarily sailing to and from Great Britain, docked in Brunswick’s deep water harbor where they were loaded with naval stores and timber. Smaller ships, averaging about 50-
60 tons, traveled between Port Brunswick and other colonial ports in the West Indies and North America (Lee 1965). While these smaller ships were forced to stop at Brunswick, the majority of them loaded and unloaded their cargo up-river in Wilmington. While large plantation owners tended to ship their goods out of Brunswick throughout the colonial period, by the 1750s Wilmington became the commercial hub of North Carolina and was the home of many merchants and merchant companies (Wood 2004).

As in Virginia, some of the wealthiest members of society could afford to pay factors in England to purchase goods and ship them across the Atlantic, but the vast majority of consumers purchased items on credit in local stores (Lee 1965). Wilmington was the principle city in North Carolina for wholesale importation, with merchants importing personal objects, such as buttons, from a wide variety of sources throughout the British Atlantic. While Wilmington merchants maintained significant business connections with Charleston merchants, by the late colonial period they were fully immersed in the Atlantic world, bringing in shipments of goods from England, Philadelphia, Boston, Kingston, and Rhode Island (Lee 1965; Wood 2004). These merchants sold their imported goods at their own stores or sold them to other store owners throughout the colony. The house on lot 30 in Brunswick may have intermittently served as a store (South 2010). Thus, goods could be imported directly by elites with connections to naval stores merchants in England, but most Brunswick consumers purchased them in smaller quantities from merchant stores either in Brunswick or in nearby Wilmington (Wood 2004).

Additionally, since the majority of the people who resided in Brunswick were either mariners themselves or worked with the maritime trade, it was possible for many of them to bypass the mercantile network entirely. Archaeologists examining domestic assemblages from 17th-century occupants of Bombay Wharf along the Thames River in London found an unusually
high percentage of ceramics of foreign manufacture. They argued that since this neighborhood was mostly populated by sailors and the families of sailors at this time, they had better access to foreign goods than other Londoners at the same socio-economic level (Pearce 2007). This finding fits in to a larger pattern of individuals with direct connections to the maritime trade consuming greater amounts of foreign goods (Gutiérrez 2007; Voss 2008). Therefore, in addition to acquiring goods from local merchants, households in Brunswick had direct access to coastal markets across the North Atlantic from which they could acquire objects.

**Personal Adornment**

Copper-alloy buttons were most commonly used to fasten and adorn formal men’s outerwear, i.e. coats, jackets, and waistcoats, but they could be incorporated onto many other articles of clothing as well. Men’s shirts could be adorned with buttons, though these were usually made of lighter materials such as cloth or knotted thread (Hinks 1988; White 2005), and in the mid-18th century it was common to fasten shirt cuffs with sleeve links (Smith 2017). The fashion of the time among British men was to wear formal suits with tight breeches, which were alternatively buckled or buttoned closed, while leather trousers with flaps secured with buttons were a less formal alternative for working men (Baumgarten 2002; Smith 2017). Some hats had flaps that were secured with buttons (Smith 2017). While most of these articles of clothing were associated with men, some women’s outfits were adorned with buttons. Women’s riding clothes were often secured with buttons and some sources describe everyday women’s jackets secured with buttons (Smith 2017). Therefore, while most buttons analyzed in this study were attached to waistcoats or coats, some percentage of them were likely attached to other garments as well, depending upon the tastes of the wearer.
British colonists at all but the lowest socioeconomic levels were expected to have many outfits to wear over the course of their lives. Even the poorest man in Brunswick would have owned at least one formal suit to be worn at his wedding and other important events (Baumgarten 2002). Increased access to a variety of consumer goods over the course of the 18th century allowed British men and women at all levels of society to express their individuality through the material and cut of their clothes (Baumgarten 2002; Hodge 2014; Smith 2017). The selection of one type of button over another, when placed in context on a particular article of clothing made of a particular fabric, made a statement about an individual’s age, social standing, and even political identity. Macaroni were the subject of significant ridicule in mid-18th-century Britain, but the ability for Macaroni to blur class divides and accumulate prestige through their dress and manner was attractive as well. One’s feelings about the Macaroni informed and was informed by the ideology of masculinity they approved of, their feelings about the nature of the British class system, and their religious beliefs (Smith 2017). The choice to wear an elaborately gilded button with a design mimicking the patterns of fashionable embroidered buttons or to choose a plain, white metal button served to reinforce both an individual’s ideas of self and communicate information about their ideologies to others in society.

In addition to attaching buttons to clothing, six buttons recovered from Brunswick were pierced after construction in order to hang them from a leather thong. Unlike buttons from other localities, most of the pierced buttons were manufactured from two-piece crimped type buttons, all of them were decorated, and all but one was gilded. Two of these buttons had multiple piercings so that the cord could go through the face of the button multiple times (Figure 11). While these buttons could have been pierced and worn by Brunswick’s enslaved population, they are all pierced in the center and made from the faces of gilded buttons, unlike those from
Williamsburg. Since wearing pierced coins has a long tradition in English folk medicine it is just as likely, if not more likely, that these buttons were pierced and worn by British colonists (Davidson 2004). It appears that amongst colonial individuals, larger, more decorative buttons were selected for piercing, and they were typically worn facing out from the body.

Conclusion

As this chapter demonstrates, each of these localities had similar historical trajectories, allowing them to be compared. Individuals living in all three of these places were connected to the Atlantic world, both producing commodities to be sold to British merchants and purchasing manufactured goods from the same mercantile network. All three were significantly affected by the American Revolution, with the abandonment of Brunswick and Chota and the dissolution of the Kingsmill plantation significantly altering the nature of these sites. However, due to the different circumstances of the individuals living in these areas, the households differed in their average size and level of complexity. Brunswick households were the least complex, followed by post-Revolutionary enslaved households in Williamsburg, then by pre-Revolutionary households, with the Cherokee in Chota generally having the most complex households. In the next chapter I will describe the methods I used to determine household assemblages in each locality and how I calculated the amount of freedom household constituents exercised when purchasing buttons from their local markets.
Chapter 5: Methodology

Introduction

Before I could test the effect of household complexity on consumer choice, I had to determine which subset of buttons best represented each household. While it is typical archaeological practice to use the objects associated with a domestic structure as a representation of the objects consumed by the household that lived there (Allison 1998; Allison 2002; Schweickart 2014; Beaudry 2015), the archaeological and historical evidence reviewed in previous chapters suggests that such clear-cut associations might be misleading. Enslaved laborers on Virginia plantations had little say in the structures that they occupied and were often made to live in domestic structures with non-household members. Some of the domestic lots in Brunswick were rented out, and therefore the households who lived in them were likely to be more transient, while the lots which were occupied by their owners were more likely to contain enslaved households who acted separately from the owner’s household. Finally, most of the artifacts from Chota were excavated from pits dug outside the bounds of individual structures, and in many cases it is unclear from which household the fill from each pit was sourced.

In the first half of this chapter I describe the method I used to determine with which, if any, household each button used in this analysis was associated. The first step involved using historical and anthropological data about household function in concert with a close analysis of the archaeological record at each of the sites used in this analysis to designate a set of loci of potential household behavior. Next, I used ArcGIS geodatabases to assign each button-containing archaeological context to one or more household loci based on their spatial relationship to one another. Finally, I calculated a distance measure, $\Delta D_h$, that represents the likelihood that two sets of buttons were acquired by the same household, between each
assemblage of buttons that was potentially associated with each household loci. By taking each of these lines of evidence into account, I was able to create groupings of buttons which I had some reason to believe were associated with the same household. This method is based upon theoretical models of cross-cultural household behavior and involves calculating a quantitative result, but it is also highly contextual and only provides general guidance, rather than testing an explicit statistical hypothesis. The analyst who uses this method must still make the final decision about which contexts are most likely to be associated with each other.

In the second half of the chapter, I outline the statistical methods I used to test my hypotheses about the relationship between household complexity and consumer behavior through an analysis of consumer constraint. First, I describe how I drew upon the measurements I took during data collection and my research on the ways 18th-century individuals used buttons to develop 14 variables which represent some of the most meaningful physical attributes of buttons in each of these localities. Then, I show how I calculated the difference between the distribution of each of these variables in a household assemblage and the overall distribution of variants in the marketplace in order to account for the differences between localities. Finally, I describe the linear models I used to analyze the relationship between the locality of each household (as a proxy for household complexity) and the multivariate dispersion in its button assemblage’s attributes (as a proxy for household constituent consumer constraint).

**Household Assemblage Analysis**

When defining household button assemblages, the first step was to define the essential material aspects of a domestic space in each of these localities. While, as many scholars have pointed out, there is no one-to-one relationship between household and house (Allison 1998; King 2006; Nash 2009; Beaudry 2015), the domestic space is an essential starting point, a locus,
where all household research must begin. While the appropriate size, shape, construction materials and number of domestic structures varied between these three localities, the presence of a cooking hearth was essential at all of them, as cooking and eating are the most common household functions (Ellickson 2008; Nash 2009). I created a geodatabase for each site used in this analysis and drew upon field records, archaeological maps, site reports and published sources to mark each hearth base and structure which archaeological evidence suggests was occupied during the time period of interest. I then assigned a household locus number to each structure/complex which my research suggested was used as a domestic space.

In the 18th century, enslaved laborers were forced to live wherever was most convenient for the property owners and/or overseers of the plantation on which they resided (Gutman 1979; McKee 1992; Dunaway 2003; Samford 2007). Therefore, I assigned a household locus number to any structure with archaeological evidence of an internal hearth on the sites from the Williamsburg area. Free British colonial households in Brunswick were expected to live within the legally-defined boundaries of a lot owned or leased by the head of household. North Carolina colonial taxes explicitly distinguished between structures that were occupied by the household and outbuildings, such as kitchens, smokehouses, and workshops, which could be built on the same lot but were not afforded the same status (South 2010). The main dwelling structure on each lot in Brunswick was assigned a locus number. If any outbuildings were identified on the same lot they were assigned their own locus number, since enslaved households in urban contexts often lived in these sorts of structures (Morgan 1998). Overhill Cherokee households occupied complexes of structures in the mid-18th century, potentially including circular semisubterranean houses, rectangular houses, corn cribs, and sweat lodges (Perdue 1998; Marcoux 2010; Boulware 2011). In Chota, a pattern of paired circular and rectangular structures was
identified and matched to historical records which mentioned separate structures used in winter and summer by the same household (Schroedl 1986; Perdue 1998). Subfloor burials were only found in the rectangular structures. Therefore, clusters of structures which contained at least one building with a subfloor burial were assigned household locus numbers.

Next, the location and extent of every archaeologically-excavated context that contained buttons was digitally mapped on the geodatabase of each site. Since the domestic spaces associated with households at each of these localities were different, the nature of the archaeological contexts, and their associations with household spaces, were also different. Where possible, sealed features that could be definitively associated with a particular locus were used as the basis of a household’s button assemblage. However, the majority of the buttons used in this analysis were recovered from contexts which could be associated with several different households. Drawing upon contextual knowledge about household occupation patterns from each of these localities and the proximity of each archaeological context to various household loci, I marked which locus or loci with which each assemblage of buttons had a possible association.

In the Williamsburg area, both pre-dating and post-dating the Revolution, most of the sealed archaeological contexts used in this analysis were subfloor pits. These square or rectangular pits, excavated into the earthen floors of domestic structures, have historically been closely identified with enslaved communities in the 18th- and 19th-century Chesapeake (Kelso 1984; Samford 2007). All of the domestic sites I used in this analysis contained at least one subfloor pit, with many rooms containing multiple pits. While some structures had subfloor pits excavated along the walls or in the corners of rooms, all of the structures with an identified hearth had a pit excavated directly in front of it. As I discussed in Chapter 2, the conditions of slavery meant that it was rare for a household to occupy a single structure. Typically, multiple
households were placed in the same structure and individuals who had married into a household on a different plantation could not actually live with their family on a day to day basis. Therefore, I used the buttons found in hearth-fronting pits as the basis for households and compared all of the other archaeological contexts associated with the same room, structure and/or structure complex to them. It is unlikely that most buttons found in a subfloor pit were placed there intentionally (Samford 2007), instead they were included in the soil which was used to fill the feature at the end of its use-life. Therefore, the fill-date of each pit was considered when comparing button assemblages to one another. This means that it is possible that some of the household assemblages that I defined represent the same household at different points in time. However, given the changes in household complexity associated with these plantation communities, I felt that it was appropriate to distinguish between households both diachronically and synchronically.

The archaeological contexts excavated in Brunswick were quite different. Rather than small subfloor pits, most structures had full basements, extending all the way to the walls of the structure and filled in with construction debris when the buildings were abandoned and the town was burned during the Revolution (South 2010). While these basements occasionally contained a thin lens of debris deposited during the occupation of the structure, the majority of the objects found in the basement fill dated to the time of destruction. These deposits therefore consist of a snapshot of the materials associated with the household at the very end of their occupation of the house (LaMotta and Schiffer 2002). In comparison, features and layers of fill found outside the structure walls were deposited before the structure was demolished and therefore represent objects discarded or lost by the occupants of the house during their occupation. Since most of the excavations at Brunswick focused on the structures themselves, rather than outlying features,
most households in this locality consisted of items found in the destruction layers houses. When available, I compared buttons from outlaying contexts to those from destruction layers to determine if they were acquired by the same household, though often they were not.

The excavations of the Overhill Towns reveal that Cherokee individuals in the 18th century rarely created pits or basements inside their domestic structures. Instead, most archaeological material came from pits dug around the structure either to obtain clay for daub, to store food and material, or in some cases possibly to serve as small sweat lodges (Schroedl 1986). Since there was usually no direct association between a domestic structure/hearth and one of these pits, it was not clear from the archaeology alone which pits were used by which household, particularly in the relatively densely-packed structures near the Chota townhouse. However, given the Cherokee practice of burying important family members beneath household floors, I was able to use buttons interred in subfloor burials as the basis of households (Perdue 1998; Rodning 2015). Since buttons found in burials were attached to the object they adorned, unlike buttons found in any other archaeological context, I selected one button at random from each identifiable article of clothing to use in my analysis in order to avoid biasing the data. Each archaeologically excavated context was compared to whichever household loci complex was closest.

Finally, to help determine which of the button assemblages from contexts that were potentially associated with each household locus were actually acquired by the occupying household, I developed a method to compare copper-alloy button assemblages, based on their material makeup, which represented the likelihood that they were acquired from the same set of

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4 Buttons recovered from human burials were analyzed with permission of the Tribal Historic Preservation Office of the Eastern Band of Cherokee Indians proceeding reburial (Appendix 3).
sources. The defining feature of households, cross-culturally, is their function as a resource pooling group. Household constituents are expected to contribute some amount of their productive time/labor/resources for the group’s benefit, and in exchange they gain access to resources for consumption (Hammel 1984; Hirth 1993). While in most societies each member of a household has some individual control over resources, usually some household member is empowered to make acquisition decisions for the group to a greater extent than others (Small and Tannenbaum 1999). Consumption is rarely an explicitly defined role, more often it varies from household to household and within the same household over time given the informal nature of households and household membership in general (Ellickson 2008). The particular social, political and economic networks that household members have access to influence the sources of objects that are consumed by the group. Households that live close to one another, or even in the same domestic structure, will interface differently with society and have access to different sources of objects (Small and Tannenbaum 1999). Therefore, assemblages of objects consumed by a household should be acquired from a more restricted set of sources than assemblages of objects acquired at random from a marketplace.

According to this theoretical model of household behavior, material attributes that vary according to the source of an object rather than the tastes of the consumer, which I will call sourcing attributes, can help determine if the object was acquired by a single household or not. By comparing the distribution of the variation in the sourcing attribute within a subset of objects to the distribution of variation overall in that object type, the likelihood that the subset of objects was consumed by the same household can be evaluated. If the distribution of the subset closely matches the distribution of the overall variation, then the subset represents objects acquired at random from all of the sources available. On the other hand, if the distribution of the variation is
distinct from the overall variation then the subset represents objects acquired from a reduced set of sources. The more distinct a subset is, the more likely it represents the objects consumed by a single household rather than a group of households.

The difference between two distributions can be quantified by calculating the Hellinger distance between the probability density function of the overall dataset and the subset in question. The probability density function (PDF) of a distribution describes the line that represents the relative likelihood that a random number drawn from a distribution would equal a particular value. For example, in Figure 15 there is a 50% chance that a number drawn from that distribution would be within the area shaded darker blue. Since the area under the PDF curve always is equal to 100%, datasets with different amounts of data can be compared. The Hellinger distance between two probability distributions is equal to zero if the relative likelihood of randomly drawing each value is exactly the same, and equal to one if there is no overlap in the distributions (Figure 16). The greater the Hellinger distance between the PDF of the variation in a sourcing attribute overall and the PDF of the variation in a subset, the more likely the subset represents objects consumed by a single household.

Calculating the probability that a subset with a Hellinger distance of X represents a household is beyond the scope of this dissertation. Many variables unrelated to household consumption, including the size of the subset, the sourcing variable used, the nature of the archaeological contexts examined, and the overall dataset should affect the Hellinger distance of a subset. Therefore, there is no definitive distance which marks the point when a subset is only related to a single household. However, since the subset is, by definition, drawn from the overall dataset, increasing the number of samples in the subset will generally decrease its Hellinger distance to the dataset’s distribution. Therefore, if additional objects are added to a subset and
Figure 15: Probability Density Function (Image courtesy of Wikimedia)
Figure 16: Hellinger Distance Calculation Example

Hellinger Distance = 0

Hellinger Distance = 0.541

Hellinger Distance = 0.866

Hellinger Distance = 1
the Hellinger distance to the overall distribution stays about the same, then they were acquired from the same set of sources and therefore were likely consumed by the same household. On the other hand, if the Hellinger distance decreases when additional objects are added to the subset then they are less likely to have been consumed by the same household. The relative change in the Hellinger distance of an assemblage from the overall distribution when other objects are added to it, which I call $\Delta D_h$, can therefore be used to help assess if assemblages of objects were, in fact, associated with the same household.

In order to evaluate this measure, I selected all of the archaeological contexts that potentially could have been deposited by a household, made subsets of the buttons from those contexts, and calculated an n by n matrix with each value equaling the Hellinger distance between the combined $i^{th}$ and $j^{th}$ subsets and the overall dataset. I then calculated the relative amount that each subset’s Hellinger distance changed when each other subset was added to it. Finally, I averaged the the $r_{ij}$ and $r_{ji}$ values of the resulting matrix to calculate the average percent change in Hellinger distance of when the $i^{th}$ and $j^{th}$ subsets are added to one another, or $\Delta D_h$.

If the $\Delta D_h$ value is negative, then adding one subset to the other decreased its Hellinger distance and the resulting subset is less likely to represent a single household. If the resulting number is close to 0, then adding the subsets together did not change its Hellinger distance much and the resulting subset is more likely to represent a single household. For example, if two subsets have a $\Delta D_h$ value of -0.2 then adding one to the other decreases their average Hellinger distance by 20%. I did not use a particular cut off number to distinguish between households, but instead used the $\Delta D_h$ value as a line of evidence which helped me decide which archaeological contexts to include in a household’s assemblage.
The sourcing attribute that I chose for this analysis was the weight-percent of tin in each button. I chose to use tin because I was able to calculate a fairly small range of probable quantities in comparison to other elements (Appendix 1), and while it was present in most buttons used in this analysis, it was typically only in trace quantities. Since tin was only present in trace amounts in button elements made from brass ingots and latten, but was intentionally added to button elements made from bell-metal, I divided my dataset by the raw material used in each button element and only compared buttons made from the same raw material. While differences in tin content between material types significantly alter the appearance and workability of the button element, differences within material types are due to the source of the raw material. For brass ingot and latten buttons, tin content is dependent upon the source of the ores used by the copper/brass refinery, while for bell-metal buttons tin content varies according to the recipe the manufacturer used and the purity of their raw materials. Given the relatively small number of brass refineries in mid-18th-century England, tin content is an ideal sourcing attribute for buttons, when compared within raw material type.

Using this attribute required me to make another adjustment to the methodology described above. Since my pXRF methodology described in Appendix 1 calculated a range of likely values, rather than a single value, I chose to use the differences between each button in the dataset, rather than the tin content of each button, as my raw data. For instance, to calculate the difference in tin content between button a and button b, I averaged the difference between 1000 draws from a uniform distribution with a range equal to the range of likely tin values in button a and 1000 draws from a uniform distribution with a range equal to the range of tin in button b. This value takes into account both the uncertainty in my estimate of the tin content and the difference between the ranges. Therefore, both the overall data from all of the buttons made from
the same raw material at each locality and the subsets associated with particular archaeological contexts consisted of the lower triangle of a distance matrix using this method between all of the buttons in the assemblage.

I used the $\Delta D_h$ values between assemblages potentially associated with the same household locus to determine which groups of buttons to add to the household assemblage. If a household locus had a group of buttons which were associated with the locus based on the relationship between the archaeological context and the domestic space, then its $\Delta D_h$ value was compared to every other assemblage that was potentially associated with the household. If the groups had a $\Delta D_h$ value close to zero, then I would assign them to the same household group, but if the $\Delta D_h$ value was more negative I would likely assign it to a different household button assemblage. If an assemblage was determined to be distinct in its tin content distribution, I would compare it to assemblages associated with other loci to see if it fit with any of them. Sometimes an assemblage would not fit with any household loci, in which case I would assign them to their own household loci if they contained enough buttons (>5) that they could be analyzed further. In other cases, an assemblage would not have buttons that could be compared to other household assemblages because they did not have enough buttons with the same material makeup. In that case I had to make a judgment call about whether to add them to the same household assemblage or not.

This method has several limitations. First of all, contexts which contained buttons consumed by several different households could not be accurately evaluated. Luckily, most contexts used in this analysis only contained a few buttons, but a few large midden contexts were removed from this analysis due to this reason. Additionally, if two households lived in close proximity to one another and also acquired buttons from a similar set of providers, this method is
unlikely to be able to distinguish between their household assemblages. Further refinement of this methodology is necessary to deal with this weakness. Due to these limitations, this method only provides a line of evidence, which must be used with other sources of information to interpret household associations, rather than a prescriptive tool. However, by performing this analysis I was able to define assemblages of buttons that seem to have been acquired by different households associated with the same structure, as well as identify and remove buttons which are unlikely to have been consumed by the household that occupied the structure they were recovered from, increasing my confidence in the results of my consumer constraint analysis.

**Consumer Constraint Analysis**

Once the data were collected from each button and their household associations were determined, the last step before carrying out the statistical analysis was to turn the raw measurements that I took into variables which were potentially meaningful for consumers. Mostly, this step involved accounting for the variation in measurements caused by differences in manufacturing technique, but also it involved determining which size category each button fit into, an important variable for consumers which cross-cut manufacturing styles. As discussed in Chapter 3, metal buttons were often sold in two sizes, small and large, with matching decorative patterns, to be attached to a single suit of clothes (Hinks 1988; Baumgarten 2002). This distinction was important to many button consumers, since variation in face diameter between sizes held a different set of meanings than variation in face diameter within a size (Schweickart 2019). Following the methodology I used in a previous study, I calculated the face diameter of every button with a round shape by averaging the length and width. I then examined the distribution of face diameters of each button type at each locality and divided them into three sizes, Small, Large and Extra Large based on natural breaks in the distribution (Figure 17). By
Figure 17: Histogram of Button Face Diameters at each Locality
using different cut-offs between size categories for each button type, I took into account the variation caused by different button manufacturing techniques (Table 4). By using different cut-offs between size categories for each locality, I was able to take into account the different ways that individuals used buttons, particularly among the Cherokee, who generally preferred smaller buttons to adorn their clothes.

I collected two types of raw data: continuous and discrete. Continuous data consisted of measurements (such as length or width) while discrete data consisted of categories (such as button type or shank morphology). I ended up with seven continuous variables, six discrete variables and one variable that was neither (Table 5). I selected face height since it represented how far a button stuck out from the surface of the garment to which it was attached. I scaled face thickness against button type, since buttons made from latten were generally much thinner than those made through a casting process. Thicker buttons were generally sturdier, but also heavier. I scaled shank thickness by shank style, since buttons made with cast shanks were different from buttons made with wire shanks. In either case buttons with thicker shanks were less likely to break, but required larger button holes and were heavier. Shank height, which determines the thickness of a textile the button could close, and shank hole diameter, which determined the thickness of the cord that could be attached to the button were also used as variables. Finally, the diameter of small and large-sized buttons, scaled by button type to take into account the differences caused by manufacturing styles, were compared. My previous research found that size differences within size categories was a meaningful variable in early 19th-century Virginian society (Schweickart 2019).
<table>
<thead>
<tr>
<th></th>
<th>Piece Brazed/ Two Piece Soldered</th>
<th>Two 2 Piece Crimped</th>
<th>Flat Disc Cast/Flat Disc Spun Back</th>
<th>Flat Disc Stamped</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>small</td>
<td>large</td>
<td>extra large</td>
<td>small</td>
</tr>
<tr>
<td>Pre-Revolutionary Williamsburg</td>
<td>&lt;18.75 cm</td>
<td>18.75-24 cm</td>
<td>&gt;24 cm</td>
<td>&lt;18.75 cm</td>
</tr>
<tr>
<td>Post-Revolutionary Williamsburg</td>
<td>&lt;18.75 cm</td>
<td>18.75-24 cm</td>
<td>&gt;24 cm</td>
<td>&lt;18.75 cm</td>
</tr>
<tr>
<td>Chota</td>
<td>&lt;12.25 cm</td>
<td>12.25-17 cm</td>
<td>&gt;17 cm</td>
<td>N/A</td>
</tr>
<tr>
<td>Brunswick</td>
<td>&lt;17 cm</td>
<td>17-24 cm</td>
<td>&gt;24 cm</td>
<td>&lt;18.75 cm</td>
</tr>
</tbody>
</table>
Table 5: Attributes used in Consumer Constraint Analysis

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Data Type</th>
<th>To Calculate:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face Height</td>
<td>Continuous</td>
<td>N/A</td>
</tr>
<tr>
<td>Face Thickness</td>
<td>Continuous</td>
<td>Z-score thickness against button type</td>
</tr>
<tr>
<td>Shank Thickness</td>
<td>Continuous</td>
<td>Z-score shank thickness against shank morphology</td>
</tr>
<tr>
<td>Shank Height</td>
<td>Continuous</td>
<td>N/A</td>
</tr>
<tr>
<td>Shank Hole Diameter</td>
<td>Continuous</td>
<td>N/A</td>
</tr>
<tr>
<td>Large Button Diameter</td>
<td>Continuous</td>
<td>Z-score average length and width of large-size buttons against manufacturing style</td>
</tr>
<tr>
<td>Small Button Diameter</td>
<td>Continuous</td>
<td>Z-score average length and width of small-size buttons against manufacturing style</td>
</tr>
<tr>
<td>Button Type</td>
<td>Discrete</td>
<td>Manufacturing style count as percent of total assemblage (no sleeve links)</td>
</tr>
<tr>
<td>Sleeve Link</td>
<td>Discrete</td>
<td>Sleeve link count as percent of total assemblage</td>
</tr>
<tr>
<td>Plating</td>
<td>Discrete</td>
<td>Applied decoration count as percent of total assemblage (button faces only, no sleeve links)</td>
</tr>
<tr>
<td>Decoration</td>
<td>Discrete</td>
<td>Presence/absence of (non-applied) decoration as percent of total assemblage (button faces only, no sleeve links)</td>
</tr>
<tr>
<td>Flaw Significance</td>
<td>Discrete</td>
<td>Flaw significance count as percent of total assemblage (button faces only, no sleeve links)</td>
</tr>
<tr>
<td>Quality</td>
<td>N/A</td>
<td>Quality equation (from Schweickart 2019) applied to flaw significance count</td>
</tr>
<tr>
<td>Size</td>
<td>Discrete</td>
<td>Divided based on natural breaks in distribution of diameters by button type (Table 4)</td>
</tr>
</tbody>
</table>
The discrete variables I used were: button type, not counting sleeve links which could not be used interchangeably with buttons manufactured using other styles; sleeve links, which compared the number of sleeve links with jewel settings (the most common decorative type), and without jewel settings, to the rest of the button assemblage; plating type, as either non-plated, gilded, silvered, or tinned, on non-sleeve link buttons; decoration, which was coded as either decorated or non-decorated (not counting plating) on non-sleeve link buttons; flaw significance, noting the number of buttons that were unflawed, minorly flawed, moderately flawed, or majorly flawed; and size, including the number of small, large, and extra-large buttons, not counting sleeve links. Finally, I also calculated quality as a single number between 1 and -1 which represented how weighted the buttons at each household were towards unflawed and against flawed buttons, using the methodology described in my earlier work (Schweickart 2019).

In order to determine the extent to which the distribution of variation of these variables was driven by accessibility or choice, I calculated the Hellinger distance between the distribution of each of these variables among each household assemblage and the distribution of the variable among all buttons from the locality (Appendix 4). For continuous variables, Hellinger distances compare the similarity of the PDFs of each dataset, as I described above in the household assemblage analysis section. For discrete variables, Hellinger distances compare the similarity in the percent of each assemblage that was assigned to the same category. This comparison serves to take into account the local marketplaces from which these consumers were making their selections.

In some cases, a restriction on choice could be represented by a low Hellinger distance between a household assemblage and the overall marketplace because the household was not able to select objects whose physical attributes best fit their tastes, but simply acquired what was
most available. In other cases, a lack of choice could be represented by a larger Hellinger distance because individuals were only able to acquire a particular variant, which was cheaper or less desirable, from the marketplace. Values were therefore dependent upon the contextual meanings associated with particular physical attributes within each locality. Therefore, the best measure of relative restriction on consumer choice is the homogeneity of dispersion among households from the same locality. If there is low dispersion among households, then they had to make similar choices about each variable, whether those circumstances led to that variable having a high Hellinger distance or a low Hellinger distance. On the other hand, if there is high dispersion, then each household was able to choose from the range of objects with variables that best suited their tastes. Therefore, in a less constrained group of households, one assemblage will have a low Hellinger distance and another a high Hellinger distance according to the tastes of the household constituents, whereas in a more constrained group of households, all of the assemblages will have similar Hellinger distances for each variable because household constituents have to make more compromises when selecting objects.

In order to determine if household complexity had a significant effect on button assemblage dispersion, I performed an analysis of the multivariate homogeneity of group dispersions. This statistical analysis is essentially a multivariate version of Levene’s test, and involves calculating a distance matrix comparing every household to each other and then evaluating if there are significant differences between groups of households by calculating the distance between each household and the group centroid. The group centroid is a point with the median value of each variable among the households from the same group. Importantly, this analysis only takes into account the distance between the household and its group centroid, not
the distance between group centroids or between households in different localities, and therefore
differences in variable selection criteria between localities do not affect the analysis.

I used the “vegan” package in R to perform this analysis. First, I scaled my input dataset so that each variable had equal weight in the distance matrix. I used the “dist” function to calculate a Euclidian distance matrix between sites. The homogeneity of dispersion was calculated with the “betadisper” function against a factor that grouped households according to the locality with which they were associated.

In order to test my hypothesis, I extracted the distance between each household and its localities’ centroid from the homogeneity of dispersion analysis and used it as a dependent variable in a linear model. If a variable added to the model, such as household complexity, has a significant relationship with distance to centroid, then that variable can be interpreted as having an effect on consumer constraint within this dataset. In particular, if households that, on average, are more complex have significantly shorter distances to their respective localities’ centroids than households that are generally less complex, then I can support my hypothesis that household complexity has the predicted effect on consumer constraint. Therefore, if the slope parameter estimate of the explanatory variable representing household complexity is both negative (distance from centroid decreases and complexity increases) and significantly different from zero than I can reject the null hypothesis that household complexity does not affect consumer constraint. If the parameter estimate is either positive or not significantly different from zero, than either household complexity does not affect consumer constraint or another variable is having a confounding effect. In order to test my hypothesis I therefore calculated two separate linear models, one which only used household complexity as an explanatory variable and the other which used household complexity, freedom, and social status as explanatory variables.
(Appendix 4). The household complexity variable consisted of a factor with two levels: 0 for less complex households and 1 for more complex households. The freedom variable consisted of a factor with two levels: 0 for unfree households and 1 for free households. Finally, the social status variable consisted of a factor with two levels: 0 for lower social status households and 1 for higher social status households.

A series of tests were used in order to reduce the probability of falsely rejecting the null hypothesis and select the most appropriate linear model to fit the data. First, a d'agostino normality test was used to make sure that the distance to centroid dependent variable was not too distinct from normality. The three explanatory variables used in these models are factors, so they were not tested for normality. For models with more than one explanatory variable, an interaction term was calculated between each variable and the model was checked for collinearity with a VIF analysis. Finally, a reverse stepwise AIC analysis was used to select only the variables that best explained the data in order to maximize the degrees of freedom for the final model. This method involves calculating Akaike's Information Criterion (AIC) values, a measure of how well the model explains the data, of the full model and comparing it to the AIC values of models with one variable removed. If removing a variable decreases the AIC value by more than two points then the variable is removed and the remaining variables are tested. If removing any of the variables does not decrease the AIC value more than two points then all of the remaining variables help explain the variation in the data. The results of the final two models were used to test my hypothesis.

Conclusion

In this chapter I outlined the two analyses I performed on the data to answer my research question: an analysis of household assemblages and an analysis of consumer constraint. Both
methods involve comparing the distribution of variables among subsets of objects to distributions among larger datasets representing local marketplace variation. The analysis of household assemblages involves calculating the $\Delta D_n$ and using it to help determine if objects found in particular archaeological contexts were associated with a single household or multiple households. Using this method, I defined 40 distinct households, 36 of which contained large enough sample sizes to analyze further. Once these household assemblages were defined, I compared their dispersion in each locality as a proxy for the amount of freedom members of each household had to acquire buttons which best fit their tastes. Households whose constituents had more consumer freedom were more distinct from one another, within the context of their local marketplace. By comparing this value against the known average household complexity of these localities, I tested my hypothesis against observed data extracted from archaeologically-recovered objects.
Chapter 6: Results

Introduction

In this chapter I discuss the results of my household assemblage analysis and the consumer constraint analysis that I outlined in the previous chapter. While I defined a total of 41 assemblages of buttons associated with separate households I removed 5 households in the consumer constraint analysis due to low sample sizes. Of the remaining 36 household assemblages, 18 were from Williamsburg (8 pre-dating the American Revolution and 10 post-dating the war), 11 were from Chota, and 7 were from Brunswick. I will first go through each locality, Williamsburg (first pre- then post-American Revolution), then Chota, then Brunswick, and list each domestic site that was used in this analysis. I will discuss the architectural elements of the site that I used as household loci and describe which archaeological contexts were determined to contain buttons acquired by the same household. A map of each site is also provided showing the architectural elements and archaeological contexts which made up each household. Next, I describe the variables that were used in this analysis and describe and interpret the results of the consumer constraint analysis. I describe the results of the initial model, which only used household complexity as an explanatory factor, and then I describe the results of the secondary analysis which added two other explanatory factors, freedom and social status, to the model.
Household Assemblage Analysis Results

Pre-Revolutionary Williamsburg

Carter’s Grove Quarter 44JC110

This quarter appears to have been occupied throughout the second half of the 18th century (Samford 2007). However, of the three potential domestic structures on the site only one (locus 7) contains subfloor pits that have a TPQ pre-dating the American Revolution. This structure appears to be a duplex with a central hearth base, but no definitive post-hole pattern was identified by the excavators (Kelso 1971). I relied upon Samford’s (2007) re-analysis of the site for the location of structures and hearth bases. While Kelso (1971) argues that all of the pits were filled at the same time based on the similarity of the fill, some of the pits contained pearlware and other artifacts, such as Virginia half-pennies and a British military button, which date them to the last quarter of the 18th century, while others only contained creamware, which could have been imported as early as 1762 in Williamsburg and was widely available by 1770 (Martin 1994). The interpretation that some of the subfloor pits were filled in the 1770s, while most were filled in the 1780s or 1790s when the site was abandoned, matches both the historical record and the buttons types recovered from the site. Nathanial Burwell II began moving enslaved laborers to his western properties on a large scale beginning in the late 1760s, but did not sell the Carter’s Grove property until the late 1790s (Walsh 1997). As some of the quarter’s inhabitants were moved out west before and during the Revolution, they filled in their subfloor pits with dirt and trash, including two piece brazed, soldered, and crimped buttons, which were most popular in the third quarter of the 18th century, but no flat disc stamped buttons which came to dominate the marketplace in the last two decades of the century.
The majority of the subfloor pits which were filled in before the end of the American Revolution were located in the eastern room of the structure that I labeled locus 6 at the Carter’s Grove quarter. I used the buttons found in the fill of the complex of subfloor pits in this room as the basis of a household assemblage (Figure 18) and compared them to buttons from the two other contexts with buttons filled in around the same time, a subfloor pit in the western room of the structure and a trench south of the structure. The $\Delta D_h$ between these contexts for bell-metal buttons, the only button type which had enough examples for an analysis, was relatively close to zero (-0.09), so I added them all into the household 1 assemblage. This suggests that either a single household occupied both rooms of the quarter or that the same trash deposit, containing the trash from a single enslaved household, was incorporated into the fill of all of these contexts.

*Bray Field (44JC34)*

This site is located about halfway between the Littletown Quarter site and the Bray manor house along a major plantation road. It contains an unusual post-in-ground structure consisting of a square 20ft by 20ft building with an interior partition or room in the very center of the structure which contained several subfloor pits. While no hearth was identified associated with the structure, there was a central depression which could have destroyed the hearth and the amount of domestic artifacts associated with the building suggests that it was occupied by enslaved laborers, even if it also served as an agricultural outbuilding. The artifacts associated with the structure suggest that it was demolished at some point in the third quarter of the 18th century (Kelso 1984). All of the subfloor pits appear to have been filled when the structure was demolished, and therefore were all used as the basis of the household button assemblage (Figure
Figure 18: Household 1
19). Other than these buttons, a single button found in the fill of a post mold for one of the interior posts makes up the only other object included in the assemblage of household 4.

**Littletown Quarter 44JC35**

This site is located about 1000 feet north of the Bray manor house, a fair distance from the main house but still on the same Littletown home quarter (Figure 10). William Kelso’s excavations at this site uncovered the remains of three post-in-ground structures, one occupied in the 17th century and two which were occupied from the mid-18th century through the 1780s. The two 18th-century structures are quite similar to one another they each consist of one larger rectangular room, which may or may not have been sub-divided, with an additional 6ft wide room or porch running along the long end of the structure. Additionally, while neither of them had a defined hearth, they each contained a large subfloor pit running slightly off-center through the center of the larger room, which had been sub-divided into smaller compartments with wooden panels (Kelso 1984). The smaller structure (locus 12) appears to have been demolished earlier, sometime in the 1750s or 1760s based on the ceramics recorded in the field notes, and contained several more subfloor pits, including one in the small room or porch. The larger structure (locus 11) only contained one subfloor pit and was still standing in 1781 when it was marked on the Desandruin map (Kelso 1984). Given the differences between the demolition dates of these structures and the fact that they are misaligned with one another, it is possible that they were not occupied simultaneously but instead one replaced the other. The similarity between the two structures’ layouts speaks to the relative stability of the Littletown home quarter’s enslaved community over the course of the second half of the 18th century.

The central subfloor pit complex in the pre-Revolutionary structure (locus 12) was used as the basis for a household assemblage (Figure 20). Comparisons of tin content with buttons
Figure 20: Household 6
from the other subfloor pits in the household found very little difference in button source ($\Delta D_h = -0.01$) suggesting that all of the subfloor pits from this structure, including those in the small room/porch and one in a structural postmold, contained buttons acquired by the same household. Thus, all of buttons from the archaeological contexts associated with locus 12 were placed into a single assemblage together.

_Utopia Quarter IV 44JC787_

This site is located on the Utopia Quarter property which was transferred from the Littletown property to the Kingsmill property when Frances Thacker Bray married Lewis Burwell IV in 1745 (Figure 10). While enslaved laborers had been living on the Utopia property since the beginning of the century, the site known as Utopia IV was not constructed until around the time Burwell took control of the land and the enslaved community that was entailed to it. This quarter was one of the first ones demolished during Burwell V’s sale of the Kingsmill plantation, and was gone by 1781 (Fesler 2004; Samford 2007). Therefore, the archaeological contexts at this site all date to the Pre-Revolutionary period. There are three potential structures located at this site, one with no subfloor pits, one with a single subfloor pit, and one ( locus 19) with many subfloor pits. Locus 19 consists of a duplex wood framed structure, apparently on ground laid sills given the lack of structural postholes, with a hearth on each gable end. The occupants of this structure excavated 23 separate subfloor pits inside this structure, a few along each wall as well as an overlapping complex of pits in front of each hearth. It is unclear when the pits along the walls were filled, though three of them contained evidence of a West African-style shrine constructed within them either before or as they were filled (Samford 2007). Other than the shrines and the pits in front of the hearths which had been cut by later pits, most of the pits were likely filled at the end of the occupation of the site.
The spaces in front of the hearths were clearly an important place for subfloor pits, since so many were excavated and filled in the area over the course of the occupation of the site, so I used them as the basis for my household analysis. Using the stratigraphic relationships of the pits in front of the hearth, it should have been possible to determine which contexts were earliest and which were latest, therefore allowing me to examine the change over time in household occupancy within this structure. However, there is considerable disagreement between different analysts who have examined this site on which of these features cuts the other, with three sources creating three different chronologies (Fesler 2004; Samford 2007; DAACS 2019). Rather than use any of these chronologies directly, I drew upon all three of them to roughly sort each pit into one of two categories, early or late. Therefore, I started with four separate household assemblages, an early and late assemblage from in front of each hearth, to compare to the other subfloor pits and outlying borrow pits. Unexpectedly, the four assemblages of buttons from the hearth-associated pits clustered tightly together when their brass ingot and latten buttons were compared (Figure 21). Apparently, all of the subfloor pits in front of each hearth were filled with items acquired from the same household (household 10). On the other hand, three of the subfloor pits along the walls (Features 5, 9 and 10) along with a single borrow pit (feature 21) clustered together as a single household as well (household 9). Two of these pits (9 and 10) were associated with shrine activities including specific objects placed in spiritually significant locations on the floor of the pit before it was filled (Samford 2007). However, the buttons were excavated from the fill of the pits rather than being placed on the bottom, so they likely represented household trash rather than ritually-significant items. Finally, a single subfloor pit along the southern wall of the western room contained an assemblage of buttons distinct from either of the other households when compared to their bell-metal assemblages, so I assigned it to its own household.
Figure 21: Households 9, 10 and 14
(household 14), though it contained too few buttons to be used in any further analyses.

Therefore, I was able to identify three separate households associated with this quarter site, though it seems that a single household contributed to all of the pits in front of each hearth throughout the occupation of the site.

*Southall’s Quarter 44JC969*

This site is located north of the North Quarter property in an area that was likely owned by Lewis Burwell IV in the third quarter of the 18th century (Figure 10). He or his son sold the property to James Southall by 1780, as they were breaking up the Kingsmill plantation. Based on archaeological analysis, this site was occupied by enslaved laborers from sometime in the middle of the 18th century to about 1800. There are three structures which have been identified archaeologically at the site, one of which dates to the third quarter of the 18th century and two of which date to after the American Revolution. The pre-Revolutionary contexts at this site consist of a post-in ground frame structure (locus 21) with a clear hearth base at one end but not at the other (Pullins, et al. 2003). One piece of evidence that the individuals who lived at this structure were part of the Kingsmill/Littletown/Carter’s Grove community was the presence of a rectangular subfloor pit right outside the structure along its long axis. This pattern is apparent in the pre-Revolutionary contexts of the Carter’s Grove Quarter, Littletown Quarter and Kingsmill Quarter, and may relate to a practice of excavating subfloor pits underneath porches. The latest ceramic found in the subfloor pits at this structure, filled with destruction debris, was creamware, which fits the historic evidence that this structure was abandoned in the 1770s as the Burwells sold their landholdings in James City County.

In front of the hearth base there were two subfloor pits dug side by side which were then filled in and replaced with a single, central subfloor pit. I used these three subfloor pits as the
basis of a household assemblage (Figure 22). The two original subfloor pits were quite distinct from one another ($\Delta D_h = -0.27$) but the northern one was similar to the replacement ($\Delta D_h = 0.04$), though this may be due to the fact that half of the replacement subfloor pit was excavated as part of the northern subfloor pit and therefore the buttons were actually associated with the later fill episode. Either way, I was able to distinguish between two separate households whose goods were associated with the fill of subfloor pits (households 11 and 12) from this structure. For the most part, household 12 was associated with subfloor pits in the eastern room while household 11 was associated with subfloor pits in the western room, with the exception of the replacement pit.

*Kingsmill Quarter 44JC39*

This site was located on the home quarter of the Kingsmill Plantation (Figure 10), just a few hundred feet from the brick mansion (Kelso 1984). Of the two buildings associated with the enslaved laborers at this site, one of them (locus 24) appears to have been occupied in both the third and fourth quarters of the 18th century while the other (locus 25) was only occupied in the last two decades of the 1700s (Kelso 1984; Samford 2007). The earlier structure consists of a wood-framed duplex with an offset central double hearth and an addition or porch built along the north side of the structure. Twenty subfloor pits were located beneath this structure, though the majority of them were not filled until the structure was demolished sometime after the Revolutionary War. Eight of the subfloor pits were filled before the demolition episode, likely sometime in the late 1760s or 1770s based on the presence of creamware in their fill (Martin 1994). This episode of filling coincides with the period when Lewis Burwell IV began moving enslaved laborers to his plantations in the piedmont. None of these subfloor pits were located near the hearths but were all around the outside walls of the structure. The tin content of the
Figure 22: Household 11 and 12
button assemblages from these features was generally similar between rooms, suggesting that the objects that were discarded into these pits were all acquired by the same household (Figure 23). Thus, there was a single pre-Revolutionary Household associated with the Kingsmill quarter.

**Post-Revolutionary Williamsburg**

*Carter’s Grove Quarter 44JC110*

The majority of the subfloor pits at Carter’s Grove Quarter with buttons in them were filled during the last decade or so of the 18th century, likely when the property was sold and the last few enslaved laborers were moved west. At the time of abandonment there appear to have been three structures on the site, two duplexes and a single roomed structure, based on Samford’s analysis (Samford 2007). Since one of the structures did not contain any buttons, I only used the remaining structures as possible household loci (Figure 24). Since the subfloor pits in front of the hearth in the eastern room of locus 6 did not contain any buttons, I used the subfloor pit complex in front of the western hearth as the basis of one household and the single subfloor pit in locus 7 as another. An analysis of the buttons made from bell-metal from these features suggested that while the rest of the buttons from subfloor pits in locus 6 could have been consumed by the same household, the ones found in feature 643 were quite distinct ($\Delta D_h = -0.76$). This button assemblage was also quite different from the one found in the subfloor pit in locus 7 ($\Delta D_h = -0.51$). Feature 643 was a particularly large subfloor pit and contained a large number of artifacts, especially for a subfloor pit located so far from a hearth (Samford 2007). Patricia Samford noted the large number of buttons from this feature and suggested that they may be have all been attached to a single garment; however, the mis-matched sizes and decorative patterns on the buttons from this feature suggest that they were acquired from a variety of sources and were
Figure 23: Household 15
Figure 24: Household 2 and 3
unlikely to have been attached to a single item. An additional analysis of buttons made from latten suggests that the buttons from the rest of the subfloor pits in locus 6 were similar to each other but distinct from the ones associated with locus 7. Therefore, I created three assemblages from the buttons from this site, one containing all the buttons in feature 643 (household 2), one containing all the buttons from the rest of the subfloor pits in locus 6 (household 3) and the final one containing all the buttons found in the pit in locus 7 (household 41) which only contained 4 buttons and therefore was too small to use in further analysis.

*Littletown Quarter (44JC35)*

This post-Revolutionary war occupation of this site consists of a single post-in-ground structure (locus 11) with a single subfloor pit and no clear hearth. The large, central pit was offset, perhaps to allow for a wall to subdivide the structure. Additionally, excavators noticed organic stains around the edge of the pit which they interpreted as evidence that it was covered with some sort of wooden structure or lid. It was also sub-divided into two separate compartments and had a shallow step dug into the wall on the southern end. This pit contained a pewter regimental button decorated with the insignia of the 80th Royal Edinburgh Volunteers, a company that fought on the British side during the Revolutionary War and was part of the forces who surrendered at Yorktown in 1781 (Kelso 1984). Therefore, the fill of the pit was deposited when the building was demolished sometime fairly soon after the Revolution. Since there is no record that Littletown was sold until the late 1790s, it is likely that this demolition was associated with an internal re-organization of the plantation or a large-scale sale of enslaved laborers by the owner, James Bray Johnson. Since all of the buttons associated with this locus were found in the same archaeological context, I used the assemblage from this one feature as a single household (Figure 25).
Figure 25: Household 5
North Quarter 44JC52

This site is located on an outlying quarter, which was part of the Kingsmill plantation during Burwell IV’s ownership and was likely sold to Henry Martin and later Henry Tazwell in the 1780s and 1790s. It was marked on the 1781 map of Williamsburg but was mostly occupied in the last quarter of the 18th century based on the artifacts found at the site (Kelso 1984). It contains a single structure (locus 18), which appears to have been a wooden frame duplex built on a brick foundation (Figure 26). The excavators found some evidence of an off-center hearth in the dividing wall between the two rooms of the structure. The west room of the structure contained a single subfloor pit, which was expanded and reinforced with a brick wall at some point during the structure’s occupation. The eastern room contained a very large and irregularly shaped subfloor pit which was also reinforced with brick (Kelso 1984). The two subfloor pits were each used as the basis of a household button assemblage.

In addition to the two subfloor pits, a section of the robber’s trench for the southern brick foundation wall contained buttons. Comparison of the bell-metal buttons from the three features found that the robber’s trench and western pit had very similar distributions of tin but they were quite distinct from the buttons found in the eastern room’s pit ($\Delta D_h = -0.58$). This suggests that the buttons associated with each of the two rooms were acquired by different households. The plowzone was screened at this site, unlike the other sites dug by Kelso, and so some of the buttons from plowzone that were associated with each room were added to the respective household assemblages. The buttons from the eastern room were assigned to household 7 and the buttons from the western room were assigned to household 8.
Figure 26: Household 7 and 8
Of the two post-Revolutionary War structures identified at this site, only one of them was associated with copper-alloy buttons from sealed archaeological contexts. This structure (locus 22) contained two separate subfloor pits, both of which were located directly in front of the hearth. Unlike the earlier structure at this site, this building’s sills appear to have been placed directly on the ground, since there were no identified structural postholes. Historic records indicate that Southall passed this site on to his son in the early 19th century, though the archaeological data suggests that this structure was abandoned before that point (Pullins et al. 2003). Since the buttons from this site were recovered from a single subfloor pit and some related features, this assemblage was assigned to a single household (Figure 27).

There are two structures on this site which were occupied by enslaved laborers after the American Revolution (loci 24 and 25), both had brick foundations with several subfloor pits. The subfloor pits in the earlier structure (locus 24), which contained debris from the destruction of the building, contained an assemblage of artifacts, which suggest a late 1780s date of deposition (Kelso 1984). These artifacts include Virginia minted coins and a pewter button associated with a British Military regiment who fought in the Virginia campaign. This date coincides with Henry Martin’s death in 1787, leading to a change in property owners (Figure 28). The other structure at the site (locus 25) had a much larger and more substantial chimney base, but appears to have only had one room, leading excavators to interpret it as a kitchen (Figure 29). This building contained at least 5 subfloor pits which were filled at some point in the 1780s or 1790s. These contexts were therefore likely associated with either Henry Martin’s or Henry Tazwell’s ownership of the property and therefore represent a much more fragmented enslaved community.
Figure 27: Household 13
Figure 28: Households 16, 17 and 18
There were several large subfloor pits, which were sub-divided with wooden panels, in front of the hearths in locus 24. I used each hearth’s pit complex as a basis for an individual household. I then compared these to each other subfloor pit in the structure as well as a large pit or depression south of the structure which was filled with domestic debris. I found that buttons from the subfloor pit complex associated with the western hearth were only similar to the button assemblage from the easternmost large subfloor pit in the attached room/porch (household 16), whereas the buttons associated with the pit in front of the eastern hearth were only similar to the buttons recovered from the westernmost large subfloor pit (household 17). Additionally, similar to my findings at the Utopia IV quarter, many of the smaller subfloor pits along the walls of the structure contained assemblages of artifacts that were not similar to either hearth assemblage but were similar to each other, so I assigned them their own household (household 18). Finally, none of the subfloor pits in front of the hearth in the kitchen (locus 25) contained buttons. The features in the structure that did have buttons, including two subfloor pits and a trench associated with the destruction of the chimney base, were similar to one another and therefore were assigned to the same household (household 19). None of these assemblages were particularly similar to the many buttons recovered from the large depression/midden, which may be because this area was used as a deposition ground by all of these households and therefore this assemblage represents a mixture of buttons acquired by all of the enslaved households who lived at this site during the second half of the 18th century.

**Chota**

Unlike the other localities, all of the structures at Chota were excavated as part of the same site. Additionally, while a few outlying structures were investigated, the majority of the households that I used in this analysis were found in the large excavation block near the
townhouse. Therefore, rather than going through the households that were found at each site, as I
do at the other localities, I will list each locus of household behavior and the features that I
determined were most likely associated with it. Several structures have been identified at Chota
that did not have enough buttons associated with them to determine if they were from the same
household. Additionally, two button assemblages that I decided to assign to a household
(households 29 and 31) were not associated with a particular household locus. Household 29 was
associated with a single feature (F471) and a single burial excavated a few feet north of the main
evacuation block. The excavated area was never mapped, so it is not clear what the relationship
between the feature and burial are or if there were any structures in the area, but the area
excavated was only about a 5 m by 5 m block, so they were not far apart. The other button
assemblage not associated with a structure is household 31, which was excavated from a
complex of pits located about 700 m south of the townhouse at Chota in their own excavation
block (Block J). No posthole information is available from this excavation block so it is
unknown if these features were associated with a structure.

Locus 26

This locus was based around a paired summer and winter structure complex north of the
townhouse in the central area of Chota. The rectangular summer structure at this locus contained
two subfloor burials, both of which contained button-adorned objects. Two buttons selected
randomly from each burial formed the basis of this household (Figure 30). Comparison with pit
features in the area of this locus suggested that the four pits located southwest of the circular
winter house were more similar to this household’s assemblage than to the next closest
household assemblage (locus 27). Additionally, the unmapped assemblage (F471) of buttons
excavated somewhere to the north of this structure was fairly distinct from this assemblage ($\Delta D_h = -0.42$), indicating that they were associated with a separate household.

*Locus 27*

This locus included a paired summer and winter structure complex directly northeast of the townhouse in the central area of Chota. The rectangular summer structure at this locus contained four subfloor burials, two of which contained buttons. The post holes and burials associated with this structure intruded into several pits which were probably excavated to acquire clay to daub the townhouse walls. Since these pits predated the domestic structure, the buttons found within them are not related to this household, or likely any single household. In 18th-century Cherokee towns, townhouses served as a public gathering place for all sorts of public events, meetings, and religious ceremonies (Rodning 2015). Therefore, it would not be unusual for personal objects to be discarded or lost in and around the townhouse. In fact, one of the main structural post holes that was associated with the repair or re-construction of the townhouse contained a button in its fill. Buttons from the burials were compared to ones from other features near this structure, including ones from the three pits northwest of the structure which were distinct from those associated with locus 26. These features, along with most, but not all, of the pits directly southeast of the summer structure had similar distributions, so I assigned them to a single household assemblage (Figure 31). Any buttons from pits near the townhouse that did not fit into this household distribution were assumed to be related to the townhouse. Together this assemblage was distinct from the unmapped assemblage north of the house (F471) ($\Delta D_h = -0.27$) and the pits further east that were closer to locus 28 ($\Delta D_h = -0.49$).
Figure 31: Household 21
Locus 28

This locus consisted of a paired summer and winter structure complex directly east of the townhouse in the central area of Chota. The rectangular summer structure at this locus contained two or three subfloor burials, none of which contained buttons. Buttons found in the pits to the north of this structure, which were distinct from the next closest household locus (locus 27) were therefore used as the basis of this household’s assemblage (Figure 32). These buttons were similar to buttons from several pits to the southwest of the structures, but distinct ($\Delta D_h = -0.32$) from the three pits further south which were located between locus 28 and locus 29.

Locus 29

This locus consisted of a paired summer and winter structure complex directly southeast of the townhouse in the central area of Chota. The rectangular summer structure at this locus contained three subfloor burials, none of which contained buttons. Initially I was unsure if there were any buttons associated with this locus. Unlike the other households in the central area of Chota, none of the pits that were closest to these structures contained buttons. There were two pits north of this structure that contained buttons, but given their proximity to the Townhouse I was not confident in assigning those buttons to this household. However, as I began to compare the set of pits which were closest to locus 30 to other pits in the area, I noted that they clustered into two distinct groups. One was made up by most of the pits in an arc around locus 30, and the other was spread out between locus 30 and locus 31. Given the distinction between these two groups (average $\Delta D_h = -0.56$), the distinction between this group and the buttons associated with locus 28 (average $\Delta D_h = -0.41$), and the proximity of these pits to the structures in locus 29, I assigned this assemblage (Figure 33) to this locus. It is possible that these buttons are not associated with the household that lived in locus 29 but instead associated with an earlier
Figure 32: Household 22
Figure 33: Household 23
household that lived in locus 30, separated by enough time that the button sources were different. Either way these two assemblages are different enough to represent two separate households.

**Locus 30**

This locus consisted of a paired summer and winter structure complex south of the townhouse in the central area of Chota. The rectangular summer structure at this locus contained seven subfloor burials, none of which contained buttons. The unusually large number of burials and the unusual east-west orientation of the structures (all of the other structures in the central area are oriented roughly north-south), suggest that this may be one of the earliest households built in Chota. The household assemblage associated with this locus (Figure 34) is made up of a widely scattered group of pits that contain buttons that are similar to one another, but distinct from groups associated with loci 31, 32 and 33 (Table 7). As I discussed above, household assemblage 23 and 24 may both be associated with these structures, perhaps representing successive generations given the presumed length of occupation of these structures.

**Locus 31**

This locus consisted of a paired summer and winter structure complex south of the townhouse in the central area of Chota. The rectangular summer structure at this locus contained two subfloor burials, one of which contained buttons. Unusually, there were a two additional burials under the floor of the round winter structure, although those internments may pre-date the construction of the structure. One small, square pit was excavated inside the rectangular summer structure which appears to have been associated with the structure’s occupants (Schroedl 1986), so the button assemblage from that feature and one button randomly selected from the burial were used as the basis of this locus’s household assemblage (Figure 35). Four large pits near the
Table 6: $\Delta D_h$ Between Brass Ingot Button Assemblages Associated with four Loci at Chota

<table>
<thead>
<tr>
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<th>Locus 30</th>
<th>Locus 31</th>
<th>Locus 32</th>
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<td></td>
</tr>
<tr>
<td>Locus 33</td>
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<td>-0.60385</td>
<td>-0.62146</td>
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east side of the structures had a similar tin content distribution (average $\Delta D_h = 0.09$) in the buttons made from brass ingots, so they were added to the household assemblage. This group was similar to the button assemblages from two other features scattered in the area west of the structures, closer to loci 30 and 33, but was distinct from three other features which were therefore associated with other households.

*Locus 32*

This locus consisted of a paired summer and winter structure complex south of the townhouse in the central area of Chota. The rectangular summer structure at this locus was not fully excavated so it is not clear if it contained any subfloor burials. Three pit features directly northwest of the round winter structure at this locus were used as the basis of this household assemblage (Figure 36). The button assemblage in these features was similar to the buttons contained in three other features north and east of these structures ($\Delta D_h = 0.11$) when the buttons made from brass ingots are compared to one another. These features were also distinct from the features associated with locus 33 (average $\Delta D_h = -0.39$) the next closest locus.

*Locus 33*

This locus consisted of a single winter structure south of the townhouse in the central area of Chota. The structure is near the edge of excavation so it is possible that its paired summer house was simply not identified. The buttons recovered from two pit features directly south of the winter house were used as the basis of this locus’s household assemblage (Figure 37). This group was similar to the buttons recovered from four other pits located north of the winter house (average $\Delta D_h = -0.06$) when the buttons made from bell-metal were compared, so the buttons from these features were added to the household assemblage.
Figure 36: Household 26
Figure 37: Household 27
**Locus 34**

This locus consisted of a paired summer and winter structure complex, with two additional square structures that appear to post-date the Revolutionary War. The rectangular summer structure at this locus contained three subfloor burials, two of which contained buttons. This locus is located on the terrace below the central area of Chota west of the townhouse and was excavated as a separate block (Area A). The buttons from the subfloor burials were used as the basis for a household assemblage (Figure 38). All of the other features in the block which contained buttons, except for one that is associated with one of the later structures, were added to this household’s button assemblage.

**Locus 38**

This locus consisted of a cluster of postholes which may represent a single winter structure about 700 m south of the townhouse in Chota (Area H). This area is located between the central areas of Chota and Tanasse but on the outskirts of both. No posthole pattern associated with a summer house was identified at this location. A cluster of pit features containing buttons was excavated at this location and the buttons from this assemblage were distinct from the buttons found at two nearby excavation blocks (Area J and 40MR62 Area C) and so they were combined as a household assemblage (Figure 39).

**Brunswick**

**Lot 29 (31BW376**S10)**

This property contained a single structure with a full basement, divided into two rooms, with foundation walls made from ballast stone. There were two chimney bases evident from the structure’s foundation, a large one for cooking on the west gable end and a small one for heating
Figure 38: Household 28
Figure 39: Household 30
the eastern room on the northern wall (Figure 40). A series of pier bases suggest that a porch wrapped around the southern and eastern walls of the structure. Originally there were two entrances into the basement, one for each room, along the northern and southern walls of the structure, but the southern basement entrance was bricked up at some point in the structure’s occupation, presumably when the porch was constructed. Historic records indicate that this structure was owned by the Moore family and rented out to middling tenants during the third quarter of the 18th century. Excavations focused on the inside of the structure, which had burned during the Revolutionary War and mostly contained rubble from the destruction of the household. Pits from brick robbing and shelling during the Civil War were dug into the cellar fill. While there was a thin occupation layer all around the outside of the structure, in the north-west corner of the excavation area it became thicker and contained considerably more artifacts.

Each room in the basement was used as the basis for a household assemblage. Any buttons which were recovered from later pits dug into the basement fill were removed from these assemblages. These buttons were then compared with each other and with buttons recovered from other features/layers on the same property. The two basement rooms had very similar button tin content (average $\Delta D_h = 0.13$) so I combined them together into one household assemblage (household 32). Most of the other buttons recovered from outside the structure walls were quite distinct from both basement assemblages except for the buttons recovered from the occupation layer right outside the bricked up southern entrance, so I only added the buttons from this unit to the basement button assemblage.

Lot 28 (31BW376**S11, S12, S15, S20)

This property was owned and occupied by Judge Maurice Moore, a prominent planter and landowner in the Lower Cape Fear region, in the third quarter of the 18th century. It is one
Figure 40: Household 32
of the few Brunswick properties with excavated outbuildings, including a smokehouse (S20) and a kitchen (S15). The main house consisted of a large wooden structure, with a full basement and a brick and ballast stone foundation. There was a single large chimney located on the south wall of the structure and large covered porches set on brick piers ran along the east and west walls (Figure 41). The basement was partitioned into three rooms and could be accessed through a large bulkhead entrance with brick stairs which ran under the west porch. Since the east side of the structure faced onto the main street, the west side was presumably the service entrance, suggesting that the bulkhead entrance was mostly used by enslaved domestic laborers. A well (S12) was located directly southwest of the main house. The smokehouse, further to the southwest, consisted of a small square structure with a ballast stone foundation which was connected to a brick firebox with a long flue. Finally, the wooden kitchen with a large brick hearth and connected bake oven was excavated directly west of the main house. Evidence of burning in all of these structures suggests that they were abandoned during the invasion of British forces in 1776 (South 2010).

The majority of the buttons recovered at the main house were found in the occupation layers to the east and west of the structure. Only a few buttons were found in the fill of the basement, underneath the rubble from the destruction of the building. The buttons from the kitchen and the smokehouse were all found in occupation layers around their respective structure. The buttons from the basement contexts and the artifacts found in the layers under the eastern porch matched the best so I used them together as a household assemblage (household 33). The buttons from the western side of the house were the most similar (average $\Delta D_h = 0.05$) to the buttons associated with the kitchen (household 35). Finally, the buttons associated with the smokehouse were not similar to either the kitchen buttons or the main house buttons (average
Figure 41: Household 33, 34 and 35
but they were very similar to the buttons recovered from the well (average $\Delta D_h = 0.30$) so I interpreted these two as an assemblage (household 34). Since enslaved domestic laborers often lived in detached kitchens it is likely that the assemblage of artifacts associated with the kitchen and the service side of the main structure (household 35) was mostly consumed by enslaved laborers rather than the Moore household. While enslaved laborers might have lived in the smokehouse, it was much less likely to be occupied than the kitchen. However, since I could not be sure that they were associated with the free, white household, I chose to not use households 34 or 35 in my household complexity analysis.

**Lot 31 (31BW376**S8)**

According to the documentary record, this lot was owned by Usher Espy from 1739 to his death in 1767, though he likely did not live on the property itself. The household, or succession of households, that occupied the property rented a single structure with a masonry foundation, a basement divided into two rooms, and a chimney located on each gable end of the building (South 2010). A series of brick piers demarcate a large porch which was built along the eastern wall of the structure (Figure 42). When the structure was first constructed, the southern room of the basement could be accessed through a bulkhead entrance on its west side, but this door was bricked up and the bulkhead was filled at some point during the occupation of the structure. This building was burned during the British invasion of Brunswick and the basement was filled with rubble soon afterwards.

A few buttons were recovered from the thin layers of occupation fill in the southern room of the basement, but the majority of the buttons from this site came from the bulkhead fill and the layer of debris that built up to the south and east of the structure during its occupation. Unlike the contexts on Lot 29, the buttons from the basement fill matched the distribution of tin content.
Figure 42: Household 36
from most of the button assemblages outside the structure (average $\Delta D_h = -0.04$). Only one context from the western midden area was different enough that I did not include it in the household assemblage from this locus (household 36). The similarity between the buttons recovered from the basement fill contexts and other contexts outside the structure suggests that this property had a more stable ownership history than other rental properties in Brunswick. It appears that the same household that purchased the buttons that were incorporated into the fill of the bulkhead and were deposited along the southern wall of the building were still living in the structure directly before its abandonment in 1776.

*Lot 30 (31BW376**S9)*

This property was also owned by Usher Espy and his descendants and contained a structure which was very similar in size and floorplan to the one on Lot 31. The renters on this property lived in a structure with a masonry foundation, a basement divided into two rooms, and two chimney bases, one on each gable end (Figure 43). It is likely that the structure had a porch along its eastern wall, along the street, but the excavation did not extend far enough to recover evidence of such an addition. As with the neighboring structure, the southern room of the basement was originally accessed by a bulkhead entrance, though this entrance was eventually bricked up and filled in. This pattern of bricking up basement entrances, observed at all three rental properties, may be evidence that while these structures were originally built to house families with enslaved domestic workers (who would be expected to access the basement kitchen through the bulkhead entrance), the actual renters were not wealthy enough to own enslaved cooks and therefore found this feature unnecessary. Stanley South interpreted this structure as a possible store, since on the 1769 map the structure was crossed out, suggesting that it was not occupied for tax purposes (South 2010). However, it is just as likely that the property was
Figure 43: Household 37 and 38
between renters when the map was made, given the building’s similarity to the other domestic structures surrounding it. Like the other structures on this street, this house was burned during the Revolutionary War and afterwards its basement was filled with structural debris from the demolition of the remaining walls.

Several buttons were recovered from the occupation and destruction layers in the basement of this structure. The buttons from the north and south rooms of the basement were similar to one another ($\Delta D_h = -0.01$) and therefore I used them together as the basis for an assemblage of household goods (household 37). The button assemblage from the basement contexts matched the assemblage from the bulkhead fill (average $\Delta D_h = -0.06$) so I added the buttons from this context to the household assemblage. The buttons from the basement were quite distinct in their tin content from the button assemblage recovered from the layer of midden deposit located along the north wall of the structure (average $\Delta D_h = -0.46$), so this assemblage was assigned to its own household assemblage (household 38). Finally, buttons recovered from the fill of the builder’s trench of this structure were not similar to either of the household assemblages ($\Delta D_h = -0.66$), and were not added to either assemblage. Therefore, this locus is associated with two household assemblages, which likely represent successive renters of the property.

Lot 345/6 (31BW376**N29)

Christopher Wooten purchased these lots sometime in the early 1760s and occupied them with his family until his death in 1774, at which point his property was put up for auction by the town sheriff. According to the 1769 map of Brunswick, three structures were built on this property, a large building in the north which served as the main house and two smaller outbuildings along the southern edge of the property. Archaeological excavations have focused
on the northern edge of this property. Extensive robbing and shelling during the Civil War, when this area was used as a camp for soldiers associated with Fort Anderson (Beaman and Melomo 2016), has disturbed the archaeological evidence of this earlier structure. While no foundation walls have been identified, a series of brick piers were found which indicate the building had a large porch which wrapped around the east and north walls of the structure (South 2010). Additionally, more recent excavations revealed that one of the rooms of the structure had a ballast stone floor (Gabriel 2012; Beaman and Melomo 2016). Drawing upon the archaeological and cartographic evidence I created a potential footprint of this structure (Figure 44). Thus, the northernmost building at this site seems to have been a fairly large, substantially built structure which served as the Wooten family home during the third quarter of the 18th century.

Analysis of the artifacts found at this site suggest that objects recovered from the lower strata are related to the colonial occupation of Brunswick lots 345/6 (Gabriel 2012). Buttons from this layer were divided into assemblages based on the excavation block from which they were recovered. The buttons recovered from the two excavation blocks underneath the possible footprint of the house had similar distributions of tin content ($\Delta D_h = -0.03$) and were therefore interpreted as belonging to the same household assemblage (household 39). The button assemblage from an outlaying excavation block, which may or may not have been part of the same property, was quite distinct from the other two ($\Delta D_h = -0.74$) and therefore was not included.

Lot 344 (31BW376**N29)

In the third quarter of the 18th century, this lot was primarily owned and occupied by Thomas Marnan. According to the 1769 map of Brunswick, this property contained a single structure and attached kitchen. Like the structure in neighboring lots 345/6, the archaeological
Figure 44: Household 39
record relating to this building was highly disturbed during the Civil War and no architectural remains have been recovered associated with this house (Gabriel 2013; Beaman and Melomo 2016). Lacking any archaeological evidence, I used the representation on the 1769 map of Brunswick as the footprint of this structure (Figure 45).

Analysis of the artifacts found at this site suggest that objects recovered from the lower strata are related to the colonial occupation of Brunswick lots 344 (Gabriel 2013). Buttons from this layer were divided into assemblages based on the excavation block from which they were recovered. The button assemblage recovered from the excavation block inside the potential structural footprint was dissimilar to the two blocks to the northwest of the structure ($\Delta D_h = -0.65$). The buttons from the excavation block directly northeast of the structure could not be compared, but were assigned to the same household (household 40) based on their proximity to the structure.

**Consumer Constraint Analysis Results**

I used 36 of the 41 button assemblages defined in the household assemblage analysis in the consumer constraint analysis. Two assemblages from Williamsburg (households 14 and 41) and one assemblage from Chota (household 30) had a sample size of five or fewer and were therefore removed from any further analysis. Two assemblages from Brunswick (households 34 and 35) were most likely associated with the households of enslaved domestic servants and were also removed. Appendix 4 displays the Hellinger distance between each household assemblage and the overall marketplace assemblage of its locality in terms of the 14 variables used in this analysis. In cases where a household assemblage had fewer than three buttons with a measurable dimension, a Hellinger distance could not be calculated for that variable. Variables where the
Figure 45: Household 40
Hellinger distance of one or more household could not be calculated could not be used in the Euclidian distance matrix and were therefore removed from this analysis.

Upon visual inspection, the results of the homogeneity of multivariate dispersions analysis did not appear to match the pattern that I hypothesized would exist in the data. I grouped the data by locality, with the lowest numbered locality representing the group with the greatest average household complexity, but the plot of the first two eigenvalues against one another (Figure 46) shows that group 2 (Pre-Revolutionary Williamsburg) is more closely clustered together than group 1 (Chota). In fact, both group 2 and group 3 (Post-Revolutionary Williamsburg) had lower average distances to the centroid than group 1 (Table 7). These findings suggest that both groups of households at Williamsburg were more constrained in their consumer choices than the group of households in Chota were, despite the fact that Cherokee households were typically more complex than enslaved African American households during both time periods.

The results of my first linear model confirm these initial observations. Since the distances to centroids were distributed exponentially, I used the logarithm of the values as my response variable for all of the linear models. The first model, which uses a single explanatory variable (household complexity) found no significant relationship between these two variables (slope beta = -0.1743, p-value = 0.252). The slope is negative, meaning that as household complexity increases, the distance to centroid decreases, but since the value is not significantly different from zero I cannot prove that this result is not due to random chance. Thus, I cannot demonstrate that household complexity, when considered alone, is related to consumer choice. However, the results from the homogeneity of multivariate dispersions analysis suggests that other factors are affecting the consumer constraint of households which need to be taken into account in my final
Table 7: Average Distance to Centroid

<table>
<thead>
<tr>
<th>Locality</th>
<th>Average Distance to Centroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chota</td>
<td>2.567</td>
</tr>
<tr>
<td>Pre-Revolutionary Williamsburg</td>
<td>1.649</td>
</tr>
<tr>
<td>Post-Revolutionary Williamsburg</td>
<td>2.484</td>
</tr>
<tr>
<td>Brunswick</td>
<td>2.834</td>
</tr>
</tbody>
</table>
model. Both of the groups of enslaved households had lower average distances to their centroid than both of the groups of free households, suggesting that, unsurprisingly, enslaved consumers had considerably more constrained choices. The variation in distance to centroid caused by the circumstances of slavery must be taken into account by any model of consumer behavior using this dataset.

Thus, my second linear model explored the relationship between each household’s distance to centroid and three explanatory variables, freedom, household complexity, and social status. First, I modeled each variable as well as the interaction terms between variables. None of the interaction terms were significant, so I removed them from the model to increase the degrees of freedom. A variance inflation factor analysis found that the three variables had no collinearity with each other. Finally, I used a backwards, stepwise AIC comparative method as a model selection tool. This analysis found that removing the social status variable increased the explanatory value of the model, but both other variables contributed to the model. Thus, my final model regressed distance to centroid against freedom and household complexity.

The results (Table 8) of this reduced model show that free households were significantly more distant from their centroids than unfree households were. The slope beta for household complexity is negative, indicating that as household complexity increases the distance to centroids decreases. However, the value is not low enough to be significantly different from zero, meaning that I cannot reject the null hypothesis that consumer constraint has no relationship to household complexity. Nevertheless, as the AIC analysis demonstrates, the addition of household complexity as an explanatory variable to the model does a better job of explaining the variation in the data despite the reduction in degrees of freedom. Thus, it is likely that a more robust dataset, which drew upon more households than were used in this analysis
Table 8: Reduced Model Coefficients

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Estimate</th>
<th>Standard Error</th>
<th>t-value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>0.7449</td>
<td>0.1198</td>
<td>6.215</td>
<td>5.12E-07</td>
</tr>
<tr>
<td>Freedom</td>
<td>0.296</td>
<td>0.1449</td>
<td>2.043</td>
<td>0.0491</td>
</tr>
<tr>
<td>Household Complexity</td>
<td>-0.2238</td>
<td>0.1451</td>
<td>-1.542</td>
<td>0.1325</td>
</tr>
</tbody>
</table>
would find a significant relationship between these two factors. Similarly, it is likely that social status also plays a role in consumer behavior, but since this dataset was not designed to test that hypothesis, this variable did not add to the explanatory value of the model. I interpret these results to show that while household complexity does decrease the consumer choices of household constituents, other factors, such as slavery, play a much more significant role in shaping consumer choices.

Conclusion

The results of both analyses demonstrate the value of contextualizing the physical variation in artifacts in relation to the variance in local marketplaces. By comparing the similarity of a single attribute which varied according to the source of the object rather than the consumers, I was able to better determine which buttons were acquired by the same households. By comparing the similarity of attributes which varied according to consumer choices, I was able to make interpretations about which factors had the most effect on consumer constraint. The physical attributes of ordinary objects hold important information about the behavior of individuals in the past and the nature of consumerism. It is only through archaeological excavation and analysis that we can access this information and make interpretations about the past.
Chapter 7: Conclusion

Introduction

In my introductory chapter I laid out two hypotheses which, if supported by my analysis, demonstrate that individuals who live in more complex households are more constrained in their consumption choices. I was not able to support my first hypothesis, that increased household complexity significantly decreased the dispersion in household copper alloy button attributes. My findings suggest that household complexity is not the most important factor which limited consumer choices in mid-18th-century Williamsburg, Brunswick, and Chota. However, I was able to support my second hypothesis, that household complexity does help explain the variance in consumer constraint in these three localities when the effect of enslavement on consumer choice is also added to the model. The modeled relationship between household complexity and household dispersion is negative (increasing household complexity decreases household dispersion), in accordance with current anthropological theory, but since the beta parameter was not significantly different from zero, there is a greater than 1 in 20 probability that this negative relationship is due to chance alone. Therefore, while the results of this analysis support the assertion that household complexity has some effect on the consumer choices of constituent members, further research is required to demonstrate with more certainty the nature of this relationship.

Implications of Results

The results of this study have important implications for three specific strands of archaeological thought. First, in terms of the research question, my results demonstrate that no matter what the effect of household complexity on consumer choice is, other factors constrain consumption choices much more significantly. Consumption choices are limited by a range of
social factors, which must all be considered in any analysis of consumerism. Therefore, while chattel slavery is not likely to play as large of a role in European society as it did in North American society, it is worth considering other factors, in addition to household complexity, which led some households, and not others, to more fully participate in the proliferation of household goods in late-17th and early-18th-century Northwest Europe. While a generally decreased household complexity in this region, associated with the European Marriage Pattern, may indeed have partially been responsible for the early timing of changes in consumption trends in the British Isles and the Low Countries, the effects of other factors must be considered as well. While this is hardly surprising, the result of this study suggest that further research into the consumer revolution could benefit from more comparative analysis of the physical attributes of archaeologically-recovered consumer goods.

While the results of the analysis of consumer constraint indicate that household complexity has a relatively minor effect on consumer behavior, my study indicates that adding a consideration of the pooled consumption activities to household analyses is one method to improve archaeological interpretations of household behavior. In cases where multiple households are believed to have occupied the same domestic structure (as in Williamsburg and Brunswick) or it is unclear which archaeological features are associated with a domestic group (as in Chota), a comparison of the similarity of the sources of artifacts acquired through long-distance trading networks between assemblages can help define which artifacts were acquired by the same households. While this methodology could use further refinement and testing, its flexibility and wide applicability make it a potentially useful tool for many archaeological analyses.
Finally, the results of this study emphasize the complexities inherent in studying the consumer behavior of groups who were marginalized by the European colonial expansion. While the first historical archaeologists to excavate sites primarily occupied by enslaved laborers tended to interpret the consumer goods they found as evidence of acculturation, provisioning, or theft (Otto 1984; Howson 1990; Orser 1998), more recent archaeological research has recognized that many of these items were acquired by enslaved laborers using their own economic resources (Heath 1997; Heath 2004; Galle 2010). Since the right of an enslaved individual to own property was a legal grey area, just participating in the market economy can be interpreted as an act of resistance, and archaeologists have long attempted to discern spiritual, familial, and cultural practices from consumer goods associated with black spaces and contexts (Wilkie 2004; Samford 2007; Leone 2010). However, the results of my analysis make it clear that we must not over-represent the choices available to enslaved consumers. Black men and women living on the Kingsmill, Little town and Carter’s Grove plantation actively participated in the consumer marketplace to acquire buttons, but their choices when doing so were significantly more constrained than their free contemporaries. Therefore, archaeologists must be particularly careful when interpreting the lives of the enslaved that the patterning they observe in the archaeological remains of particular sites actually represents choices made by individuals rather than the availability of objects for acquisition (Heath and Breen 2009; Schweickart 2019).

In addition to this word of caution, the results of this analysis provide more information about the relationship between household behavior and consumer behavior among enslaved laborers. While neither household complexity nor social status - defined in the Williamsburg sites as whether the domestic structure was located on the same quarter as the property owner’s manor house - had a significant effect on consumer constraint, the addition of household
complexity to the model better fit the data while the addition of social status did not. Thus, the size of the enslaved household affected the household’s consumption patterns, but the proximity to the manor house, and the additional access to the owner’s family, had no effect. This result fits both the sociological evidence and documentary evidence, which suggests that larger households, with more mouths to feed, exchanged less of their household production for consumer goods (Heath 2004; Hammel 2005). Smaller, more fragmentary enslaved households, such as the ones that occupied the Williamsburg sites after the American Revolution, were able to spend more of their resources on market exchange. This applies to both households which were moved into the area by new property owners and households which were divided by internal reorganizations within a property-owner’s landholdings and/or the sale of household members living on neighboring plantations. On the other hand, there is no evidence in this dataset that individuals who had more direct contact with plantation owners had either greater or fewer choices when acquiring consumer goods. The inverse relationship between household size and consumer constraint illustrates yet another difficult decision enslaved individuals faced; the larger their family grew, the fewer resources they had to spend on buying objects which defined their personhood in the face of racist erasure, or even purchasing their own freedom.

A final implication of this project for studies of the African diaspora is that household analysis can be used to distinguish between the objects acquired by enslaved households and free households who occupied the same domestic structure. Using this analysis I was able to split the assemblage of buttons associated with Judge Maurice Moore’s property in Brunswick into three groups which were distinct from one another in terms of their sources. In this particular case, it is likely that the detached kitchen was occupied by at least one enslaved household whose property was found both near the kitchen and along the west wall of the main house, closest to the service
entrance to the structure. Given the large size of Moore’s enslaved community, it is likely that this group represents a distinct household, but this pattern is not apparent at other sites in Brunswick where free and enslaved laborers are known to have lived in the same structure (lots 344 and 346/7). Since these two households contained many fewer enslaved individuals, the buttons they consumed may have been mixed in with the buttons from the rest of the household. Thus, this method can be used to help define white and black spaces in urban areas and other places where archaeologists have traditionally had difficulty defining the boundaries between enslaved and free households (Epperson 1990; Wilkie 2004).

While archaeologists studying colonial Native American sites have long since problematized the simple categorization of all European material goods as representing acculturation (Mullins and Paynter 2000; Silliman 2009; Hu 2013), there is still significant scholarly debate over the correct way of interpreting exchange relationships between Native Americans and European colonists. Bruce Trigger (1991) divides scholars into two opposing camps, the Romantics and the Rationalists. The Romantics, he argues, are inspired by Franz Boaz’s ideas of cultural relativism to see the cultural worldview of a society as the defining determinant of its member’s behavior. More recent histories of Native American/Colonist interactions with a Romantic bent tend to emphasize the contrast between the Maussian, un-commodified, traditional gift exchanges of Native North America with the highly-commodified, value-based commodity exchanges of the European colonists (Richter 2001; Mallios 2004; Mallios 2006; Marrell 2006). The Rationalists, on the other hand, hold the view that the universal human tendency to act in accordance with one’s own self-interest overrides any other motivating force. For instance, Kathryn Braund (2008) recognizes that the Creek continued their traditions of communal land holding and not passing on their property after death, but she dismisses the
notion of a uniquely Creek conception of consumer goods. Braund argues that over the course of
the 18th century, Creek society imported European ideas of consumption when they imported
European goods and while Creeks tried “to the best of their ability, [to mold] the commerce to
suit their culture and condition,” (137) she sees nothing particularly Creek about the resulting
Creek consumerism.

Modern theories of consumerism meld these two viewpoints together, suggesting that the
universal human tendency to accumulate capital can only be understood when the cultural
conditions which dictate the value of capital, both economic and symbolic, are made explicit
(Bourdieu 1984; Bourdieu 1990). The results of this study suggests that Overhill Cherokee
individuals domesticated trade goods, particularly buttons, into their pre-existing conceptions of
property and exchange. Overhill Cherokee households in Chota were significantly less
constrained when acquiring buttons than their contemporaries in Williamsburg, and they
consistently chose to acquire two-piece brazed and soldered buttons from local fur traders, the
types that best fit Cherokee tastes. Overhill Cherokee consumers domesticated European-
manufactured copper-alloy buttons and made them their own. Rather than representing a new
and intrusive form of dress, these objects were folded into a tradition of personal adornment with
roots extending into the deep Cherokee past. Cherokee involvement with the fur trade was
partially motivated by the desire to consume objects that communicated uniquely Cherokee ideas
of identity and group membership. By looking beyond simple interpretations of trade goods
based on the assumptions that metropolitan producers made about how the objects they
manufactured would be used and the social roles they would play, scholars can examine how
these objects added new modes of expression to an ongoing indigenous conversation.
Future Directions

As always, this analysis raises more questions than it satisfactorily answers. In addition to expanding the dataset with new sites in order to confirm the results of this analysis and better test the effect of social status on the consumer choices of households, this study opens up several other avenues of future research. First, further refinement and testing of the household analysis methodology defined in this study would make it more applicable and define its utility and limitations as a method. Applying this methodology to several different artifact types from the same site and comparing the results would allow an archaeologist to more confidently define the spatial extent of household’s artifacts as well as determine if separate artifact types follow the same consumption patterns. Comparing the patterning of attribute variation found in buttons with other artifact types would provide more data both about the factors that constrained consumer choice in general as well as investigating whether a household had the same constraints on their choices when acquiring other types of objects. Additionally, the methods used here can be applied to other datasets in order to examine other social factors which potentially had an effect on consumer behavior.

Finally, for this analysis I only used the distance between each household’s assemblage and the local marketplace as my dependent dataset since my research question was focused on constraint within localities. However, a redundancy analysis could be applied to the original dataset to evaluate which physical attributes were more important to each locality. Using this method, an analyst could interpret which attributes were more important to consumers in each locality and begin to investigate the meanings which were associated with particular variants in each social group. This type of analysis would allow archaeologists to add context to individual finds at each of these places and better understand how the same object would have been viewed
differently depending upon which social group was examining it. Finally, all of the sites used in this analysis were domestic sites, biasing the nature of the archaeological record towards the remains of domestic activities. A comparison of the attributes of copper-alloy buttons found at these domestic sites with the attributes of buttons found at structures associated with public gathering spaces such as taverns, public houses, and Cherokee townhouses, would allow archaeologists to better understand which features of these objects were more associated with public, rather than private, life. These sorts of future analyses would allow analysts to use this dataset to investigate some of the multivalent meanings of button attributes, how these meanings changed over time, and how individuals who lived in these localities drew upon these meanings when adorning themselves with these items.

Conclusion

In his recent article in Historical Archaeology, Michael Roller (2019) examines questions of consumerism in the early 20\textsuperscript{th} century. He argues that archaeologists of consumerism have over-emphasized the discursive nature of consumption and suggests that consumer behavior in the inter-war period is better explained by machinic theory, a critical social theory derived from Marx’s writings which focuses on the way that systems beyond the factory floor (transportation infrastructure, mass media, shopping centers and so on) are automated for the profit of elites. Roller centers his study on Lattimer No. 2/Pardeesville, a Pennsylvania coal-mining company town, and particularly on an assemblage of artifacts found in a privy on one of the lots in town, but he primarily draws upon historical and ethnographic data, rather than the archaeologically-excavated artifacts, to support his argument. While Roller emphasizes the importance of objects to understanding consumerism, he draws upon broad trends in early 20\textsuperscript{th}-century material culture, such as changes in manufacturing techniques and decorative styles defined by scholars.
of the time period, to support his argument about mechanistic mass consumption and only uses the archaeological assemblage as an illustration of those changes rather than a source of data.

The editors of *Historical Archaeology* invited two established archaeologists of the early 20\textsuperscript{th}-century United States to respond to Roller’s article. While both commenters agreed with the aim of Roller’s research, they both faulted him for not engaging with the archaeological assemblage more specifically (Mullins 2019; Wurst 2019). Mullins, in particular, argues that Roller’s focus on the power of totalizing social structures to affect the choices made by individual consumers risks downplaying the ways that individuals found meaning and pleasure, and even resistance to domination, in consumption. In his response to these critiques, Roller (2019) argues that he chose to focus on broad social structures, rather than the agency of individual consumers at one particular site, as a corrective for recent trends in historical archaeology. He notes that for the last several decades, archaeologists have focused their analytical energies on interpreting the specific, local, symbolic meanings of consumer goods rather than investigating the effects that large-scale social structures have on consumer behavior. He argues that if archaeologists do not consider the structures which shape the type, variety and necessity of consumer goods available at any given time or place, they risk mis-representing an object acquired under duress as a symbol of freedom and liberation.

While I find Roller’s critique of recent archaeological studies of consumerism convincing, the solution he suggests to the structure-agency problem leaves me unsatisfied. His analysis of mechanistic mass consumption relies entirely upon documentary and ethnographic data sources. While there is no question that Roller did an exemplary job excavating the privy and cataloging the artifacts found within it, his analysis does not rely on the archaeological data recovered from this site and his results would have been unchanged if he dug another site.
entirely, or indeed if he refrained from excavating altogether. Given the time and expense of archaeological excavations, not to mention the effort necessary to curate and store the resulting artifacts, data and samples, what justifies its practice if the information gained from the endeavor is not used to inform our interpretations of the past? The most important result of my dissertation analysis is that it demonstrates that archaeologically recovered data can indeed provide information about the large-scale processes that affected consumer behavior in the past.

Archaeologists do not have to just rely upon documentary or ethnographic data sources to provide information about the social structures that consuming agents acted within. The analysis of the physical attributes of large datasets of artifacts recovered from comparable sites can allow archaeologists to investigate the relative significance of different sources of consumer constraint as well as the ways individuals navigated these constraining factors.

By analyzing the difference between the distributions of physical attributes associated with a household and the overall distribution of that attribute in the marketplace, I measured the extent to which consumers were able to select objects which fit their tastes and therefore how much choice individuals actually had when acquiring consumer goods. Using a multivariate analysis, I tested the actual effects of various large-scale social processes on the physical attributes of objects excavated by archaeologists. Not only was my model able to determine if different processes affected consumer constraint, it was able to rank the processes in terms of the significance of their effect. This methodology allows scholars to interpret, based on archaeological data, the extent to which particular objects were acquired by individuals as an expression of their unique identity or as a requisite totem foisted upon them by a system designed to accumulate capital. Archaeologists investigating both literate and pre-literate societies both can and should add to the scholarly conversation about consumerism, not just in
terms of the ways individuals at a specific site identified themselves within their social context but also the effects of socio-political structures on communities and groups.
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<thead>
<tr>
<th>Author</th>
<th>Title</th>
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<tr>
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Walsh, Lorena

Walsh, Lorena

Walsh, Lorena

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Wood, Bradford


Wurst, Louann


Yentsch, Anne

Appendix 1: pXRF Methodology

The elemental composition of each button was estimated through X-Ray Florescence (XRF) analysis. This appendix describes the sampling procedure used to collect elemental spectra, the software used to quantify the data, and the analytical methods used to calculate the 90% likelihood range for the weight percent of each major element (Cu, Zn, Sn, and Pb). Two handheld pXRF analyzers were used in this study: a Brucker AXS Tracer IV owned by the Analytical Archaeology Laboratory at the University of Tennessee, Knoxville, and a Thermo Scientific Niton XL5 owned by the Geoarchaeology Core Facility at the University of Tennessee, Knoxville. For logistical reasons, all the buttons from the Tennessee and Virginia sites were analyzed with the Tracer while the majority of the buttons from the North Carolina sites were analyzed with the Niton. All samples were analyzed according to the same procedure, though instrument settings and quantification methods differed depending on the instrument used.

XRF analyses assume a homogeneous sample matrix and have a very shallow depth of penetration, therefore corrosion products on the surface of unconserved copper-alloy artifacts significantly alter the measured weight percent of each constituent element (Orfanou and Rehren 2015). However, Dussubieux and Walder (2015) show that if the corrosion product is removed, pXRF measurements of the underlying metal are within accepted error ranges of the true element ratios. Therefore, a sample of 30 previously unconserved buttons of a variety of types were analyzed using the pXRF before and after their corrosion products were removed and a series of regression models was developed to predict the elemental weight percent of the conserved buttons based on the unconserved spectra. Given the error inherent to these models, both a mean
value and a range of values representing the 90% likelihood range of each element’s weight percent was calculated.

**Sampling Procedure**

Two 30 second assays were collected from each button. Thirty second assay times are industry standard for quantifying the weight percent of metallic alloys (Sitko and Zawisza 2012). For complete buttons, a reading was taken from both the front and the back of the button. Spectra taken from buttons consisting of a single metallic element (not counting the shank), such as flat disc cast/stamped or two piece crimped buttons, were named “Button#_F” if taken from the face and “Button#_FB” if taken from the back of the face. Spectra taken from buttons consisting of two fused metallic elements (not counting the shank), such as two piece brazed and soldered buttons, were named “Button#_F” if taken from the face and “Button#_B” if taken from the back. If either the face or the back of the button could not be analyzed, either because they were missing, obstructed or coated in a corrosion product that was judged to have a different source than the button element, then the second assay was taken from a different spot on the face/back and named “Button#_F2/B2”. Every effort was made to avoid including the button shank in the area of analysis when taking a reading unless they were cast as part of the button element. Non-metallic button elements and button shanks were not analyzed. Spectra from buttons that, upon analysis, were primary made of silver were discarded.

**Tracer**

The Tracer IV instrument, when used in concert with the S1PXRF software, is designed to allow the user considerable flexibility to change the instrument settings according to the needs of their analysis. Therefore, a review of relevant literature (Table 9), was undertaken to
determine the appropriate instrument settings before carrying out the pXRF analysis with the Tracer instrument. In accordance with the literature review, the following instrument settings were selected: the instrument voltage was set to 40 KeV to collect the widest possible range of fluorescing electrons, the instrument current was set to 30 uA and the Ti/Al filter was used to focus specifically on the elemental peaks of interest (<~5.3 KeV). The vacuum pump was not used for this analysis since the light elements which are most likely to be attenuated by the atmosphere were filtered out by the Ti/Al filter anyway. Each spectra was saved as both a .csv and .pdz file and named according to the system described above.

During analysis, the valid count rate was monitored to make sure it stayed within the range of 10,000-100,000 counts per second in order to avoid pile ups in the Cu and Zn peaks. If the sample exceeded this count rate the spectrum was discarded and the object was moved to the edge of the analysis area in order to reduce the amount of sample which was exposed to the X-ray beam. Over the course of the analysis it was determined that a current of 30 uA was too high for non-corroded and/or high-Cu alloys, resulting in count rates well above the suggested range. Therefore, a new instrument setting of 40KeV voltage, 11.3 uA current, Ti/Al filter and no vacuum pump was created and used for the rest of the samples. Nine hundred and thirty four spectra were analyzed using the 30 uA current setting and 1465 spectra were analyzed using the 11.3 current setting.

Niton

The Niton XL5 instrument allows for considerably less flexibility in terms of its instrument settings than the Tracer IV; however the instrument comes with custom calibrations
Table 9: Comparative Instrument Settings

<table>
<thead>
<tr>
<th>Study</th>
<th>Instrument</th>
<th>Anode</th>
<th>Detector</th>
<th>Voltage (keV)</th>
<th>Current (uA)</th>
<th>Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dussubieux and Walder 2015</td>
<td>Olympus Alpha Series</td>
<td>Tungsten</td>
<td>Si PiN diode</td>
<td>35</td>
<td>20</td>
<td>Iron</td>
</tr>
<tr>
<td>Orfanou and Rehren 2015</td>
<td>ED-XRF spectrometer</td>
<td>Rh-anode</td>
<td>PIN X-ray detector</td>
<td>40</td>
<td>30</td>
<td>Yes</td>
</tr>
<tr>
<td>Fernandes et al. 2013</td>
<td>Thermo Scientific Niton XL3t</td>
<td>Silver</td>
<td>GOLDD (Geometrically Optimised Large area Silicon Drift Detector)</td>
<td>50</td>
<td>40</td>
<td>?</td>
</tr>
</tbody>
</table>
that automatically quantifies a suite of elements. I created a custom profile which used the

general metals elemental suite (Ag, Al, Au, Bi, Cd, Co, Cr, Cu, Fe, Hf, Mg, Mn, Mo, Nb, Ni, P,
Pb, Pd, Re, Ru, S, Sb, Se, Si, Sn, Ta, Te, Ti, V, W, Y, Zn, Zr) and performed a 30 second assay
using only the main filter. The button number of each sample was entered into the “sample” field
and I created a required field called “side” which recorded the button element (F, FB, F2, B, B2)
of each spectra. Additionally, a micro-photo of each analyzed spot was taken using the
instrument camera. A .ncd file was downloaded from the instrument using the NitonConnect
software containing all of the analyzed spectra, the quantified elemental amounts (including 95%
standard error estimates), the button number and side of the spectra, the sample time and the
micro-photo.

**Element Quantification**

Once all of the raw spectra were collected, they needed to be quantified in order to
determine the weight percent of each element used in the analysis. Weight percent is an
important metric to calculate since it is the principle method of determining the physical
properties of metallic alloys. XRF spectra quantification involves comparing the elemental peak
count rates of unknown samples to the peak count rates taken from a standard specifically
manufactured with a known quantity of that element (Fernandes et al. 2013). While an estimate
of elemental quantity in the unknown sample can be made through comparison with a single
standard, peak count rates do not usually have a direct linear relationship with elemental
quantities, so the greater the distance between the elemental quantity in the unknown sample and
the elemental quantity in the standard, the less accurate the estimate is likely to be. Therefore, a
better method is to analyze multiple standards with varying quantities of the element of interest
and create a regression model of peak count rate against known quantity. So long as the amount
of the element of interest in the unknown sample is within the range of quantities in the standards used to create the model, this method is the most accurate way to estimate the elemental ratios in XRF data (Smith 2013). Since there can be significant inter-elemental effects in XRF spectra, wherein the presence or quantity of one element can increase or decrease the peak count rate of another element, standards with similar elemental compositions to the unknown sample create the most accurate models (Shugar and Mass 2012). Therefore, analysts typically select standards that have a suite of elements which are often found together in the same material and create a regression model for each element. These sets of regression models are called a calibration.

*Niton*

For spectra collected using the Niton XL5, the quantification was done automatically using calibrations built into the instrument by the manufacturers. The exact regression models used to create the calibration are not shared by the manufacturer and therefore cannot be reported. However, researchers have found factory calibrations to be consistently accurate when quantifying elements from copper alloy samples.

*Tracer*

In order to quantify the spectra captured by the Tracer IV instrument, I drew upon the quantified values provided by the Niton instrument of the North Carolina dataset, as well as the ranges of elemental variation in historic bronzes reported in Heginbotham et al. (2010), to estimate the ranges of elemental variation in the dataset. I then acquired a set of 6 standards (Table 10) which encompasses the majority of the elemental variation in the major elements (Cu, Zn, Sn, and Pb) as well as the trace elements Heginbotham and collaborators (2010) identified as
<table>
<thead>
<tr>
<th>Standard</th>
<th>Cr</th>
<th>Mn</th>
<th>Fe</th>
<th>Co</th>
<th>Ni</th>
<th>Cu</th>
<th>Zn</th>
<th>As</th>
<th>Ag</th>
<th>Cd</th>
<th>Sn</th>
<th>Sb</th>
<th>Pb</th>
<th>Bi</th>
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<td>SRM 1114</td>
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<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<tr>
<td>33X GM20A</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>36X CN10B</td>
<td>1.4910</td>
<td>0.5520</td>
<td>4.7600</td>
<td>0.1220</td>
<td>28.3500</td>
<td>61.6300</td>
<td>0.0580</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0164</td>
<td>0.0000</td>
<td>0.0130</td>
<td>0.0000</td>
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<tr>
<td>43X Z5B</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
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<tr>
<td>91X S40PR2D</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<tr>
<td>BS 937C</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
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<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
commonly found in copper alloys (Cr, Mn, Fe, Co, Ni, As, Ag, Cd, Sb and Bi). Since instrument settings affect elemental peak count rates, but assay time does not, I took one 180 second assay of each standard at each of the instrument settings used during data collection (30 uA and 11.3 uA). Using these spectra I created two custom calibrations for 18th-century copper-alloy buttons, one for each instrument setting.

The calibrations were created using CloudCal, an open source software package which can be run through R. CloudCal allows users to upload spectra from analyzed standards, select the elemental peaks of interest (including either the alpha or beta peaks of the K, L, and sometimes M shells), enter the elemental quantities in each standard, and then select the regression and normalization method that best fits each element. Since the majority of the constituent elements are within the range visible to XRF spectrometers, I normalized all of the elements to the total photon count. The photon detector in the Tracer IV instrument automatically picks up Rh, therefore, by adding Rh to the calibration even though none of the standards contain any, I was able to account for variation in attenuation as will be discussed below. I found that I was unable to accurately quantify As (given the overlap between the As and Au peaks) and therefore removed it from the calibration.

Using the tools provided by the software, I was able to determine which regression method worked best depending on the element (Table 11). In some cases linear or non-linear (adding an extra independent variable allowing for exponential curves) regression methods were most accurate. However, in most cases, I found that a Lucas-Tooth regression method, which allows either the slope or intercept parameters to be adjusted according to the variation of another element, worked the best. In particular, adding the Rh peak to regression curves removed
<table>
<thead>
<tr>
<th>Element Peak</th>
<th>Calibration Curve</th>
<th>Normalization</th>
<th>Intercept</th>
<th>Slope</th>
<th>Removed points</th>
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<tr>
<td>Cr.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>N/A</td>
<td>Cr, Rh</td>
<td></td>
</tr>
<tr>
<td>Mn.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Cr, Mn</td>
<td></td>
</tr>
<tr>
<td>Fe.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Fe</td>
<td>43X75</td>
</tr>
<tr>
<td>Co.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Fe, Rh</td>
<td>Co</td>
<td></td>
</tr>
<tr>
<td>Ni.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Ni</td>
<td></td>
</tr>
<tr>
<td>Cu.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Cu, Zn, Pb</td>
<td></td>
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<tr>
<td>Zn.K.Alpha</td>
<td>Non-Linear</td>
<td>Total Counts</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Ag.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Rh, Ag</td>
<td>43X75</td>
</tr>
<tr>
<td>Cd.K.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>N/A</td>
<td>Rh, Ag, Cd</td>
<td>43X75</td>
</tr>
<tr>
<td>Sn.K.Alpha</td>
<td>Non-Linear</td>
<td>Total Counts</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Sb.K.Alpha</td>
<td>Linear</td>
<td>Total Counts</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Pb.L.Beta</td>
<td>Non-Linear</td>
<td>Total Counts</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Bi.L.Alpha</td>
<td>Lucas-Tooth</td>
<td>Total Counts</td>
<td>Rh</td>
<td>Bi, Pb</td>
<td>36XCN10</td>
</tr>
</tbody>
</table>
variation due to differential sample attenuation. A regression curve was accepted when it maximized the R2 value of the actual and the modeled elemental quantities. Though there was no explicit cut off, if there were outlying samples in the data that substantially lowered the R2 value of the model, they were removed.

**Error Tests**

The strength of calibrations that use Lucas-Tooth regression adjusted to the Rh peak is their stability against variation in sample distance and orientation from the detector. Smith (2013) found that the greater the distance between the detector and the sample, and the greater the angle of the sample surface away from the detector, the more inaccurate the quantification. Since it was not always possible to place buttons in such a way that a flat surface was placed directly against the detection window, I decided to measure the amount of error introduced in the quantification by both distance and angle. The distance test involved taking five assays of the BS 937C standard using the 11.3 nA instrument settings at four separate distances from the detection window, 0 mm, 2 mm, 4 mm and 7 mm. The angle test involved taking five assays of the BS 937C standard using the 11.3 nA instrument settings at seven separate angles, 0°, 6°, 11°, 21°, 26°, 28° and 32°. Each assay was quantified using the custom calibration and the average estimated weight percent of each element from the same distance/angle were calculated. The relative deviation of Cu, Zn, Sn, and Pb from the known quantities of each element in the standard, normalized against the values at 0 mm or 0°, do not show the same increasing trends as Smith (2013) observed. Instead, they rarely deviate beyond 5%, within the acceptable error range.

Since the elemental composition data was only compared within localities, inter-instrument error did not have a significant effect on study results. However, a sample of buttons
from the Brunswick town button study collection were analyzed with both machines to estimate the error introduced by separate machines. Comparison of the quantified values of conserved, non-decorated button elements, normalized against unknown elements (table 12), found that both Cu and Sn values had less than 1% relative average error, less than the 5% acceptable error range. However, both Zn and Pb quantities had larger than 5% average relative error and therefore cannot be accurately compared between instruments.

Analyses

Two types of analysis were conducted using the pXRF spectra. The first was a qualitative analysis to determine if button faces had applied decorations made from silver, gold or tin. The second was a quantitative analysis to determine the most likely values and 90% probability range of each major elemental constituent’s weight percent.

Qualitative

The method used for this analysis depended upon the instrument used to analyze each button. For the buttons analyzed with the Niton instrument, each button face with a quantity of Au or Ag greater than 0 was marked as gilded or silver plated. Button faces with quantities of Sn that fell well outside the normal range for the button’s material type were marked as tin plated.

For buttons analyzed with the Tracer instrument, the area below the Bayesian-deconvoluted curve method built into the Artax software was used to identify the number of photons which were detected at each elemental peak. This method allows the user to choose a suite of elements which they believe to be present in a sample and then uses Bayesian deconvolution to estimate the area under each elemental peak. Processing was done in two
<table>
<thead>
<tr>
<th></th>
<th>Cu</th>
<th>Zn</th>
<th>Sn</th>
<th>Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Relative Error</td>
<td>-0.77%</td>
<td>8.41%</td>
<td>0.76%</td>
<td>-17.24%</td>
</tr>
</tbody>
</table>
separate batches based on the instrument settings used to record the spectrum (30 nA or 11.3 nA). All of the elements used in the custom calibration, with the addition of Au, were used in this analysis. Each button face with a quantity of Au or Ag well outside the normal range of background photon detection was marked as gilded or silver plated. Button faces with quantities of Sn well outside the normal range of background photon detection for the material type were marked as tin plated.

Quantitative

This analysis involved estimating both the most likely value and 90% likelihood range of the weight percent of Cu, Zn, Sn, Pb, and the summed weight percent of the remaining quantified trace elements (Cr, Mn, Fe, Co, Ni, Ag, Cd, Sb and Bi) in each button element. Previous studies have found that quantified XRF spectra taken from the outer surface of archaeologically-recovered artifacts that have had their corrosion products removed are within the standard relative error range (5%) of the actual values as determined by ICP-MS (Orfanou and Rehren 2015). Additionally, studies have determined that organic and polymer films do not have a significant effect on elements with the atomic weight of Fe and higher (Smith 2013), a source of error which is likely to be even less significant in this analysis due to the use of Lucas-Tooth regression with Rh standardizations in the calibration. Therefore, the elemental values of conserved buttons from these archaeological sites are taken to be an accurate representation of the actual weight percent. However, since most of the buttons were not conserved at the time of analysis, I created a methodology to estimate the likely elemental values of buttons based on the analysis of their corrosion products by comparing the quantified pXRF values of a sample of buttons both before and after conservation (See Appendix 2 for a description of the conservation process).
In order to increase the accuracy of the estimates I created three separate methods based on the three types of raw material used to make buttons: Brass Ingots, Bell-Metal, and Latten. Each button element was placed into one of these three groups based on the manufacturing method used to create it and was processed according to the flowcharts below (Figure 47-49).
Figure 47: Brass Ingot Transform
Figure 48: Latten Transform
Figure 49: Bell-Metal Transform
Appendix 2: Button Conservation Methodology

For my dissertation research, I used pXRF analysis to determine the Cu/Zn/Pb/Sn ratios of copper alloy buttons recovered from three localities in the Atlantic World during the third quarter of the 18th century. XRF analyses of archaeologically-recovered copper alloy artifacts are complicated by taphonomic processes such as the oxidation of copper and loss of zinc (dezincification) on the surface as a result of burial in soil (Mezzi et al. 2012). In order to account for this process, a set of calibrations were derived by comparing the XRF spectra of a representative sub-sample of the buttons from the McClung Museum collections before and after the removal of their surface corrosion. Pollard and Heron (2008) have shown that analyses of surface enriched copper-alloy artifacts calibrated using this method approximate the readings of artifacts with their surface enrichments removed. Furthermore, Orfanou and Rehren (2015) have demonstrated the XRF quantifications of copper-alloy ratios with surface enrichments removed are not significantly different from the actual element ratios of the artifacts determined through destructive EPMA analysis. In this appendix, I outline the method I used to remove the corrosion from the sub-sample of buttons and the steps I took to document my actions and counter the potential risks of this process.

Background

The surface of copper and copper-alloy objects are covered in thin oxidized films. When placed in an acidic environment (such as burial in soil) these films dissolve and the metal attempts to return to its native state (copper ore) by giving off electrons, thereby developing a positive charge. In the process, the outside layer of copper crystals pick up negatively charged oxygen molecules from the environment to balance out their positive charge and become
corrosion products known as Cuprite or Tenorite (Rodgers 2004). Unlike iron corrosion, copper corrosion is often reversible using galvanic coupling, wherein a metal with more corrosion potential (i.e., one that emits a greater amount of electrons) will donate electrons to the one with less corrosion potential, thereby preventing corrosion on the second metal and/or reversing the corrosion process by attracting the oxygen molecule.

**Process**

Bradley Rodgers (2004) describes the methodology of galvanic conservation of copper-alloy objects, which I followed (Figure 50). Because the first two methods described by Rodgers (2004), Recovery and Storage, and Concretion Removal, had already been performed on the buttons before my analysis began, I only performed the final five steps.

*Step 1: Sample Selection*

During pXRF analysis, I selected 30 buttons which represent the maximum variety of material makeup and depositional contexts available in the McClung collection. Each conserved button was photographed from multiple angles and its qualities were noted on a separate spreadsheet (Table 13). A log was kept, recording the date each artifact begins each step and any notes or observations. A plastic tag with each artifact’s unique button # was created.

*Step 2: Concretion Removal*

Each of the buttons were dipped in water and lightly brushed with a soft toothbrush to remove any remaining soil or dust. Any visible large concretions were removed by light scraping with a metal dental tool. Any lacquer applied to the object for labeling purposes was brushed with acetone to remove it prior to analysis.
Figure 50: Chart of the Process for the Conservation of Copper-alloy Objects
<table>
<thead>
<tr>
<th>Button #</th>
<th>Site</th>
<th>Context</th>
<th>Completeness</th>
<th>Button Type</th>
<th>Shank Style</th>
<th>Conservation Comments</th>
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<td>F490</td>
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<td>cast loop</td>
<td></td>
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<td>F415</td>
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<td>drilled</td>
<td>Complete encrustation removed from back/Partial encrustation removed from face</td>
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</table>
Step 3: Galvanic Wrap

Each artifact was wrapped in two sheets of aluminum foil and soaked in a 10% solution of acetic acid. The acetic acid solution was made from 10 mL of acetic acid added to every 90 mL of deionized water (Rodgers 2004). The acid works as an electrolyte, easing the transference between the aluminum and copper alloys. A small amount of solution was placed in a pouch made of two sheets of aluminum foil which was then carefully compacted around each button. The plastic tag was then attached to the object and its foil pouch with a cable tie. All of the packaged artifacts were placed in a basin filled with acetic acid solution and allowed to soak for two days. At this point each artifact was unwrapped and examined for corrosion product. If any corrosion product still existed on the artifact, it was re-wrapped and returned to the tank for an additional day. According to Rodgers (2004), objects can be left in solution indefinitely, as there have been no recorded incidents of this treatment harming copper-alloy artifacts. pXRF analysis took place directly after removal from the galvanic wrap to maximize exposure to the pure metal.

Step 4: Sodium Sesquicarbonate Wash

Once the corrosion materials were removed from each artifact, the aluminum foil pouch was discarded, the plastic tag was removed and re-attached to each object, and they were placed in a Sodium Sesquicarbonate Wash. This process will allow a protective thin-oxidized film to develop around each artifact. Karen Leyssens (2006) has demonstrated that copper-tin-lead alloys with copper oxidation are highly stable in a 1% Sodium Sesquicarbonate solution for 14 days. Therefore, I made a solution of 5 grams Sodium Carbonate, 5 grams Sodium Bicarbonate, and 990 mL of deionized water and placed the buttons in it for 14 days.
Step 5: Rinse

Once the samples went through the Sodium Sesquicarbonate wash they were submerged within deionized water for several hours to rinse any remaining sesquicarbonate from them. After the removal from the sesquicarbonate wash the objects were only handled with gloves or tools to avoid contact with salts.

Step 6: Dehydration

According to Rodgers (2004), oven dehydration can discolor copper-alloy artifacts, so objects were dehydrated in acetone. Objects were completely submerged in acetone, left for one minute, and then removed and allowed to air dry in the fume hood.

Step 7: Protection Application

After completely drying, a thin coat of 25% B72 paraloid in acetone was applied to each artifact using a paintbrush. Cotton swabs dipped in acetone were used to remove bubbles and ensure an even coat. The buttons were then be re-packaged in acid-free, plastic bags to ensure the protectiveness of the coat.
Appendix 3: Permission to Analyze Buttons from EBCI THPO

From: Miranda Panther <mirapant@nc-cherokee.com>
Sent: Wednesday, September 27, 2017 11:17:31 AM
To: Baumann, Tim; jsimek
Cc: Russell Townsend
Subject: Research requests

Hello,

The EBCI THPO approves both Mark Babin and Eric Schweickart’s research requests involving items from the Tellico Reservoir collection. We would like to request a copy of the papers when they are completed. If you have any questions, please let me know. Thank you.

Miranda Panther
NAGPRA Officer
Eastern Band of Cherokee Indians
Tribal Historic Preservation Office
828-359-6850
Appendix 4: Data Tables used in Consumer Constraint Analysis
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<th>Face Thickness</th>
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<th>Small Button Diameter</th>
<th>Large Button Diameter</th>
<th>Button Type</th>
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<th>Decoration</th>
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Table 15: Household Variables used in Consumer Constraint Analysis

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Vita

Eric Schweickart was born in Baltimore MD, to parents Susan VandeWoude and Russell Schweickart. He has two younger siblings, Eston and Sarah. He attended Cottonwood Plains Elementary School, Lucile Erwin Middle School, and Loveland High School in Loveland, Colorado. In 2009, he received his Bachelors of Arts degree in Anthropology from the University of Colorado Boulder. Following his graduation, was hired by the Colonial Williamsburg Foundation as an Archaeological Field Technician on the Anderson Armory project. In 2012 and 2013, Eric attended the University of Leicester in the UK, where he received a Masters of Arts with Distinction in Historical Archaeology. Returning to the United States, Eric worked at James Madison’s Montpelier in Orange, VA as a Field Archaeologist for two years. In 2014, Eric was accepted into the Anthropology graduate program at the University of Tennessee, Knoxville under the direction of Dr. Barbara Heath. He earned his Ph. D. in 2019 and was hired as a Staff Archaeologist at the Colonial Williamsburg Foundation where he continues his work utilizing archaeological methods and resources to educate the public about American history.