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Making Mission Communities: Population Aggregation, Social Networks, and Communities of
Practice at 17th Century Mission Santa Catalina de Guale

By

Elliot Hampton Blair

A dissertation submitted in partial satisfaction of the
requirements for the degree of

Doctor of Philosophy

in

Anthropology

in the

Graduate Division

of the

University of California, Berkeley

Committee in charge:

Professor Kent G. Lightfoot, Chair

Professor Rosemary Joyce

Professor Paul E. Groth

Summer 2015

Making Mission Communities: Population Aggregation,
Social Networks, and Communities of Practice at 17th
Century Mission Santa Catalina de Guale

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Abstract

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Doctor of Philosophy in Anthropology

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Professor Kent G. Lightfoot, Chair

This dissertation is an archaeological study of social relationships amongst the aggregated populations that formed the 17th century mission community at Santa Catalina de Guale—a Spanish mission located on St. Catherines Island, Georgia. I argue that despite the documentary history of factionalism and internecine warfare amongst the Guale people of the Georgia coast, the social consequences of intra-province relocation and aggregation within the Spanish missions of *La Florida* has been largely underexplored. I consider these issues by taking a microhistorical look at the community that formed at Mission Santa Catalina de Guale during this period, weaving together four independent lines of archaeological evidence to explore the dynamics of population aggregation and factional conflict in a colonial context. More broadly, this dissertation is a granular study of a pluralistic colonial community, grounded in a practice-based approach to the archaeology of colonialism and situated learning theory.

In chapter one of this work I argue that a close reading of the ethnohistorical sources suggests that “Guale” as a social identity is “overdetermined” and might not be a useful analytical category for examining the dynamics of colonial population aggregation. I suggest that this perspective, in combination with the documented history of population aggregation that occurred in *La Florida*, particularly during the latter portion of the 17th century, requires a fine-grained examination of social identity and intra-chiefdom diversity within the mission pueblos.

Following an overview of the history missionization in the region and a background of previous archaeological work, I elaborate in chapter three on a theoretical orientation framed around practice-based approaches to colonialism focused on exploring identities in pluralistic contexts. I suggest that an approach grounded in situated learning, that seeks to identify past communities of practice in the archaeological record, provides a methodology for using archaeological materials to explore social practice and identity without relying on, or ascribing, any particular predetermined category of identity to groups in the past.

After elaborating on this theoretical and methodological approach I present four sets of archaeological data that I use to explore social relationships and internal diversity at Mission Santa Catalina. In chapter four I discuss how various survey techniques (pedestrian, subsurface, topographic, and geophysical) provide a detailed picture of the spatial organization of the mission community. I use these surveys to define five distinct residential neighborhoods surrounding the central mission quadrangle that provide the spatial framework for the rest of the dissertation. In chapter five I review the history of archaeological excavations from each of these neighborhoods, focusing on the diversity of residential architectural practices.

In chapter six I present a detailed analysis of ceramics from the mission pueblo. Rather than identifying the ceramics primarily based on typology, however, I emphasize the spatial variation of small-scale design and technological attributes. Using this approach I identify ceramic micro-styles and potting communities of practice that vary across the mission neighborhoods. I suggest that the variability in ceramics evident between the different mission neighborhoods is a product of the aggregation of distinct potting communities at Mission Santa Catalina.

In chapter seven I shift scales and utilize the glass bead assemblage recovered from the mission cemetery in order to examine social relationships between individuals. I combine compositional and morphological analyses of the glass beads in order to trace the itineraries of these objects from European glass factories into the mission community. By following these objects from production to consumption I am able to create a formal social network model of the relationships and connections amongst individuals found within the mission cemetery and ultimately use these connections to define distinct bead-consumption communities of practice. I follow this by expanding the social network model to include assemblages recovered from the different residential neighborhoods—linking individuals buried in the cemetery and bead communities of consumption to specific residential neighborhoods in the mission pueblo.

In the final chapter I integrate these diverse data sets, considering how bead consumption networks, ceramic communities of practice, and residential architectural diversity intersect, presenting a complex picture of an aggregated population maintaining distinct social identities while also making a new colonial community.

Dedication

For my parents,
Linda and Tom Blair,
and for Rachel.

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Chapter 1. Introduction: Population Aggregation, Social Identities, and Factionalism at Mission Santa Catalina

On December 20, 1677 Captain Antonio de Argüelles, on the orders of the Governor of *La Florida* Pablo de Hita Salazar, arrived in “the place of Santa Catalina” on St. Catherines Island, Georgia in order to initiate an official visitation of the Spanish mission provinces of Guale and Mocama. The following day Argüelles organized a meeting of the Guale community leaders residing on St. Catherines Island—“the caciques, heirs, *mandadores*, and the rest of the leading men (*principales*)”—in order to discuss governmental issues and concerns of members of the mission community. During this meeting the leaders of “the place of Satuache” advised Argüelles (via his interpreter, Diego Camuñas) that the cacique of Faslica¹ had died and that a woman named Lucia was his rightful heir and should be appointed cacica. After discussion, however, Lucia declined the position and requested that her sister Elena—currently residing at San Phelipe de Atuluteca (located on the northern end of Cumberland Island, GA)—receive the office and title instead. Argüelles granted this request (Hann 1993:89). During this same visit the caciques also complained to Argüelles “that the Indians of this place were passing from one Council House (*Bujio*) to another with slight cause” (Hann 1993:89; Pearson 1975; Worth 1995:30). In response, Argüelles “ordered that they should remain in their own state (*estado*) and that this [rule] be observed” (Hann 1993:89).

While somewhat ambiguous and lacking in detail, the discussions that occurred during this visitation illustrate the two primary issues around which this dissertation is framed: population aggregation and the intersection of social identities and political factionalism in 17th century *La Florida*. Regarding the first, the “the place of Satuache” refers to San Diego de Satuache, a mission community that had relocated from the Georgia mainland to St. Catherines Island (ca. 1663-1666), and the installation of a new cacica is a clear example of what Worth (2002) has extensively described as the persistence of chiefly matrilineages and identities even within the context of aggregation and colonial entanglements. At the same time, the complaint that “Indians of this place were passing from one Council House (*Bujio*) to another with slight cause” reinforces this observation, and complicates it. Worth (1995:30) has suggested that this passage might be interpreted as indicating that the Santa Catalina and Satuache communities were reifying their distinctive identities architecturally through the construction of separate council houses within the same town, while simultaneously dealing with the conflict and social unrest precipitated by aggregation (cf. Moore and Jefferies 2014; Pearson 1975).

This dissertation is an examination of these issues, as I present an examination of the material traces of the diverse social networks that formed at Mission Santa Catalina during the

¹ Faslica was a community subordinate to Satuache that likely aggregated to Mission San Diego at some point prior to their combined retreat to Santa Catalina (Worth 1995:125, note 38; 2004a, table 1).

17th century. More broadly, this dissertation provides a granular case study of social relationships within a pluralistic indigenous community in a colonial context. As I elaborate in chapter three, recent approaches to the archaeology of colonialism (e.g., Lightfoot and Martinez 1995; Voss 2005) highlight the need to examine other axes of diversity, beyond the colonized/colonizer dichotomy. Such considerations are particularly important in mission situations, where in many cases, with the exception of a few friars and perhaps a few soldiers, the entire population of a mission community is Indigenous. In these situations—and particularly in contexts of population relocation—interactions between diverse native actors thrust into new communities created difficult, and often traumatic, social interactions. Such a perspective also resonates with recent perspectives on Mississippian social structures, in which rather than considering Mississippian chiefdoms—such as the Guale—as highly centralized political entities, they are increasingly viewed as more decentralized and cross cut by factional groups and competing interests (Blitz 2010; Lorenz 1997). Indeed, as Wilson (2008:11-13) has argued, “a better understanding of Mississippian community organization requires an examination of the network of interactions among households.” In this dissertation I take both perspectives—on colonial and Mississippian societies—seriously and examine how diverse native peoples made a new colonial community in turbulent times.

POPULATION AGGREGATION IN LA FLORIDA

One of the fundamental assertions that has often been made to differentiate the mission enterprises of Florida from those elsewhere in the Spanish borderlands, was that the native peoples of the region—as members of sedentary agricultural chiefdoms—did not undergo the difficult, traumatic, and disruptive processes of *reducción* and *congregación* that occurred elsewhere, such as in Texas, Alta California, and South America.

The spiritual success of missions required that Indians live in towns, within the sound of the mission bell and the reach of the sacraments, and the “civilization” of Indians required that they follow the Spanish ideal of urban life. In Florida and New Mexico, missionaries found ample Indians already living in towns. On occasion, the friars tried to relocate sedentary natives in order to increase the size of towns, make them more defensible, and minimize travel to distant visitas. In general, however, the Franciscans in Florida and New Mexico did not need to devote energy and resources to congregating or “reducing” dispersed natives into towns, or *reducciones*, as they had done earlier in the Caribbean and in central New Spain, and as they would do again in eighteenth-century Texas or California. (Weber 1992:107-108)

This passage, written by David Weber, reflects a common opinion regarding missionization in *La Florida*: *reducción* did not occur in the region. Other scholars have expressed similar sentiments, though often with subtle caveats. For instance, Hann (1986:371-372) has argued that formal

policies of *reducción* did not occur in *La Florida*, with the sedentary agricultural communities of the region not requiring population relocation in order to facilitate conversion. He suggested that when relocation was required, later in the mission-era, it was at the instigation of secular rather than religious authorities. He wrote: “As far as is known, Florida's friars did not follow a policy of forceful reduction or *congregación* in establishing their first missions among Timucua-speakers.... The only phenomenon resembling *congregación* involved migrants from the hinterland who came to coastal villages so that they might become Christians. But this was a spontaneous voluntary phenomenon, distinct from the more or less coerced migrations that constituted *congregación* in places such as California” (Hann 1996:168).

This position, while reflecting the realities of initial strategies of missionization that were largely structured by indigenous political economies, does not acknowledge the largely traumatic and disruptive processes that emerged out of long term colonial engagements (Lightfoot, et al. 2013; Worth 2002:50-53). More recently scholars have acknowledged the existence *reducción* in *La Florida*, though often with caveats. For example, Saunders (1998:405) has noted that *reducción* was “not systematically implemented,” and Milanich (2006:111) considered reduction to have only occurred as an outcome of population loss, with consolidation occurring as communities succumbed to disease. Deagan (1993:89) observed that *reducción* policies were only employed “under circumstances of population decline and social upheaval, such as that seen in seventeenth- and eighteenth-century Florida.” But, regardless of these caveats about motives, timing, and the responsibility for instigating reductions, there is ample documentary evidence that relocation and aggregation were extensive and continual processes in Spanish Florida (1995, 1998b, 2004a, 2007, 2009a, 2009b).

POPULATION RELOCATION AND MISSION SANTA CATALINA

In 1659 a group of exiled Erie Indians (also referred to as Richehecrians, Chichemecos, and ultimately the Westo) emigrated to Georgia (from the Lake Erie region by way of Virginia)—first to the piedmont and the province of La Tama, and later to the falls region of the Savannah River (Bowne 2000, 2005; Gallay 2003; Oatis 2004; Smith 1987:132-134; 2002). The group, in conjunction with British slave traders, carried out a series of destructive raids against the coastal Spanish missions. This included a 1662 attack on the town of Huyache on the northern frontier of the Spanish Mission province of Guale (Bowne 2005:78; Worth 2007:19). This attack, though only briefly mentioned in the documentary record, was a transformative event in the province of Guale and precipitated the relocation of the northernmost Spanish mission—San Diego de Satuache—from the vicinity of the mouth of the Ogeechee River to St. Catherines Island, where it aggregated with Mission Santa Catalina de Guale sometime between 1663 and 1666 (Worth 1995:190-191) (see figure 1.1).

After fourteen years of co-residence on St. Catherines Island, in 1680 the two communities, following another Westo attack, relocated southward to Sapelo Island, aggregating with the previously combined missions of San Joseph de Sapala and Santa Clara de Tupiqui. Three years later, following an attack by the French pirate Grammont (Agramon), Lieutenant Captain Francisco de Barbosa proposed further southward retreat, suggesting that the four mission communities aggregated on Sapelo Island resettle at the former location of Santa María de la Sena on Amelia Island, FL.²

Despite Barbosa's observation on both the desirability and feasibility for all four communities to relocate together to Santa María, the move did not occur *en masse*, nor did all four communities ultimately move to the same town. Santa Catalina and San Diego did relocate together in 1683, while San Joseph and Santa Clara delayed until the following year after yet another pirate raid. Following this raid some members of the Sapala and Tupiqui communities fled northward and joined the emerging Yamasee confederacy in South Carolina (Worth 2004b). The remaining members of the San Joseph community joined Santa Catalina and San Diego at the former location of Santa María, while the remaining members of Santa Clara moved to the northern tip of Amelia Island, occupying another abandoned Yamasee town (Worth 1995:38-45; 2009a).

This configuration of Guale communities located on Amelia Island—with Santa Clara y San Joseph located on the northern end, Santa Catalina y San Diego and San Joseph located at Santa María, and San Phelipe located between the two—persisted until 1702 when a combined British and Indian force led by Colonel James Moore marched down the coast, destroying all of the mission towns on Amelia Island and ultimately laying siege to St. Augustine (Bushnell 1994:190-192; Hann 1989). Following this attack most of the Guale communities from Amelia Island relocated to the vicinity of St. Augustine, aggregating into continually fewer *doctrinas* during the first half of the 18th century before the final retreat from Florida to Cuba in 1763 (Worth 1998b:147-158).

² The “place of Santa María” had been home to a Mocama mission community until it was abandoned 1665. Between 1673 and 1683 a Yamasee community occupied the site. Following the 1683 Grammont raid the Yamasee community relocated to Carolina, and members of the Santa Catalina, San Diego, and San Joseph communities occupied the site (Worth 1995:197-198).

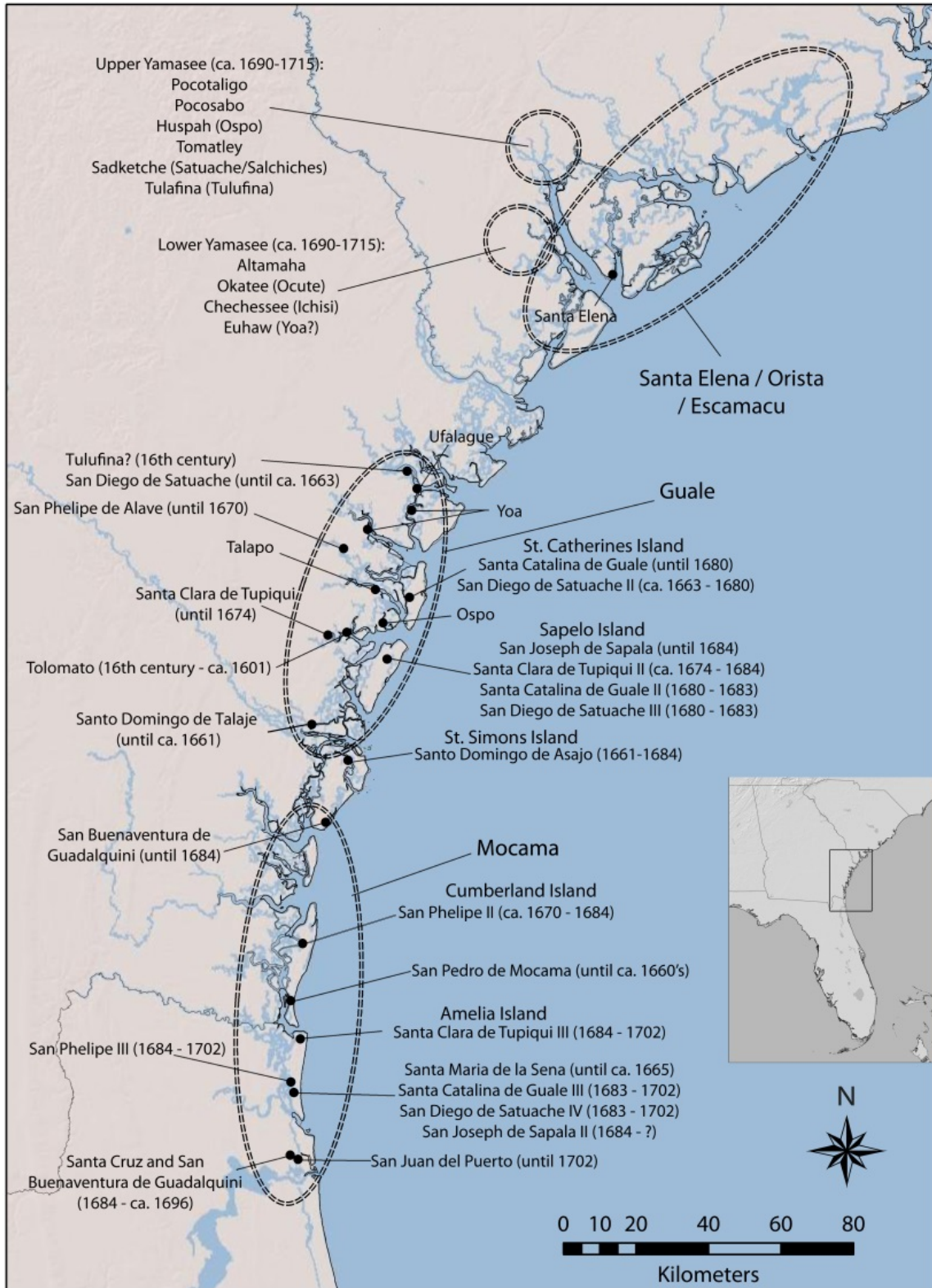


Figure 1.1. Locations of selected mission provinces and native towns. Locational information and dates of occupation are synthesized from Francis and Kole (2011), Green, DePratter, and Southerlin (2002), Jones (1978) and Worth (1995, 2004a, 2004b, 2007, 2009a).

SOCIAL IDENTITIES ON THE GEORGIA COAST

The Guale people encountered by the Spanish have generally been considered to have comprised a complex chiefdom, consisting of roughly 50 communities organized with two tiers of political organization above the community level. While there has been debate over the boundaries, membership, and organization of the Guale chiefdom, most researchers agree that it can be subdivided into between three and six constituent local chiefdoms and most likely included the barrier islands and adjacent mainland from the Altamaha to the Ogeechee rivers (Jones 1978; Saunders 2000a; Worth 2003, 2004a). The Guale were most likely a Muskogean speaking group (Broadwell 1991; Sturtevant 1994) and manufactured the Irene and Altamaha variants of the grit tempered, stamped and incised, Lamar pottery tradition (Braley 1990; Deagan and Thomas 2009; Hally 1994; Williams and Shapiro 1990). To the north of Guale, in the vicinity of Port Royal and Santa Elena was the province of Orista/Escamacu (Santa Elena), another Muskogean speaking chiefdom (also manufacturing Irene ceramics) (Worth 2009a). While Jones (1978) grouped Guale and Orista/Escamacu together into a unified socio-political unit, archaeological and documentary evidence suggest that the two provinces were actually separated by an uninhabited region around the Savannah River (Anderson 1994b; see figure 1.1).

To the south, the province of Mocama has generally been understood to be a simple chiefdom, speaking a Timucuan dialect (Granberry 1990, 1993; Milanich 2004) and manufacturing clay tempered San Pedro wares (Ashley 2008, 2009; Ashley and Rolland 1997), while the people living in the vicinity of St. Augustine spoke a different Timucuan dialect (Agua Salada) and manufactured sponge spiculate tempered St. Johns ware (Deagan 2009b).³

This brief, and highly normative, gloss of the social geography of the Southeastern Atlantic coast, presents a picture where, at contact, language, chiefdom, province, and ceramic tradition largely co-vary. This picture is certainly too simple and corresponds to what Worth (2012) has described and criticized as “an enhanced culture-historical framework” that has dominated Southeastern archaeology. But, because of the dominance of this framework, archaeological examinations of the complex sequence of population relocations described above, have tended to focus only on interactions and disruptions that crossed provincial, linguistic, and ceramic type boundaries.

For example, one of the major material disruptions that accompanied aggregation and shifting mission locations in Spanish Florida was a distinct change in ceramic production within the Mocama province and in the vicinity of St. Augustine, with locally produced San Pedro and

³ While some secondary literature has tended to lump “the Timucua” into a seemingly unified people, archaeological and documentary evidence strongly indicate that the Timucua actually comprised approximately ten independent chiefdoms and dialects (Deagan 1978a; Milanich 1978, 1996, 2000, 2004; Worth 1998a)

St. Johns wares being replaced with the Altamaha pottery local to the province of Guale (Ashley 2008, 2009, 2013; Ashley and Rolland 1997; Deagan 2009b; Gorman 2013; Saunders 2012; Waters 2005, 2009; Worth 2009a). Less considered, however, have been the implications of population aggregation *within* Spanish mission provinces. For example, with the enhanced culture-historical framework Worth(2012) describes, the aggregation of Satuache and Santa Catalina would be considered a “non-event” due to the shared language, political affiliation, and ceramic traditions of the two communities.

Though it seems intuitive that this complex sequence of population movements, relocations, and aggregations should have significant implications for internal community solidarity and integration, during the 17th century the Spanish argued that the social effects of such population aggregation were negligible. Indeed, in 1617, in response to significant population loss in the Timucuan administrative province, several Franciscan friars petitioned the king, writing:

We request that Your Majesty would be served to command that, whenever these necessities occur, as long as the governors are advised by the [Franciscan] prelate, these disordered [settlements] should be drawn together since there is not one inconvenience, *through those that have to join together not being from different families or languages, but rather friends of friends, brothers of brothers, and relatives of relatives beforehand*” (Stojanowski 2005b:40, citing Pareja et al. 1617; Worth 1998b:28, emphasis added).

Indeed, such arguments, combined with the seeming linguistic and ceramic homogeneity found within the province of Guale, has generally lead scholars to presuppose a more-or-less cohesive “Guale” identity or ethnicity, and thus largely ignore the social effects of intra-province aggregation.

For example, the most detailed, specifically archaeological , examination of the implications of population movements in *La Florida* is the bioarchaeological investigations of Christopher Stojanowski (2001, 2005a, 2005b, 2010, 2011, 2013; Stojanowski and Schillaci 2006). In this work Stojanowski (2005b:29) defines four different varieties of population aggregation in Spanish Florida, Stage 1 and 2 congregación and Types 1 and 2 reducción, and evaluates the biological outcomes of each. Stage 1 congregación refers to the aggregation of local villages into a single doctrina while Stage 2 is the aggregation of different doctrinas of the same province to a single location. Type 1 reducción is the complete replacement and relocation of populations across provincial boundaries and type 2 reducción refers to the in-migration of non-missionized native groups from outside Spanish Florida.

Beginning in 1605, with the redistribution of Franciscan friars after the resolution of the 1597 Guale rebellion, it is certain that Stage 1 congregación began in earnest (Stojanowski 2005b:38). While the specifics of such community level aggregation are little documented and are

rarely mentioned by the Spanish, the names, lineages, and identities of the relocated subordinate communities persist in the documentary record throughout the 17th century—that is, spatially distinct satellite and subordinate communities continue to be documented as distinct lineages and entities even after being physically relocated and aggregated within central towns (Worth 2002). Episodes of Stage 2 congregación—in which principal doctrinas are aggregated—are much better documented than Stage 1. The aggregation of Santa Catalina and Satuache—discussed above—is one example.

But, did the well documented examples of Stage 1 and Stage 2 congregación at Mission Santa Catalina have any substantial effect on either the social or biological structure of the Mission community? The previously discussed letter from Father Pareja et al. (1617) suggests that such episodes of congregación should have been a virtual non-event in terms of social effects. Similarly, Stojanowski (2001, 2005a, 2005b) has argued that because both Stage 1 and Stage 2 congregación operated entirely within Spanish defined provinces and within indigenous chiefdoms there should be no biological significance to such aggregation. In contrast to this, discussing both the Guale and their pre-contact ancestors, Rebecca Saunders (2001:82-83) has noted that “the primary allegiance and identity of the Guale... was with the village that served as the chief’s residence and area ceremonial center... [and] it is still unclear from the documents the extent to which the historic Guale considered themselves a coherent group. [The Guale]... seemed to have maintained more allegiance to a town...than to any larger group.”

Indeed, Stojanowski’s own evidence from Santa Catalina shows a level of biological heterogeneity, post-aggregation, that is unexpected if “Guale” is understood to be a biologically integrated group. Using dental measurements from the Mission Santa Catalina cemetery, Stojanowski evaluated the phenotypic variability of the population—comparing the assemblage with precontact communities and with other mission populations, both from Guale and from elsewhere in Spanish Florida. Importantly he found significantly increased phenotypic variability at Mission Santa Catalina (GA) compared with precontact Irene communities on the Georgia coast (Stojanowski 2001, 2004, 2005a, 2005b). While the details of his study are complex, the important point is that the phenotypic variability of the temporally and geographically aggregated precontact population is significantly *less* than that of the Mission Santa Catalina burial population—emphasizing increased biological diversity of the mission community.

Several conclusions—none mutually exclusive—can be drawn from his observations: 1) there were significant, and undocumented, incidents of Type 1 and Type 2 reducción occurring and restructuring the biological population at Mission Santa Catalina; 2) individuals of Spanish, African, etc. descent may have contributed more to the biological population at Mission Santa Catalina than has previously been considered; 3) the phenotypic variability documented by Stojanowski is more directly related to factors other than population aggregation (e.g., epidemics, changes in diet) and/or 4) the biological impact of Stage 1 and 2 congregación has been significantly under-estimated.

What seems clear—especially if this final possibility is entertained—is that the enhanced diversity documented by Stojanowski, the persistence of distinct chiefly lineages, and perhaps little loss of town-level social identities during aggregation would indicate that reduced mission settlements—including “single-ethnicity” ones (Worth 2009a) like Mission Santa Catalina—were diverse and pluralistic communities.

FACTIONALISM

Recent ethnohistorical research, considering factionalism and intra-chiefdom conflict, has also explored this same issue, asking similar questions about the degree of political and social solidarity of the Guale (Blair and Thomas 2014; Francis and Kole 2011; Kole 2009; Thomas 2010b) and other Mississippian chiefdoms. Mississippian chiefdoms have long been recognized as relatively unstable political entities characterized by warfare, competition, and internal strife (e.g., Beck 2003; Blitz 1999, 2010; Ethridge 2010). Using the term “cycling” to characterize the socio-political change accompanying such inter and intra-chiefdom conflict, Anderson (1994a, 1994b, 1996; Gavrilets, Anderson, and Turchin 2010) has identified a number of factors underlying such political instability and change—importantly including factional competition (see also Brumfiel 1995; Brumfiel and Fox 2003; Helms 1994). Here I review some of the evidence for factional conflict within the Guale chiefdom, focusing particularly on the 1597 Guale revolt, but consider the implications from an historical, rather than evolutionary perspective.

THE 1597 GUALE REVOLT

In 1597 the Spanish province of Guale (situated between the Ogeechee and Altamaha Rivers), as well as the more northern province of Santa Elena (Orista/Escamacu, centered around Parris Island, SC) erupted in armed insurrection, killing five of the six friars stationed in the province and razing most of the mission *doctrinas* that had been established along the coast. Most accounts of the rebellion (e.g., Gannon 1965; Geiger 1937; Hoffman 2002; Johnson 1923; Lanning 1935), based almost entirely upon the ca. 1619 non-eyewitness account of the Franciscan friar Luis Geronimo Oré (1936),⁴ argue that the rebellion was instigated by the heir to the title of mico mayor (paramount chief) of Tolomato (the principal town within the chiefdom of Guale) named don Juanillo. The commonly accepted explanation for the revolt was that the Franciscan friars provoked the attack by attempting to end polygamous practices and by trying to subvert don Juanillo’s right to inherit the title of mico mayor from his uncle don Francisco, the current mico mayor of Tolomato (Jones 1978; Pearsall 2013; Stojanowski and Duncan 2008). Even revisionist and postcolonial approaches to Native American colonial histories emphasize rebellion and resistance to Spanish brutality and oppression as the primary motive for the rebellion (e.g., Mann and Grinde 2001).

⁴ For a contemporary and independent account—though likely unreliable—see Fray Alonso Gregorio de Escobedo’s poem *La Florida* (Covington 1963; Geiger 1934; Harkins 1990; Owre 1964; Stojanowski and Duncan 2008; Sununu 1993).

Recently Francis and Kole (2011; see also Kole 2009) revisited the primary documentary record of this event and reinterpreted the revolt, arguing that it was more about factional competition amongst Guale elites than active resistance against Spanish colonial powers; in their words it was a “a story of intense competition, fierce rivalries, and power struggles between various southeastern chiefdoms. What unfolds is a complex web of shifting alliances, political competition and intrigue, as well as violence....” (Francis and Kole 2011:48).

To make this interpretation they identify a number of ambiguities and paradoxes in the historical record. First, they point out that in addition to the killing of five of the friars in the province of Guale, the revolt also included an attack by a force of Guale Indians (led by don Domingo of Asao) on Mission San Pedro (Cumberland Island), located to the south of Guale in the province of Mocama. But, they note that this attack was directed entirely against the local native inhabitants and notably was not directed towards the resident Franciscans.

Secondly, they note that during the Spanish investigation of the attacks, differential destruction of the Guale towns involved in the rebellion was observed. That is, in some Guale settlements not only were the Spanish church and friary burned, but the town council house, chief’s residence, and rest of the village were also burned (e.g., Guale, Tolomato, Tupiqui). In other Guale towns neither Spanish nor indigenous buildings had been destroyed (e.g., Asao and Talaje) (Francis and Kole 2011:68, table 5). As they astutely ask, why would a community rebelling against the Spanish destroy their own council house and burn their entire village including food stores?

Finally, they observe that while early (circa 1597-1598) accounts of the revolt implicate don Domingo of Asao (intact village) as one of the primary instigators, later documentation (circa 1601) assigns the blame entirely to don Francisco and don Juanillo—the mico mayor and his heir—from Tolomato (destroyed village). Don Domingo subsequently becomes the one responsible for organizing the war party charged with tracking down and killing Don Francisco and Don Juanillo, and afterwards he emerges as the new mico mayor of Guale territory (with Santo Domingo de Asao becoming the new principal town).

Francis and Kole (2011) argue that these complications to the traditional narrative of the 1597 Juanillo Rebellion clearly indicate that an anti-Franciscan or anti-Spanish explanation for the rebellion is unwarranted, or at least only a minor motive amongst others. Additionally, they suggest that don Domingo from Asao is the most important protagonist of the revolt and a combination of his personal goals and ambitions along with factional strife and competition amongst and between the Guale and neighboring chiefdoms (e.g., Orista/Escamacu, Mocama, Salchiches) is one of the most plausible primary explanations for the rebellion.

While the specifics of exactly who was responsible for the killing of the five Franciscan friars is unclear from the documents, and the testimony is often contradictory, several common

themes emerge. For my purposes, the two most important are:

- 1) None of the Indians interrogated by the Spanish during their investigation implicate the village of Guale and its leadership in the rebellion, though the village and cacique of Tolomato are later singled out for blame by Don Domingo from Asao. Indeed, some accounts suggest that the cacique of Guale attempted to warn and protect the two friars (Fray Miguel de Auñon and lay brother Antonio de Badajoz) prior to their deaths (Francis and Kole 2011:50; Oré 1936).
- 2) The most commonly and consistently identified instigators and participants in the rebellion that appear in the primary documentary record are Tulafina and the Salchiches (Francis and Kole 2011:103, table 7; Jones 1978:184; Worth 2004b:248). As I discuss below, there is considerable evidence that both the Salchiches and Tulafina are either the same as, or closely associated with, Mission San Diego de Satuache (Blair and Thomas 2014; Green, DePratter, and Southerlin 2002).

FACTIONALISM, COLONIAL ENCOUNTERS, AND TRADE

While factional conflict has been identified as an important factor for socio-political change and chiefdom stability (Anderson 1994a, 1994b; Brumfiel 1995; Brumfiel and Fox 2003; Gavrillets, Anderson, and Turchin 2010; Helms 1992, 1994), it is also critically important for understanding how people negotiate colonial encounters, particularly as they seek to maintain or gain power within shifting political landscapes and material worlds (Harrell 2015; Lightfoot and Martinez 1995; Lorenz 1997; McCafferty 2000; Richter 1985; Waselkov 1993; Wesson 2010; Wiegand 2013). Indeed, access to trade goods—as both material symbols of external connections and power and for redistributive purposes—continually appear as significant causes of factional conflict in colonial contexts (Hall 2007, 2009). For the 1597 Guale rebellion Francis and Kole (2011:100) note that one of the items demanded in ransom for a captive friar was a single white blanket, six knives, and 12 axes—clearly items of power, prestige, and status for whomever possessed them, not widely shared utilitarian items.

Like the 1597 rebellion, the revolt of 1576 in the provinces of Guale and Santa Elena (Orista/Escamacu) seems to have been due to many of the same underlying causes. Though this revolt has not received a complete documentary examination (Francis and Kole 2011:25), based on the extant secondary historiography, several factors emerge as catalysts and causes. These include Governor Hernando de Miranda's cessation of gift giving to, and his approval of abusive treatment of, the Guale and Escamacu caciques (Held 1949; Lyon 1984, 1987, 1992), Spanish interference into internal indigenous conflicts over chiefly succession (Francis and Kole 2011), and Spanish demands for excessive maize tribute (Jones 1978:182).

Both during and following the rebellion, French corsairs appeared on the Georgia coast seeking both to form anti-Spanish alliances with the native peoples and to trade for sassafras

(Bushnell 1994:63, 65-66; Magnaghi 1997; Paar 1999; Ross 1923:275, 280; 1924; Worth 2009a:183). The French presence seems to have exacerbated pre-existing factional conflict amongst native communities, with some towns (e.g., Tolomato in Guale and Guadalquini in Mocama⁵) welcoming the French (and their trade goods) and rebuffing the Spanish and others refusing to engage with them.

While conflict between pro- and anti-French factions does not appear to have been a major factor in the later 1597 rebellion (Francis and Kole 2011; Hoffman 2002:347, note 28; Kole 2009), Bushnell (1994) argues that it continued to be a source of conflict. Following the resolution of the 1597 revolt, Bushnell (1994:68, citing Ybarra 1605; see also Ross 1924:185) argues that the “people of Satuache took up arms against the cacique of Guale over the issue of trade with the French, who continued to visit their harbors long after the ill-fated Ais and Guale rebellions. Without this trade, they claimed, they could not survive.” Continuing, she argues that “the factions of Guale’s civil war were still alive and would remain troublesome until the French ceased to visit the province for sassafras around 1610” (Bushnell 1994:69). It is likely that this explains the poorly documented 1608 Guale conflict (Hoffman 2002:98; Jones 1978:185-186, note 34; Lanning 1935:160-161; Swanton 1922:89), in which only five of the Guale caciques are implicated in internal strife, refusing to obey the mico mayor. Yet another rebellion is documented in Guale in 1645, and though few details are available regarding its causes it too seems to be related to internal socio-political conflicts, rather than being an anti-Spanish action (Swanton 1922:89; 1946:135).

FACTIONALISM IN THE CONTEXT OF AGGREGATION

This documented history of 16th and early 17th century factional conflict within the province of Guale provides a new perspective from which to evaluate the social implications of population aggregation during the mid-17th century. Indeed, the numerous social factors—including tension, turbulence, and turmoil—that would certainly have accompanied such population aggregation and created uneasy communities and exacerbated factional conflict deserve serious consideration, particularly when considered in terms of the long-term histories of social strife (Blair 2013:385-388; Blair and Thomas 2014:35-37; Worth 1995:30, 39).

As Worth (2002, 2006) has also noted, population aggregation did *not* result in the erasure of previous social identities oriented along the lines of town affiliation or lineage, rather, aggregated settlements continued to be identified by the names of all the constituent communities, and the associated chiefly lineages persisted even once aggregated. That is, social identities seem to be primarily linked to what Blitz (1999:583) calls the *okla-talwa*—the community-level socio-political building block of most Southeastern chiefdoms. And, in addition to aggregating, communities also split, or fissioned, along these same lines.

⁵ See Ashley et al. (2013) for a thorough discussion of the socio-political and ethnic affiliation of Guadalquini.

For instance, not all of the Guale residing on Amelia Island in 1702 retreated towards St. Augustine following Colonel Moore's attack. Some instead fled northward, joining the Yamasee confederacy in South Carolina. Many of the constituent towns of the Upper Yamasee first appeared in the documentary record in the early 18th century, almost simultaneously with the Moore's attack on *La Florida* (2004b:248). These towns were almost all of Guale origin, and almost certainly appear to be refugees from the attacks on the coastal mission communities. Indeed, Kelton specifically notes that during the 1702 raid two Christian Guale communities were persuaded to "flee Florida and to incorporate" with the Yamasee (Kelton 2009:324). Particularly important here is the appearance of the Upper Yamasee town of Sadkeche, and possibly the town of Tulafina in South Carolina in the early 18th century. Most scholars of the Yamasee identify Sadkeche with the Salchiches/Satuache (Blair and Thomas 2014; Bossy 2014; Crane 2004 [1929]; Green, DePratter, and Southerlin 2002; Green 1991; McKivergan 1991; Sweeney 2003; Worth 2004b). While it is uncertain if Tulufina was a separate Yamasee town or simply associated with Sadkeche, in either case both names were linked with Santa Catalina from 1666 through 1702 through a series of three distinct relocations, before disappearing from the mission censuses in Spanish Florida after Moore's raid and appearing amongst the Yamasee in South Carolina at roughly the same time (Blair and Thomas 2014:39). The historical evidence clearly suggests that after being in violent conflict during the 16th century and aggregating in the 1660's, almost 40 years later Satuache/Tulafina split with the Santa Catalina community. Again, like much of the evidence already presented, this highlights the difficulties, and ultimately impermanence of the aggregation process in *La Florida*. One final intriguing possibility pertains to the documentation of a San Diego mission, populated by Yamasee, identified in the vicinity of St. Augustine in 1726 (Hann 1989:193; Worth 1998b:151, table 9-3). Could this San Diego represent the return of the Satuache/Sadkeche/Tulufina community in the aftermath of the 1715 Yamasee war? While probably a remote possibility, this would again highlight the tensions and difficulties of aggregation. If this does represent the same community, it is highly significant that rather than re-aggregating with Santa Catalina this community settled separately and identified itself as Yamasee, rather than Guale.

OUTLINE OF THE DISSERTATION

In the preceding discussion I outlined a complex history of social relationships within the province of Guale, documenting a history of factional strife between the pre-aggregation Santa Catalina and Satuache communities. I also discussed the context of aggregation, the persistence of social identities, and a later episode of community fissioning along the same factional lines. I also noted that despite the documentary history of factionalism and internecine warfare, the consequences of intra-province relocation and aggregation has been largely underexplored. This is due to both the culture-historical framework that has dominated much research in the region, as well as the methodological difficulties of exploring a social dynamic that is difficult to observe in the archaeological record. In this dissertation I consider these issues by taking a

microhistorical look at the community that formed at Mission Santa Catalina de Guale during this period, weaving together four independent lines of archaeological evidence to explore the dynamics of population aggregation and factional conflict in a colonial context.

In the following chapter I situate this work in historical context, briefly reviewing the history of 16th century colonial encounters and 17th century missionization in *La Florida*. I also review the history of archaeological work in the research in the region, particularly focusing on the archaeology of Spanish colonialism along the Georgia Bight.

In chapter three I present the theoretical orientation to this dissertation, discussing the history of archaeologies of colonialism and reviewing the practice-based archaeology of colonialism I embrace in order to examine pluralistic identities within aggregated populations. More specifically, I discuss how an approach grounded in situated learning theory, in which archaeological remains are used to identify past communities of practice, provides a formal methodology that can be used to trace past social networks.

The next four chapters present the substantive analyses that I use to reconstruct social relationships in the Mission Santa Catalina community. In chapter four I discuss how various survey techniques (pedestrian, subsurface, topographic, and geophysical) provide a detailed picture of the spatial organization of the mission community. I use these surveys to define five distinct residential neighborhoods surrounding the central mission quadrangle that provide the spatial framework for the rest of the dissertation. In chapter five I review the history of excavations from each of these neighborhoods, focusing on the diversity of residential architecture. In chapter six I present a detailed analysis of ceramics from the mission pueblo. Rather than identifying the ceramics primarily based on typology, however, I emphasize the spatial variation of small-scale design and technological attributes. Using this approach I identify ceramic micro-styles and potting communities of practice that vary across mission neighborhoods. I suggest that the variability in ceramics evident between the different mission neighborhoods is a product of the aggregation of distinct potting communities at Mission Santa Catalina.

In chapter seven I shift scales and utilize the glass bead assemblage recovered from the mission cemetery in order to examine social relationships between individuals. I combine compositional and morphological analyses of the glass beads in order to trace the itineraries of these objects from European glass factories into the mission community. By following these objects from production to consumption I am able to create a formal social network model of the relationships and connections amongst individuals within the mission cemetery and ultimately use these connections to define distinct bead-consumption communities of practice. I follow this by expanding the social network model to include assemblages recovered from the different

residential neighborhoods—linking individuals buried in the cemetery and bead communities of consumption to specific residential neighborhoods in the mission pueblo.

In the final chapter I integrate these diverse data sets, considering how bead consumption networks, ceramic communities of practice, and residential architectural diversity intersect, presenting a complex picture of an aggregated population maintaining distinct social identities while also making a new colonial community.

Chapter 2. The Guale and Spanish Colonial Archaeology in La Florida

The Guale people of the northern Georgia coast had one of the earliest and longest histories of sustained European contact of any native group in North America. In the previous chapter I discussed specific examples from this history of contact that highlighted factionalism within the Guale chiefdom, as well as specific details of 17th century population aggregation. In this chapter I provide a more chronological overview of the history of the early 16th century colonial encounters and 17th century missionization in the region. I also summarize the relevant history of archaeological work in *La Florida*, focusing particularly on Mission Santa Catalina de Guale, St. Catherines Island. Figure 2.1 shows missions, provinces, and settlements mentioned in the text.

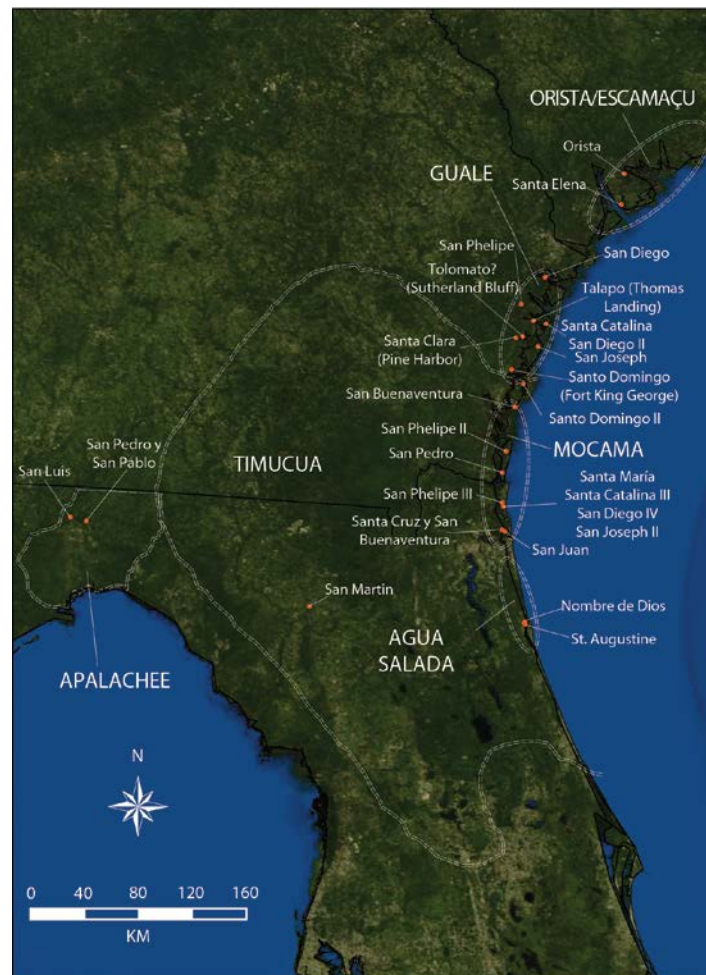


Figure 2.1. Missions and provinces mentioned in the text (Blair 2013:377, figure 14.1), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

THE SIXTEENTH CENTURY

EARLY CONTACT

The history of early contact amongst the Guale has been covered in considerable detail by a number of researchers (Bushnell 1994; Hoffman 1990; Paar 1999; Sturtevant 1962; Swanton 1922; Worth 2004a, 2009a, 2015). Here I merely summarize this history. In the initial years following Columbus's arrival in the Americas, there is little direct evidence for European-Guale contact, though the moment of first contact can likely be traced to Pedro de Salazar's slave raid along the lower Atlantic coast, sometime between mid-August of 1514 and December, 1516. During this encounter, Salazar visited a location known only as "the Island of Giants" and enslaved 500 native people who he subsequently transported to Hispaniola. While the precise location of this island is not known for sure, Hoffman (1980) suggests that it almost certainly occurred on a barrier island somewhere between the North Georgia coast and Cape Fear, North Carolina, possibly within the Guale region.

Following this brief and poorly documented encounter, another slave raid, by Pedro de Quejo and Francisco Gordillo in 1521, resulted in the seizure of another 60 slaves from the vicinity of the South Santee River in South Carolina (Hoffman 1990, 1994). This raid included the capture of Francisco de Chicora, who later traveled to Spain (Guitar 1997).⁶ While this occurred to the north of Guale, this voyage, and a subsequent 1525 reconnaissance by Quejo,⁷ were the immediate precursors to the failed 1526 colonization attempt of San Miguel de Gualdape by Lucas Vazquez de Ayllón (Hoffman 1990, 1994; Peck 2001). While the site of the failed colony has never been located, Hoffman's (1990) analysis strongly suggests that the colony was located in Guale territory, probably in the vicinity of Sapelo Sound. What is particularly noteworthy about this attempted colony, is that it represents the first sustained contact between Europeans, Africans, and Native Americans within Guale territory that would have definite material and social implications (Smith 1992). Indeed, beads from this failed colony were observed by Hernando de Soto when he visited Cofitachequi in 1540 (DePratter 1994; Hudson, et al. 2008:468-469).

THE FRENCH IN *LA FLORIDA*

⁶ Francisco de Chicora returned to his homeland with Ayllón in 1526 and quickly fled from the Spaniards (Hoffman 1990:67).

⁷ Three enigmatic objects made of tar and stamped with a cross and the letters "S," "O," "C," and "G" have recently been found on Tybee Island, GA. One hypothesis that has been proffered is that these objects might be manufactured "stone" markers left by Quejo in 1525, with "S.O." indicating Sancho Ortiz de Urrutia (Ayllón's business partner) and "C.G." indicating Charles of Ghent (Charles V, Ayllón's patron) (Elliott 2008; Hoffman 1990:51).

Following Ayllón's failed colony, the next series of colonial encounters centered on the French and the brief establishment of Charlesfort (1562-1563) on Parris Island and Fort Caroline (1564-1565) at the mouth of the St. Johns River (Bennett 2001; DePratter 2009; DePratter and South 1990; Douberly-Gorman 2013; Laudonnière 2001; South 1982b).⁸ These French explorations and settlements resulted in several encounters between the French and the Guale (Oade), with the French receiving gifts of maize from Oade and his brother Covecxis (Cansin) (e.g., Laudonnière 2001:42-46). In response to the French activity in Florida, Manrique de Rojas sailed along the Atlantic coast in 1564 looking for evidence of the French. During this voyage he observed numerous European artifacts (including at the village of Guale) that he attributed to French trade. This included a "wooden box with a lid, made by the hands of Christians" (Bennett 2001:112-113; Wenhold 1959). This has particular significance considering the recent find of a wooden box in a 16th century mortuary context at the Fallen Tree Mortuary Complex, immediately south of the later Mission Santa Catalina (Napolitano 2014).

PEDRO MENÉNDEZ DE AVILÉS AND EARLY ATTEMPTS AT MISSIONIZATION IN *LA FLORIDA*

Beginning in 1565 Pedro Menéndez de Avilés initiated the first successful colony in *La Florida*, establishing settlements at St. Augustine, FL and Santa Elena (Parris Island, SC) (Deagan 1980a, 1980b, 1981, 1993, 2009a; Lyon 1984; Paar 1999; Ross 1925; South 1980, 1982a, 1988). The following year, in 1566 Menéndez visited the village of Guale, noting it as a likely location for future colonization due to the good port (Lyon 1976:154-155). Indeed, Menéndez placed a garrison of 20 men on St. Catherines shortly afterwards (until ca. 1566-1569), as well as a missionary (Enríquez de Fromonte) who lived there from 1566-1567 (Hann 1990:429; Hoffman 1990:256, table 2; Worth 2009a:182).⁹ Following Fromonte, Jesuit missionaries Agustín Vaez and Antonio Sedeño were briefly stationed in Guale from 1568-1570 (Hann 1990; Jones 1978; O'Brien 1942; Worth 2004a). By 1572 the Jesuits had abandoned Florida, claiming that the land was too poor and that the natives were too mobile to successfully missionize (Cushner 2006; Gray 2014; Marotti 1984, 1985; Paar 1999).¹⁰ During this time (the early 1570's) Francis and Kole also note the presence of Theatine friars residing on St. Catherines Island, including one named Father Rosel (perhaps Rogel?), though no details of the presence are provided (Francis and Kole 2011:32, note 72). However, this reference might actually refer to the Jesuit presence, because, as Bushnell (1994:41) has noted, Jesuits and Theatines were often confused by laymen.

⁸ Just prior to the French exploration and settlement, Angel de Villafañe also visited the Santa Elena region in 1561 (Hoffman 1990).

⁹ At the same time that Menéndez placed this garrison in Guale, he also had Juan Pardo establish a series of other fortifications inland from Santa Elena. This includes the recently discovered and excavated Fort San Juan, at the Berry Site in North Carolina (Beck 2013; Beck, Moore, and Rodning 2006)

¹⁰ One of the more significant events leading to the departure of the Jesuits was certainly the failure of their missionization attempt in Ajacan (Virginia) and the deaths of those friars (Gradie 1988, 1990; Lewis and Loomie 1953; Mallios 2006, 2007)

Following the Jesuit departure of *La Florida*, Franciscans, led by Diego Moreno, replaced them, serving briefly in Guale from 1574-1575 (Lyon 1992). This missionary effort was short lived, as the Franciscans quickly came into conflict with the governor, Diego de Velasco, and abandoned *La Florida* in 1575, ultimately becoming lost at sea as they fled Florida in a leaky boat (Lyon 1992:96). In the aftermath of the Franciscan departure, the Guale-Orista revolt of 1576 occurred (discussed in chapter 1). During this rebellion the Spanish garrison at Santa Elena was destroyed, and numerous villages along the coast were burned by the Spanish in retaliation (Francis and Kole 2011:25; Hoffman 1990:270-271; Lyon 1984, 1987). Santa Elena was rebuilt and refortified beginning in 1578, though it was ultimately abandoned in 1587.

1587 marks the beginning of the primary Franciscan Mission Period in *La Florida*, with Franciscan friars arriving in Florida, being primarily being stationed in the Mocama and Agua Salada provinces. By 1595 two Franciscans were stationed on the island of Guale, while additional doctrinas were also established within the province at Tolomoto, Tupiqui, Talapo, and Asao. On St. Catherines the resident friars were Fray Miguel de Auñon and Brother Antonio de Bádajoz. As discussed in the previous chapter, however, both were killed only two years later during the 1597 Guale rebellion (Francis and Kole 2011).

THE 17TH CENTURY

Following the resolution of the 1597 Guale revolt, friars were once again distributed amongst native villages beginning in 1605, initiating a sustained 75 year period of missionary presence on St. Catherines Island. Until the beginning (ca. 1661) of what Worth (2009a) calls the “retreat phase,” this was a period of relative quiet in Atlantic Florida. However, the French intrigue that occurred during the late 1570’s and early 1680’s—exploiting factional unrest amongst the Guale—may have continued to cause disruptions throughout the early 17th century.

As discussed in the previous chapter, beginning in 1661, slave raids by the British-allied Westos against the Spanish missions began in 1661, resulting in the relocation of the northernmost mission—San Diego de Satuache—to St. Catherines Island in 1663, and the relocation of Santa Clara de Tupiqui from the mainland to Sapelo Island in 1674 (see Worth 1995; Worth 2009a; also figure 1.1). Santa Catalina y San Diego moved to Sapelo Island in 1680 and Amelia Island in 1683. In 1702 Santa Catalina relocated to St. Augustine, while it appears that Satuache joined the Yamasee confederacy in South Carolina—before rejoining the Spanish in the aftermath of the 1715 Yamasee War (Worth 2004b). During the early- to mid-17th century, in addition to the already established Atlantic Coast mission chain, interior missions were also established to the west of St. Augustine, into the interior Timucuan provinces (Worth 1998a, 1998b) and then into the province of Apalachee in 1633 (Hann 1988; Thomas 1990).

ARCHAEOLOGY OF THE GUALE COAST

Archaeological and ethnohistorical investigations of the late prehistoric (Irene period, A.D. 1300-1580) and Spanish Mission periods (A.D. 1580 – 1702) have a long and rich history on the Guale coast (roughly defined as that portion of the Georgia Bight located between the Savannah [or Ogeechee] and Altamaha rivers). Significant early research includes C.B. Moore’s excavation of more than 50 burial mounds on the Georgia coast (including 7 on St. Catherines Island¹¹) (Larson 1998; Moore 1897; Pearson 2012; Pearson and Cook 2003) and the W.P.A. excavations at the Irene Mound site located at the mouth of the Savannah River, the only Mississippian period site on the Georgia coast known to definitively contain a platform mound (Caldwell and McCann 1941; Pluckhahn and McKivergan 2002; Thompson 2014).¹² More recent excavations at late prehistoric sites include work on Ossabaw Island (Pearson 1976, 1977, 1979, 1980a, 1980b; Pearson and Cook 2010), Sapelo Island (Crook 1978a, 1978b, 1980a, 1980b, 1984a, 1984b, 1986), Skidaway Island (Garrison and Keene 2007; Keene 2002, 2004; Keene and Garrison 2013), and St. Simons Island (Cook 1978; Martinez 1975; Wallace 1975), as well as research on several back barrier islands (Napolitano 2012, 2013; Sanger 2013; Thompson, et al. 2013) and the adjacent mainland (Cook n.d.; Pearson 1984; Sipe 2013a, 2013b). Early ethnohistoric syntheses of the Guale people include the work of Swanton (1922, 1946) and Sturtevant (1962), while early historical investigations of the Spanish Missions of the Georgia coast include those by Lanning (1935), Geiger (1937), and Gannon (1965). More recent research includes extensive work by John Worth (1995, 1998a, 1998b, 2001, 2002, 2003, 2004a, 2006, 2009a, 2009b, 2013a, 2013b), as well as other detailed overviews and examinations of the Guale and the Spanish mission system (e.g., Bushnell 1994; Francis and Kole 2011; Jones 1978; Larson 1978; Matter 1972; Saunders 2000a) .

Since the 1950’s significant research in this region, much of it on St. Catherines Island, has proceeded on several fronts. This primarily includes: 1) bioarchaeological and biocultural investigations; 2) investigations of settlement distribution and site seasonality; and, 3) the identification and excavation of Spanish missions. Much of this research has been conducted by the American Museum of Natural History, under the direction of David Hurst Thomas. This has also included a substantial program in mortuary archaeology directed by Clark Spencer Larsen

¹¹ Only one of these, South End Mound I, dates to the Irene Phase, though pig bones in Johns Mound (St. Catherines Period; cal. A.D. 800-1300) date some of the burials to the mission-era (Larsen 2002; Larsen and Thomas 1982, 1986).

¹² Indeed, while this site is named Irene, the mound itself, and much of the site occupation, primarily dates to the earlier Savannah period (cal. AD 1150-1300). The mound was little used during the later Irene period, when there appears to have been a shift in coastal Mississippian social organization away from platform mounds and towards the use of what have been described as “more egalitarian” council houses (Anderson 1994b; Saunders 2000a). The site, and the entire Savannah River Valley (immediately to the north of historically identified Guale), were abandoned in 1450—generally attributed to “chiefly cycling” and extreme draught conditions (Anderson 1994b, 1996; Anderson, Stahle, and Cleaveland 1995). For an alternative explanation of the switch from mound building to the use of council houses see Thompson (2009).

(Larsen 1982, 2002; Larsen and Thomas 1982, 1986; Thomas 2008b; Thomas and Larsen 1979; Thomas, South, and Larsen 1977).

Investigations of site distribution and seasonality have been particularly concerned with the “Guale Problem,” which is the debate amongst researchers as to the extent of residential mobility amongst the Guale people encountered by the French and Spanish in the 16th century (Thomas 1987, 2008a, 2008b, 2008c; Thompson and Worth 2011). Larson (1969, 1978, 1980a) and Crook (Crook 1978b, 1984a, 1986, 2012) have argued that the Guale people were highly seasonally mobile and engaged in little maize agriculture, based upon the Spanish Jesuit accounts from the late 1560’s. More recent ethnohistoric and archaeological work, however, suggests that this was not the case and that the Guale people lived year round in “dispersed towns” and engaged in significant amounts of maize agriculture (Jones 1978; Russo 1991; Saunders 2000a, 2000b, 2002; Saunders and Russo 1988; Thomas 1987, 2008a, 2008b, 2008c; Worth 1999). Much of this new interpretation is based upon the critical re-examination of the early French accounts from the Georgia coast (Bennett 2001; Jones 1978; Laudonnière 2001; Saunders 2002; Worth 1999), as well as new climatic data based upon bald cypress tree rings (Blanton and Thomas 2008). These data suggest that the Jesuits’ accounts (as well as their missionization failure) can be attributed to a significant drought in the late 1560’s. Additionally, sclerochronological and oxygen isotopic seasonality studies, also well as some archaeobotanical research, indicate four-season occupation at late prehistoric sites (Andrus and Crowe 2008; Bergh 2012a, 2012b; Braley, O’Steen, and Quitmyer 1986; Keene 2002, 2004; O’Brien and Thomas 2008; Quitmyer 1985; Russo 1991; Thompson and Andrus 2013), while bioarchaeological studies indicate that maize was indeed a significant dietary component during the late prehistoric period (Hutchinson, et al. 1998; Larsen 1981, 1990, 2001; Larsen, et al. 2001; Schoeninger, et al. 1990).

The most significant mission excavations within the province of Guale have occurred at Mission Santa Catalina (Blair, Pendleton, and Francis 2009; Larsen 1990; Reitz, et al. 2010; Thomas 1987, 1988a, 1993a). This work has included the complete excavation of the mission church, cemetery, friary, and kitchen, and two wells (Larsen 1990; Thomas 1987, 1988a, 1993a, 2009b, 2010a). Figure 2.2 is an aerial photograph showing the layout of excavated buildings within the mission quadrangle. These excavations have yielded considerable information about the architecture of the mission quadrangle (Saunders 1990; Thomas 1988a, 1993a), the exploitation of vertebrate resources (Dukes 1993; Reitz and Dukes 2008; Reitz, et al. 2010), and the production of mission-era ceramics (Brewer 1985; May 2008; Saunders 2000b, 2004, 2009, 2012; Thomas 2009a).

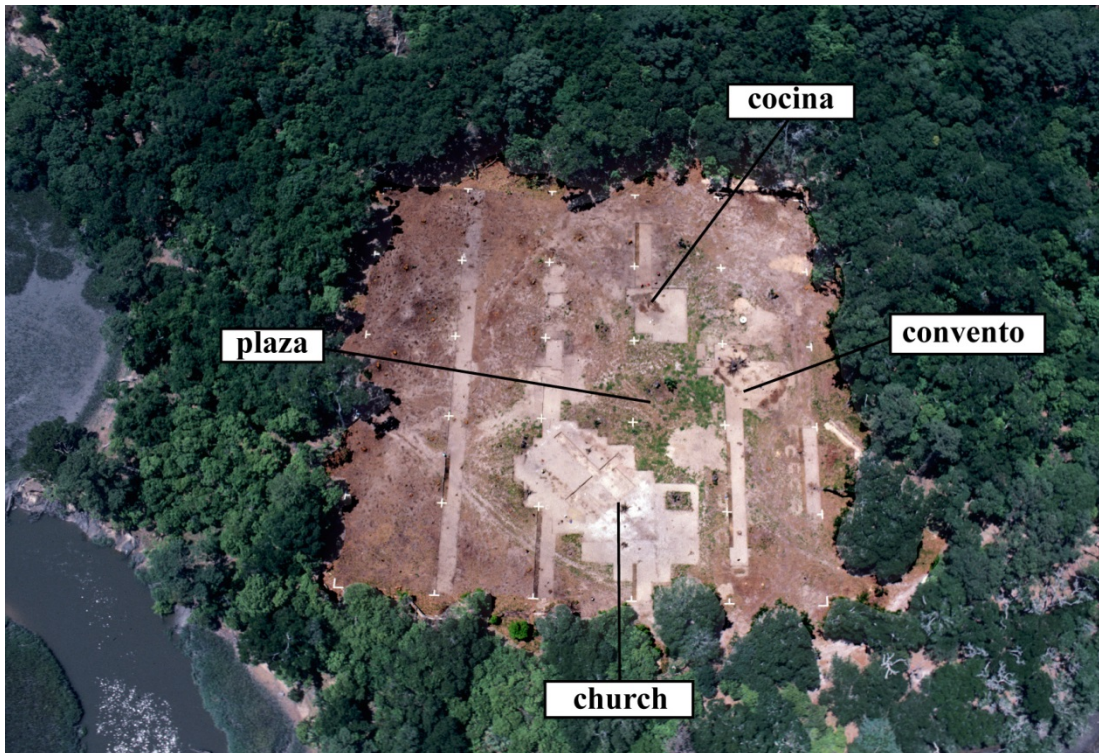


Figure 2.2. Aerial photograph of the central compound of Mission Santa Catalina de Guale, view to the north (Thomas 2009b:24, figure 3.1), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

Excavations within the mission cemetery, located beneath the floor of the church, have also provided considerable information on the biocultural and bioarchaeological makeup of the mission population (Griffin 1989, 1993; Griffin, Lambert, and Driscoll 2001; Larsen 2001; Larsen, et al. 2001; Schoeninger, et al. 1990; Stojanowski 2001, 2004, 2005a, 2005b, 2010, 2013; Winkler 2011) and mission burial practices (Blair, Pendleton, and Francis 2009; Thomas 1988a).

Elsewhere in the province of Guale, more limited excavations have also taken place at Mission Santo Domingo de Talaje (Caldwell 1943; Caldwell 1953, 1954, 2014) and work has recently been initiated at Mission San Joseph de Sapala on Sapelo Island (Jefferies and Moore 2010, 2013; Moore and Jefferies 2014). Further south, in the province of Mocama, on Amelia Island, FL, significant excavations have been conducted at the sites of Mission Santa Maria de la Sena and the relocated site of Mission Santa Catalina (1683-1702) (Hemmings and Deagan 1973; Saunders 1988, 1990, 1993, 2000b). Excavations have also occurred at San Juan del Puerto (Dickinson and Wayne 1985; Gorman 2013; McMurray 1973), San Pedro de Mocama (Rock 2006, 2010), and Santa Cruz y San Buenaventura de Guadalquini (Ashley 2013; Ashley, Rolland, and Thunen 2013). In the vicinity of St. Augustine excavations have occurred at a number of refugee missions (e.g., Boyer 2005; Waters 2005; White 2002) and particularly extensive work has occurred at the site of Nombre de Dios (Deagan 2009a).

Extensive excavations have also occurred at several mission sites in the interior Timucuan and Apalachee provinces, such as at San Martín de Timucua (Fig Springs) (Saunders 1996; Weisman 1992), Mission Patale (Heide 1999; Jones, Hann, and Scarry 1991; Marrinan 1993; Rust 1992), the O’Connell Mission Site (Azzarello 1999; Wallace 2006), and particularly at Mission San Luis de Talimali in Tallahassee (Hann and McEwan 1998; McEwan 1991, 1992, 2014; McEwan and Larsen 1996; Scarry and McEwan 1995; Shapiro, McEwan, and Vernon 1992; Shapiro 1987; Shapiro and Hann 1990). With rare exceptions (e.g., Deagan 2009a; McEwan 1992), however, most of this work has primarily focused on mission quadrangles, and comparatively little attention has been paid to the spatial patterning of the pueblo areas of the mission complex, focusing instead on architectural details of individual structures.

For example, at Mission San Luis archaeological work—particularly topographic mapping and intensive auger survey—identified the fort, church complex, cemetery, central plaza, and Apalachee and Spanish villages (including evidence of animal corrals) (Hann and McEwan 1998; McEwan 1992). Testing in the Apalachee village area, however, only revealed evidence of one aboriginal domestic structure—a round building roughly 20 meters in diameter. This has been interpreted as a likely elite (chief’s) residence. The absence of additional domestic structures, as well as additional settlement pattern survey data (Bryne 1986) and ethnohistoric accounts, has been interpreted as an indicator that the broader community was dispersed in a series of hamlets and farmsteads, rather than nucleated around the mission itself (Hann and McEwan 1998; McEwan 1992; Scarry and McEwan 1995).

This is also the situation for late prehistoric sites on the Guale coast. While significant excavations have been conducted at a number of indigenous residential sites of this period (e.g., Meeting House Field, Pine Harbor, Bourbon Field), these have primarily focused on midden excavations (Crook 1978b, 1984a, 1986; Larson 1984; Saunders 2000a, 2000b; Saunders and Russo 1988). Keene and Garrison (2013) have recently synthesized the limited evidence from architectural excavations of late prehistoric structures on the Georgia coast and note that only ten structures have been excavated from this period (see Braley, O’Steen, and Quitmyer 1986; Caldwell and McCann 1941; Cook n.d.; Goad 1975; Keene 2002; Pearson 1984; Sipe 2013b). They also observe that these limited excavations have not resolved discrepancies between archaeological and ethnohistoric evidence regarding structure shape and construction material (Keene 2002). As with the Mission period, these excavations have also focused on architectural details and not the broader community spatial patterning. Most agree, however, that common features include a large circular council house (*buhío*), a ball court and/or plaza, and a mortuary structure and/or burial mound, with the town center surrounded by dispersed households. While Jones (1978) suggests that individual dwellings should be round, and perhaps of pole and thatch construction, the very limited archaeological evidence suggests that rectangular wattle and daub structures may be the norm (Keene 2002; Saunders 2000a; Worth 2004a).

Following this brief overview of the historical background and past archaeological work in the region, in the next chapter I outline a theoretical perspective on the archaeology of colonialism—grounded in theories of practice. I then implement this approach in the following chapters, using archaeological materials from Mission Santa Catalina to explore population aggregation and the making of a 17th century mission community.

Chapter 3. Archaeologies of Colonialism, Social Identities, and Communities of Practice

In the previous two chapters—drawing primarily on ethnohistoric sources—I presented a brief overview of the Guale and their intersection with the Spanish Mission system of *La Florida*. One point that I emphasized in this review is that a close-reading of the historic and ethnohistoric sources suggests that the existence of a coherent “Guale” identity is an oversimplification of a complex set of social relationships (Saunders 2001:82). In fact, I believe that “Guale” (along with Spaniard, Mocama, Yamassee, etc.) as a category of identity can largely be considered “overdetermined.” Here I use overdetermined in the sense of Voss (2008a:5, 24-25), who has argued that in archaeology specific categories of identity have often tended to be foregrounded, without acknowledging the complex interlocking of multiple identity categories, that are always “multiple, shifting, and relational” (Joyce and Wilkie 2008:1484). In the colonial Southeast, such overdetermined identities—whether subsumed as tribe, chiefdom, province, or ethnicity—have often served to mask considerable internal diversity. Such problems have not been unnoticed. Indeed, Wesson (2008:xxiii) has argued that “our understanding of postcontact Native American social change is impeded when indigenous peoples are viewed primarily through monolithic linguistic and political categories” (see also Hally 1971:62-63).

More broadly, Meskell (2001:188) has written that the goals of social identity analysis should be to “break the boundaries of identity categories themselves, blurring the crucial domains of identity formation, be they based on gender, sexuality, kin, politics, religion, or social systems. Only through deconstruction of the domains we see as ‘natural’ or prediscursive can we truly approach an archaeology of difference - real cultural difference and contextuality.” She also argued that “identity, in its various manifestations, operates under erasure in the interstices of reversal and emergence and thus cannot be studied in the old ways (Hall 1996, p.2). This entails interrogating the old taxonomies and categories that we have reified as doxic and impermeable and happily projected across the spatiotemporal divide” (Meskell 2002:283). To actually operationalize such a project, however, produces considerable analytical and methodological difficulties in order to avoid overemphasizing only one category of identity (see Conkey 2005:14; Franklin 2001; McClintock 1995).

The difficulties of conducting such an analysis in the Southeast can primarily be traced to two interlocking archaeological legacies. The first of these is the continued reliance on what Worth (2012) has called an “enhanced culture-historical framework” (Brown 1994:71-72; Dunnell 1990), where, despite “knowing better,” easy and normative correlations between pottery type, language, polity, and identity continue to be assumed (see discussion in Saunders 2012). The second of these is the legacy of colonial archaeologies grounded in the theory and

method of early acculturation models, in which dichotomous relationships between colonizers and colonized are emphasized.

In this chapter I discuss my theoretical and methodological efforts to avoid this situation and work with the archaeological remains from Mission Santa Catalina in order to conduct a colonial archaeology of pluralism that engages with the internal diversity of the mission community, without foregrounding a colonized/colonizer dichotomy. I begin by briefly reviewing the history of the method and theory of the early acculturation studies, as well as considering some of the newer theoretical approaches that have sought to rectify some of the perceived deficiencies. I follow this with a review of practice-based approaches to archaeologies of colonialism, primarily as advocated by Kent Lightfoot (Lightfoot 1995, 2005b; Lightfoot and Martinez 1995; Lightfoot, Martinez, and Schiff 1998), as a materially grounded method and theory for conducting an archaeology of colonialism in pluralistic contexts. I conclude by reviewing and advocating the identification of “communities of practice”—grounded in situated learning theory—as a methodological approach that can be used to materially identify “groupness” in the archaeological record without falling into the trap of reifying overdetermined identities. I argue that such an approach provides a method and theory for archaeologically investigating documented histories of conflict and factionalism within the aggregated Mission Santa Catalina community.

ARCHAEOLOGIES OF COLONIALISM

Broadly stated, the archaeology of colonialism examines the intersections and entanglements of different cultural groups. While much of the literature of colonialism has been concerned with the European intrusion into North and South America, recent scholarship has emphasized that the cultural entanglements with which an archaeology of colonialism is concerned, is broadly relevant to the global study of cultural interaction. Additionally, research examining culture contact has increasingly moved away from a simplistic colonizer/colonized dichotomy and instead has begun to examine interactions within pluralistic social settings as well as examining colonial relationships amongst diverse Indigenous peoples (e.g., D'Altroy 2005; Deagan 1980b, 1983; Lightfoot 2005b; Lightfoot, Martinez, and Schiff 1998; Panich 2013; Voss 2005, 2008a).

While colonialism has been variously defined, and as Stein (2005) has pointed out there is no commonly accepted definition, there is still considerable ambiguity in the way that different researchers engage with issues of intercultural interaction. Lyons and Papadopolous (2002:11) have generally defined colonization as “the processes of establishing and maintaining settlements in foreign territory, whether an isolated trading post perched on a protected headland or a network of fortified cities that act as proxies for distant military powers.” Similarly, van Dommelen (1997:306) writes that colonialism is “the presence of one or more groups of foreign

people in a region at some distance from their place of origin (the 'colonizers'),” but he also adds “the existence of asymmetrical socio-economic relationships of domination or exploitation between the colonizing groups and the inhabitants of the colonized region” as a further component of his definition. He notes, however, that this definition is intended only for his case at hand, and historically contextualized examinations of specific contact situations need to be examined on a case by case basis (Stein 2005; van Dommelen 1997).

Indeed, even as definitions are debated, the language which is used to describe these situations is greatly contested. For example, Silliman (2005) discusses the use of the terms “colonialism” and “culture contact” and suggests that the term “culture contact” fails to adequately reflect the differential power relations and the magnitude of cultural interactions bound-up in colonial interactions. Part of the difficulty in deriving satisfactory common definitions and terminology stems from the great diversity of types of interactions subsumed under the terms colonialism and culture contact, as well as due to the considerable variation in the timing of colonial encounters (e.g., short-term encounters versus sustained colonialism) (Lightfoot, et al. 2013) . When we simultaneously attempt to consider diverse loci of cultural interactions such as settler societies (e.g., Murray 2004), missions (e.g., Graham 1998), mercantile enterprises (e.g., Lightfoot, Wake, and Schiff 1993), and early explorations (e.g., Milanich 1990), there will of course be considerable difficulties in reconciling concepts and definitions. The range of situations falling under the rubric of colonial interactions have now been argued to also include “colonization without colonists” (e.g., Dominguez 2002; Wells 2015) and “colonies without colonialism” (e.g., Stein 2002). In these latter two cases, the point is that colonialism is a heterogeneous concept, needing to be decoupled from the specific, physical entities (e.g., colonies, colonists), which have traditionally formed part of its definition (Stein 2005).

ACCULTURATION, AND OTHER COLONIAL MODELS

The concept of acculturation has had a long and important place within the archaeologies of colonialism and culture contact (e.g., Brown 1979a; Cusick 1998; Dozier 1951; Farnsworth 1987, 1992; Foster 1960; Freed 1957; Herskovits 1938; Linton 1940; Quimby and Spoehr 1951; Redfield, Linton, and Herskovits 1935, 1936; Spicer 1961), but, as highlighted by Cusick (1998), it has never been a uniform concept. As defined by Redfield et al. (1935:145-146; 1936:149) in the programmatic *Memorandum for the Study of Acculturation*, “acculturation comprehends those phenomena which result when groups of individuals having different cultures come into continuous first-hand contact, with subsequent changes in the original cultural patterns of either or both groups.” Importantly, this definition remains flexible in terms of the direction of cultural change and in terms of the role of power and coercion in cultural change (see also Herskovits 1938). This is an important point because many critiques of acculturation have highlighted the problematic emphasis on the unidirectional nature of power relations and cultural transmission—from donor to recipient culture. But, as emphasized in the acculturation studies of

the 1930's (e.g., Herskovits 1938; 1935, 1936), cultural change and contact can encompass a variety of forms, directions, and power structures. Indeed, Cusick (1998) has argued that many of the critiques of acculturation are actually directed towards the formulations that followed the memorandum in the 1940's and 50's and that acculturation research actually embraces a considerable degree of analytical diversity.

Most critiques of acculturation fall into one of several categories: first, acculturation models often fail to explicitly consider the role of power structures in culture contact relationships; secondly, the donor/recipient relationship is problematically unidirectional, most often formulated as cultural traits actively being transferred from Western to non-Western people; third, changes in material culture (and behaviors) are considered to have a direct, quantifiable, and linear correspondence and relationship to acculturation; and finally, acculturation models have little explanatory or predictive power (see Cusick 1998). Specifically considering Southeastern colonial contexts, Worth (2006) has critiqued acculturation from a different perspective. He has argued that acculturation models (i.e., artifact ratio approaches) fail to account for different scalar dimensions of change (individual versus political/structural change)—they work from the individual and the domestic outwards, ignoring political and economic relationships between polities. Secondly, Worth suggests that acculturation models lead to “bottom-up” analyses, where material culture is believed to drive culture change, rather than vice-versa. Third, he argues that acculturation approaches “focus on one relatively minor and secondary element of the colonial experience— intersocietal transmission of cultural traits in the material realm” (205). And finally, he suggests that acculturation models fail to explain internally derived culture change of entirely indigenous origins (Worth 2006).

In response to such critiques and dissatisfaction with how many studies of acculturation had actually been enacted, a number of other concepts for studying culture change during colonial encounters such creolization (e.g., Burley 2000; Cusick 2000; Dawdy 2000a, 2000b; Deetz 1996; Ewen 1991, 2000; Ferguson 1992, 2000; Groover 2000; Gundaker 2000; Lenik 2009; Lightfoot and Martinez 1995; Loren 2000; Mullins and Paynter 2000; Wilkie 2000), ethnogenesis (Hill 1996, 1998; Mullins and Paynter 2000; Restall 2004; Sider 1994; Stojanowski 2010; Sturtevant 1971; Voss 2008a, 2008c; Weik 2009; Weisman 2000), hybridity or hybridization (Card 2013a; Silliman 2013; Stockhammer 2012; van Dommelen 2005; Wade 1999; Wernke 2006), transculturation (Deagan 1998), and the middle ground (Malkin 2002; Murphree 2001; Sweet 2002; White 1991) have been suggested. Each of these approaches seeks to reframe the dynamics of culture change, with different emphases upon power relations, authenticity, and newness. Like acculturation, however, each of these concepts has overlapping and conflicting definitions, as well as diverse theoretical underpinnings (Liebmann 2013).

For example, creolization has three common usages and/or genealogies within archaeology: 1) through linguistic metaphors (Burley 2000; Deetz 1996; Ferguson 1992, 2000;

Wilkie 2000); 2) new colonial cultures that are not explicitly considered to have been formed through colonial interaction, but rather fostered by location (e.g., *criollos*—Spaniards born in the Americas) (Cusick 2000; Ewen 1991, 2000); and 3) under various rubrics conceptualizing it as a type of mixing—together glossed by Dawdy (2000a) as the linguistic, cultural, and biological approaches to creolization, respectively. But, as Dawdy (2000a) points out, most applications of creolization use combinations and variants of these three approaches, and attempts at precision in usage amongst different researchers has resulted in sometimes contradictory definitions. For example, Deetz (1996:213), drawing a direct contrast with acculturation, which he implicitly defines as cultural replacement, defines creolization as “the interaction between two or more cultures to produce an integrated mix which is different than its antecedents” (see also Ferguson 1992). Wilkie (2000:11), however, defines creolization as “a process that is represented by retentions in cultural values that become expressed in new ways due to cultural contact and relocation” and contrasts this with syncretism—defined as “the fusion of two existing traditions into a new, third cultural reality.” At the same time, however, this definition of syncretism is quite similar to how some researchers define ethnogenesis. Voss (2008a:1), for example, defines ethnogenesis as “the birthing of new cultural identities,” in contrast to the “reconfiguration of an existing one.” And, in yet another set of contrasting formulations, Mullins and Paynter (2000:74) specifically differentiate creolization and ethnogenesis, suggesting that while creolization is a “generalized and syncretic ‘cultural adjustment,’” ethnogenesis more explicitly situates culture change within colonial power structures, incorporating tradition, acts of resistance, and the “structural domination of the colonizer.” This is a particularly interesting approach because it acknowledges power asymmetries while avoiding unidirectional models, and simultaneously allows for the emergence of new cultural expressions while also allowing for both the adoption of and the persistence/retention of cultural forms.

Despite attempts to clarify terminology and make the theoretical foundations of these concepts explicit (e.g., Liebmann 2013; Stewart 1999, 2011; VanValkenburgh 2013), critiques have been emerging that these terms lack theoretical clarity and thus any utility other than as coarse metaphors for cultural mixing that often result in the reification of “pure” or “authentic” analytical categories (e.g., Hitchcock and Maeir 2013; Silliman 2013; Silliman 2015). In addition to conceptual problems, such approaches have often proven to be difficult to archaeologically operationalize. As Card (2013b:3) has noted, “in practical terms, many models of assimilation, acculturation, or ethnogenesis are archaeologically operationalized by measuring the persistence or adoption of material culture traditions in the form of whole artifact classes.”

Traditionally, many approaches to acculturation in archaeology have focused upon the introduction of European artifacts to Native Americans, in particular utilizing artifact ratios of native/introduced artifacts to measure the degree of acculturation (e.g., Deetz 1963). While some approaches, such as Deetz’s (1963), simply compare ratios of European artifacts to native artifacts, other approaches utilize a typological scheme that identifies a number of sub-categories

that span a range of types of modifications. For example, using museum collections, Quimby and Spoehr (1951) defined a number of artifact categories that reflect acculturation. These include artifacts and techniques introduced through contact (e.g., trade items, copies of trade items made of local materials, hybrid items partially made or decorated with local and introduced materials), and native materials altered by contact (e.g., made with new materials). Their approach is an attempt to provide a method for enumerating and quantifying the type and degree of acculturation found within museum ethnographic collections. In a similar vein, John White (1975) modified Quimby and Spoehr's (1951) approach in order to apply it to colonial archaeological sites. He argued that "by determining the relative proportion of each of these artifact types in a contact situation, the archaeologist may provide himself with a rough indicator of the degree of culture change in both the material and non-material spheres" (White 1975:159-160). Others have utilized modified forms of White's approach. For example, Brown (1979a, 1979b) has argued that artifact function is critical for understanding acculturation. That is, an introduced artifact might be used differently by the receptive culture than it is by the donor culture. He suggests that researchers cannot assume that artifacts function as replacements, but rather must consider the specific contexts and possible transformations in use-function. Another approach to quantifying acculturation was proposed by Brain (1979) in his study of the Tunica Treasure. He argued that by considering material, form, function, and manufacturing and use techniques of artifacts (numerically coding each as either old or new), a researcher can measure culture change. Farnsworth (1987, 1992) also modified Quimby and Spoehr's (1951) artifact ratio methodology, classifying objects recovered from California missions by function, material type, source culture and modification, and used these classifications to calculate various acculturation indices (e.g., continuity of traditional culture, intensity of cultural exchange). But, each of these approaches to quantifying culture change through quantified ratios either implicitly or explicitly emphasizes a unidirectional power structure in which there is both a donor (or conquest) and a recipient culture (e.g., Foster 1960; cf. Spicer 1961).

Artifact ratios have also been employed in colonial archaeology in ways that are not strictly designed to measure degree of acculturation. For example, the so-called "Iroquois method" of dating sites consists of calculating ratios of European trade goods to native goods, and then placing the sites in temporal sequence; those sites with greater proportions of European artifacts are presumed to date to a later time-period—that is, they have become more acculturated (e.g., Fitzgerald 1982; Smith 1987; Wray and Schoff 1953). The underlying assumption behind such methods is that acculturation is unidirectional, unavoidable, and occurs at a regular and steady rate of change over time.

Somewhat related to such approaches are the artifact pattern ratioing techniques of some processual historical archaeologists. Primarily advocated by South (1978a, 1978b), these approaches suggest that characteristic patterns of artifact ratios, in specific contexts, can be identified for specific categories of sites, and that "the by-product of a specific activity has a

consistent frequency relationship to the by-products of all other activities in direct proportion to the organized integration of the various activities... the relationship between the colonials and the native peoples regarding the flow of goods would also be a variable to be monitored” (South 1978b:42).

South’s (South 1978a, 1978b) approach has been refined by others, particularly with greater and more specific attention being paid to archaeological and social context. For example, Deagan (1983:105), differentiating between public and private space within mestizo households in colonial St. Augustine, has argued that “areas of low-visibility, female-associated activities... would be expected to exhibit the strongest Indian characteristics, whereas such male-associated socially visible areas as house construction, weaponry, and other military activities would be expected to exhibit the least Indian influence.” Her approach is notable in that it combines the importance of context and function [as advocated by both Brown (1979a, 1979b) and Brain (1979)] for assessing acculturation as manifested through artifactual remains with an emergent emphasis on gender and the performative aspects of daily practice.

Despite taxonomic debates, and detailed discussions of the precise mechanisms, nuances, and vocabulary for exploring culture change, each of these theoretical perspectives is largely still grounded in dichotomous cultural interactions. Recent discussions in archaeology of colonialism, however, have emphasized that different theoretical and methodological approaches are needed in order to examine cultural interaction in pluralistic contexts. As Voss (2005:461-462) has written: “Culture contact studies of identities generally focus on the colonized–colonizer dichotomy as a fundamental axis of identification. Researchers have also tended to emphasize the effects of European contact with indigenous populations. However, the situation at most colonial settlements was far more complicated.... The challenge facing those of us who study identities in culture contact settings is to maintain a research focus on colonization and its cultural outcomes while also embracing the complexities of social identification in colonial contexts.”

PRACTICE AND COLONIALISM

One of the most influential recent approaches in archaeology has been a turn towards an explicit engagement with practice theory (e.g., Dornan 2002; Joyce and Lopiparo 2005; Lightfoot, Martinez, and Schiff 1998; Pauketat 2001). Briefly stated, theories of practice consider the relationship between agency and structure and have primarily emerged through the work of Bourdieu (1977, 1990), Giddens (1979, 1984), and Sahlins (1981), though recently, archaeologists have also explicitly embraced William Sewell’s (2005) formulation of structure—identified as schemas and resources—in order to explain the relationship between colonial “events” and culture change (e.g., Beck 2013; Russell 2011a, 2011b; Thompson, et al. 2013).

To put it simply, and to quote Ortner (1984:154), through practice, that is what people do, “actors not only continue to be shaped by the underlying organizational principles involved, but continually re-endorse those principles in the world of public observation and discourse.” Giddens’s (1984) notion of structuration is critical for understanding how change is incorporated into the system; understood as a feedback loop—in which peoples’ practices both simultaneously create social structures and are constrained by social structures—structuration allows for both the reproduction and transformation of society. Practice based approaches have been particularly influential in archaeology because the material things that archaeologists use to make interpretations are the physical remains of peoples’ practices. Additionally, because what people do—their practices—are understood to be the processes by which society is reproduced and transformed—all individual’s actions are important. This provides a corrective to top-heavy models that emphasize structural domination at the expense of native agency. This is particularly important for studies of colonialism because, whether cultural change is understood as creolization, acculturation, ethnogenesis, etc., practice and structuration theories provide an explanatory model for how cultures actually persist and change.

Lightfoot et al. (1998) utilize a theory of practice in their study of culture change at colonial Fort Ross. Looking at material remains of Russians, Native Alaskans, and Native Californians, they suggest that attention to daily practices—what people eat, how and where they prepare and dispose of food, etc.—will reveal both cultural persistence and transformation of the different groups coming into contact (see also Lightfoot 1995, 2005a; Lightfoot 2005b; Lightfoot and Martinez 1995). Especially, through comparisons with the various homelands of the groups in contact, they suggest that changing (and persisting) patterns of daily practice can show how individuals actively shape and reshape their lives within colonial settings. As Van Buren (2010:158) summarizes, this approach provides a robust methodology that is focused “on spatial organization, particularly the analysis of the built environment and the residues that accumulated within it as a result of daily routines, rather than the quantitative assessment of artifact assemblages.” This approach also provides a particularly powerful approach for exploring interactions and entanglements in pluralistic contexts. Lightfoot and Martinez (1995) elaborate on this point, arguing that attention to microscale contexts can both reveal social divisions within native and colonial societies as well as provide evidence for how diverse factional interests were negotiated and promoted within colonial contexts. Indeed, they argue that “the strategies employed by people in factional competition and segmentary alliances should be visible in the archaeological record as the results of day-to-day activities that were involved in broadcasting intercultural relationships” (Lightfoot and Martinez 1995:488).

Marcoux (2010:15-16) has made similar arguments in his analysis of archaeological materials from the Cherokee Townsend Site in North Carolina. Also using a practice based approach—in which communities are understood as “created by the shared practices of people who interacted on a daily basis”—he examined how potting traditions and other household

practices revealed the ways in which diverse Cherokee peoples coalesced and formed a new community in response to colonial changes. Particularly compelling is his analysis of how the enactment of potting practices that differed by household reveal the diversity and complex history of the coalescence of the Townsend community (Marcoux 2010:106-107).

Silliman (2001) has also demonstrated the utility of using a practice based approach for colonial archaeology, particularly as a framework that can explain both nondiscursive and intentional action. Drawing upon Bourdieu's notion of *doxa*, "the unquestioned and often unacknowledged shared backdrop of givens in discourse and social interaction," Silliman (2001) contrasts it with what he calls practical politics, the intentional practices operating outside the realm of *doxa* that shape the social world. Included in this are the "mundane" daily practices of living, through which people cope with and resist oppressive colonial situations. In his approach daily practices can be either *doxic*, or overt political engagement with the world. His focus upon political engagement is important because it demonstrates how resistant processes of residing, in political ways, structure colonial entanglements. He also makes the important point that practices that seek to control or structure daily practices are common tactics when there are asymmetric and oppressive colonial relationships. In such situations either the transformation or the persistence of mundane daily practices can reflect acts of social resistance. In his example from Rancho Petaluma, he suggests that the continued use of lithics was, rather than representing persistent *doxic* practices, was actually an example of political action where individuals actively challenged the dominant group.

In an example from the Southeast, Wesson (1997, 2008) has also utilized a practice based approach in his analysis of transformations in Creek society during the early colonial period. Specifically seeking to show that cultural transformations were not imposed, top-down processes, Wesson—characterizing it as a Gramscian hegemonic struggle—argues that transformations of daily practices within Creek households demonstrated a shift from formerly *doxic* acceptance of elite authority to active social challenges to elite authority (e.g., manifested as changing sizes of storage pits).

Each of these examples shows how attention to the daily practices of individuals within colonial situations can bring native agency to the fore and avoid portraying colonized people as passive recipients of European domination. Additionally, such an approach is not merely a political choice to emphasize the active role of the colonized, but through the theory of structuration the daily practices of individuals within colonial situations are understood to be that which makes, remakes, and transforms colonial landscapes.

OBJECTS AND COLONIAL ARCHAEOLOGY: OPERATIONALIZING PRACTICE

One of the challenges to enacting a robust, practice-oriented archaeology of colonialism is providing a methodology for operationalizing it. That is, for an archaeology of colonialism, how can the patterning of material culture be understood and interpreted in the context of the multiple processes of pluralistic identity formation, transformation, and maintenance. Of course, the primary approach entails paying close attention to context, especially social context (Voss 2008a:120). As Lightfoot et al. (1998:201) note “it is through daily practices—how space is structured, how mundane domestic tasks are, conducted, how refuse is disposed of—that people both organize and make sense of their lives.” Such daily practices, however, also leave traces within the objects themselves, often as indexes of nondiscursive technological practice. While much archaeological work linking artifacts and identity has focused on design style (e.g., Conkey 1990; Conkey and Hastorf 1990; Dietler and Herbich 1989, 1998; Hegmon 1992; Parkinson 2006; Plog 1980, 1995; Sackett 1977, 1982, 1985; Wiessner 1983, 1985; Wobst 1977, 1999), even the nondiscursive ways of *how* objects were made can be interpreted as the outcome of social practice. Here I argue that an approach grounded in situated learning theory (Lave and Wenger 1991), that examines how—through co-participation in processes of learning—habitual repetitive actions produce similarities and unintentional commonalities in both behavioral practices *and* material objects. These patterns may then be understood to mark social groups—communities of practice—that may crosscut traditionally defined identity categories (Bowser 2000; Stark 1998; Stark, Bishop, and Miksa 2000). Along these line, Joyce (2012c:150) has argued that “within the range of practice theories, communities of practice provide us with a formalized framework to talk about the groups of people who maintain similarities of things through more or less conscious action.”

LEARNING

Processes of learning are what produce the consciously and unconsciously created material patterns that we find in the archaeological record. Meaningful social boundaries (see Plog 1995) are created, and can be observed both *emically* and *eticly*, through material culture, because individuals and communities *learn* ways of acting, producing, and making. That is, cultural transmission—of ideas and things, spatially and temporally—happens through learning. As Lemonnier (1986, 1993a) has argued, we need to consider the *why* and *how* material forms are generated, not just *what* these forms are; analyses of learning processes allow us to examine the social nature of technology, helping us to interpret the “meaning(s)” and “realities” behind material patterns (see also Hegmon 1992).

There are numerous approaches to studying learning—spread across many theoretical and disciplinary boundaries. Wenger (2009:216-218) identifies neurophysiological/biological, behaviorist, cognitive, constructivist, social-psychological, activity, socialization/functionalist/normative, and organizational approaches as valid and potentially complementary approaches to the study of learning. Yet only a few approaches have been

extensively employed in archaeology (see Minar and Crown 2001). Stark et al. (2008) present a succinct overview of the more common theoretical approaches to learning found within anthropology. They broadly argue that the main distinctions are between studies of learning and apprenticeship grounded in situated learning theory and Darwinian approaches to cultural transmission and “learning.” The Darwinian approaches they discuss include selectionist archaeology (e.g., Dunnell 1992) and dual inheritance theory (see critiques in Gosselain 2008). Here my discussion will be concerned with “social constructionist” approaches to material patterning, boundary formation and technology (Killick 2004), specifically situated learning theory and its applicability to cultural transmission, material culture patterning, and identifying and forming social boundaries.

COMMUNITIES OF PRACTICE

In 1991 Jean Lave and Etienne Wenger published their seminal volume on learning and education: *Situated Learning: Legitimate Peripheral Participation*. This work has been extraordinarily influential, primarily by transforming the central metaphor for learning from one of *product*, *transmission*, and *acquisition* to one of *participation* and *process* (Engeström 2007; Hughes 2007; Lave and Wenger 1991). This metaphorical transformation emphasized that learning is a social process, rather than an individual, cognitive relationship between instructor and student. Indeed, the significance of this transformation has been identified as a paradigm shift (sensu Kuhn 1962) for the academic theorizing of learning, as well as the applied fields of human resource management, organization, and consulting (e.g., Hughes 2007; Hughes, Jewson, and Unwin 2007; Wenger 1998; Wenger, McDermott, and Snyder 2002). Here I will provide an overview of the concept, discuss critiques and new theoretical directions, and review the archaeological literature that has engaged with it.

In their formulation Lave and Wenger (1991) developed three inter-related concepts: situated learning, legitimate peripheral participation, and communities of practice. Situated learning, a concept developed out of studies of apprenticeship (both historical and conceptual), is their notion that learning has *situatedness*—that is, learning occurs, is located in, and is part of, the active, lived-in world (as opposed to a notion of *situated* that merely suggests a place or location, e.g., “learning *in situ*”) (Lave and Wenger 1991:30-31). Legitimate peripheral participation is the central process or form through which learning occurs. While this is a confusing concept, partly because the terms used seem to imply opposing and opposite possibilities (i.e., illegitimate, central, non-participation), Lave and Wenger (1991) go to great length to explain that this concept must be considered as a whole, with legitimacy implying belonging within a learning community, peripherality indicating the ability of individuals to change location (through learning) within a community by moving from peripheral to full participation (see below), and participation indicating the understanding that learning is a

participatory act, “an integral part of generative social practice in the lived-in world” that bridges cognitive and embodied action (Lave and Wenger 1991:35, 52).

The third concept, community of practice, is “the locus or site of learning” (Hughes 2007:31). Similarly to legitimate peripheral participation, Wenger (1998:72) cautions that the term “community of practice” should not be dissociated; it “should be viewed as a unit.” Nevertheless, the constituent terms have important implications, with Lave and Wenger (1991:49-52) making the explicit connection to theories of practice (e.g., Bourdieu 1977, 1990; Giddens 1979; Ortner 1984, 2006; Sahlins 1981):

A theory of social practice emphasizes the relational interdependency of agent and world, activity, meaning, cognition, learning, and knowing. It emphasizes the inherently socially negotiated character of meaning and the interested, concerned character of the thought and actions of persons-in-activity. This view also claims that learning, thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world. [Lave and Wenger 1991:50-51]

This explicit connection between theories of practice and situated learning provides a logical rationale for linking observable patterns of motor-habit variation and learning-interaction theories. That is, situated learning is a mechanism that, through group practice, allows motor-habit variation to become socially patterned—with each stage in the technical *chaine operative* potentially revealing multiple and overlapping communities of practice—reflecting the learning community and not necessarily reflecting any normative (bounded) social category—of either analysis or practice. Their notion of community—an often contested term (e.g., Anderson 1983; Canuto and Yaeger 2000; Cohen 1985; Isbell 2000; Joyce and Hendon 2000; Kolb and Snead 1997)—however, is less well developed (Jewson 2007; see also below).

Together, situated learning, legitimate peripheral participation, and community of practice, emphasize a process of learning in which “newcomers,” through active social participation with “old-timers” and each other, “move towards full participation in the sociocultural practices of a community” (Lave and Wenger 1991:29), or processes of “changing participation and identity transformation” (Wenger 1998:11). Wenger (1998:4-5, 72-73) emphasizes that this process of learning links practice, meaning, identity, and community through mutual engagement, joint enterprise, and shared repertoire (a connection of social action and the material world).

ARCHAEOLOGICAL ENGAGEMENTS WITH “COMMUNITIES OF PRACTICE”

The concept of “communities of practice” is particularly useful for archaeologists and ethnoarchaeologists in that its focus on participatory learning locates practice, meaning, identity,

and community specifically within the material world, particularly through Wenger's (1998:73, 82-85) notion of "shared repertoire," which includes artifacts, tools, style, etc.—the locus of much archaeological research. Explicit archaeological engagements with the concept of communities of practice has primarily tended to focus on repetitive bodily practices, or those ingrained bodily motions, gestures, and actions that occur outside of discursive behaviors (e.g., motor-habits and muscle memory), discussed by Roddick (2009:83-84) in terms of Bourdieu's (1977) notion of *hexis*. Ingold (2000) has described a similar process by which skill in crafting is acquired, and, though he doesn't use the term, a community of practice is formed. He writes:

This is precisely where the standard model of the social learning of technical skills goes wrong. For in attributing the intergenerational conformity of movements to rules that are transmitted and internalised *in advance* of their practical application in mimesis, the model assumes that practice is a matter of executing identical, rule-governed movements over and over again, leading to gains in speed, efficiency and automation. But a little girl, making her first *bilum*, is quite unable to produce these movements. Rather than repeatedly carrying out the same movements, generated from an already internalised schema, she is repeatedly set the same *task*, generated within the social context of mother–daughter relations. The ability to reproduce her mother's movements with precision, depending as it does on subtle sensory attunement, is not a natural foundation for *enskilment* but its consequence. (Ingold 2000:357)

Many ethnoarchaeological studies provide strong empirical support for the integration of learning, motor-habits, and specific stages in the *chaîne opératoire* (e.g., Bowser 2000; Bowser and Patton 2008; Crown 2001; Dietler and Herbich 1989, 1998; Gosselain 1992, 1998, 2000, 2008; Herbich 1987; Herbich and Dietler 2008; MacEachern 1998). For example, Gosselain (1998:92) identifies the manner of "fashioning—or roughing" ceramics as a particularly good indicator of ethnographically observed social identities. He notes that once a potter learns the practice of potting, the only changes that occur are to "those stages of the manufacturing process that do not rely on motor habits, that are performed in the open, and that may sometimes involve a collaboration between potters or assistance from other social actors" (Gosselain 1998:102).

The concept of the community of practice has become increasingly utilized within the discipline of archaeology over the decade, appearing in a number of books, chapters, and journal articles (e.g., Cordell and Habicht-Mauche 2012; Eckert 2008; Fenn, Mills, and Hopkins 2006; Hendon 2010; Herbert 2009; Huntley 2006; Kohring 2012; Minar 2001; Peelo 2011; Sassaman and Rudolphi 2001; Van Keuren 2006; Wendrich 2013), as well as within dissertations and theses (e.g., Braje 2003; Duwe 2005; Gilligan 2008; Ginn 2009; Hayden 2009; Herbert 2003; Hilditch 2008; Minar 1999; Roddick 2009). But, within these works, the engagement with situated learning and the "communities of practice" literature has been somewhat uneven and it has also

rarely been used to explore material domains other than ceramic production (c.f. Blair 2015; Hendon 2010). Joyce (2012c:150) has provided some cautions for how the concept might best be employed. As she notes, “to use this new framework, we will need to be very certain how the material phenomena we can observe and describe correspond to the abstract aspects of the overall model.”

In line with her suggestions, the most powerful and convincing uses of “community of practice” in archaeology are those who engage with it within its original context as a theory of learning, theoretically connect it with technological choices, and do not attempt to use it as a stepping-stone back to a reified notion of a categorical identity. Regarding this third point—and the relationship between social boundaries and material practice, Hegmon (1998:271) has noted that it is important to “emphasize structure over content” and that it may be more important to be “concerned with a boundary as an expression of some sort of difference than with the specifics of what lay on either side of the boundary.”

Indeed, Hilditch (2008:60), has emphasized that “the concept of a community of practice operating in the past should not be synonymous with previous definitions of archaeological ‘cultures’. Many communities of practice may be operating within a large social group, either as specific differences in the performance and learning of a single technical task or with respect to the production and exchange of different materials.” In her study of ceramic production and exchange in the Cyclades, Hilditch (2008) uses a variety of petrographic and chemical techniques to identify constellations of communities of practice that cross-cut individual Cycladic communities, all of the Cyclades, and the broader Minoan, Helladic, and Anatolian areas. Fenn et al. (2006:61) also make this important point in their analyses of painted glaze-ware ceramic “communities of practice” in the Silver Creek Area of the American Southwest. They argue that communities of practice “may be much smaller than residential communities... [operating] at social scales smaller than the village” (61). This observation, coupled with the understanding that a community of practice is not equivalent with a social identity, highlights the analytic utility of the concept. Secondly, Fenn et al. (2006:61, 82-84) consider consumption, as well as production, stressing that how groups and individuals acquire and use objects is a learned social practice in the same way that technological production is. Van Keuren (2006:91) makes a point similar to the first of these, arguing that a community of practice approach allows for the examination of “community boundaries as they are expressed at smaller scales of interaction (e.g., within large aggregated settlements).”

In his study of communities of practice—of both pottery production and consumption—in the Bolivian Andes, Roddick (2009) also stresses the multiple scales at which communities of practice can (and do) operate. “[They] may not directly relate to typical archaeological units of villages, cultures or ethnic groups (Stark 2006:25-26) since particular practices may be shared across such boundaries. While face-to-face interactions lie at the center of most informal modes

of learning, the scale of relationships can vary across geographic distances (Frankel 2003:44)” (Roddick 2009:79).

One of the more common types of analyses in archaeology that employ a community of practice approach is through examinations of cordage twist (e.g., Gilligan 2008; Hayden 2009; Minar 1999, 2001). For example, Jill Minar (2001) considers the distribution of cord marked pottery from the southeastern United States, looking at whether the cordage used to mark the pottery have an “S” or a “Z” direction of twist, and she observes different ratios of S and Z twist marked pottery in both space and time. Similarities and differences in the twist ratios are also found to vary independently of classic Southeastern pottery “types”—determined by either decoration or temper. Using experimental and ethnoarchaeological evidence she rejects several possible hypotheses for the observed variation: 1) right or left handedness of the spinner; 2) fiber type used; and 3) spinning technique or technology. She then utilizes ethnographic data from the Gé tribe of Brazil (Carr and Maslowski 1995; Newton 1974) to show that differences in final twist can be shown to mark group differences; but the groups marked may be undifferentiated by either themselves or by ethnographic observers. Instead, rather than identifying community or ethnic social identities, direction of spin marks a community of learning or practice (as in the Gé ethnographic example). She emphasizes that because spinning cordage is a motor skill dependent activity (unlike choice of design or temper in pottery construction) it is learned and habituated early and is unlikely to be consciously changed. Thus she argues that while explanations for each attribute of an artifact must be evaluated independently—looking closely at the “pressures and constraints” that affect conscious choices of technology, style, and material—communities of practice, or the processes of learning and teaching, both conscious and unconscious, need to be considered as we examine and attempt to explain material variation.

SUMMARY

In the rest of this dissertation I use a communities of practice approach to explore the social dynamics of the aggregated community at Mission Santa Catalina. More broadly I employ a practice based approach that explores the colonial entanglements of diverse and pluralistic factional groups residing at the mission. In the next two chapters, utilizing archaeological survey and excavation data I provide the spatial framework that allows such an approach to be enacted (e.g., Lightfoot, Martinez, and Schiff 1998). I follow this with two chapters that examine the production of ceramics and the consumption of glass beads, contexts in which multiple communities of practice intersect across multiple material domains and domains of practice.

This approach is one that takes seriously the need for archaeologies of colonialism that explore diverse and pluralistic social interaction, not just colonized/colonizer relationships, while all stressing the importance of archaeological and social context. This approach also provides a methodology that does justice to our understanding of social identities as multiple and

continually shifting and intersecting (e.g., Casella and Fowler 2005). Finally, this approach is one that takes material remains seriously. As Bruno Latour (2005) has argued, in the study of the social world we must begin by tracing associations, rather than investigating social forms *a priori* established to be relevant. He calls this the “first source of uncertainty”—there is no group, only group formation. He writes:

Either we follow social theorists and begin our travel by setting up at the start which kind of group and level of analysis we will focus on, or we will follow the actors’ own ways and begin our travels by the traces left behind by their activity of forming and dismantling groups. ... Their duty is not to stabilize—whether at the beginnings for clarity, for convenience, or to look reasonable—the list of groupings making up the social.” (Latour 2005:29)

I argue that tracing and elucidating past communities of practices is a methodological approach that—by emphasizing things and their relationships to processes of social learning and interaction—“follows the actors” in the sense advocated by Latour (2005) and avoids binary and normative categorization.

Chapter 4. The Spatial Structure of a Mission Community

This chapter is the first of four that substantively engages with the archaeology of Mission Santa Catalina de Guale. Here I explore the spatial organization of the mission, drawing on a suite of survey data in order to describe and interpret community organization. In particular I focus on the spatial layout of mission pueblo: the residential sector of the community where the neophytes lived outside of the central mission quadrangle. This serves two primary purposes: one substantive and one theoretical. The substantive purpose is to provide the spatial context for the analyses presented in the following three chapters, in which I discuss the distribution of architectural remains, ceramics, and glass beads in terms of this spatial reconstruction. The second, more theoretical, purpose is to situate this work within a structure that articulates with the practice-based approach to the archaeology of colonialism discussed in chapter three.

As I elaborate in that chapter, a practice-based colonial archaeology can both avoid the pitfalls of acculturation studies and help frame research questions around the intersections of diverse factional groups in colonial contexts. Indeed, as Lightfoot et al. (1998:201-202) have argued:

Change and persistence in multi-ethnic contexts pertaining to the construction of social identities may be best addressed by considerations of daily practices involving domestic life and the organization of space.... it is through daily practices—how space is structured, how mundane domestic tasks are conducted, how refuse is disposed of—that people both organize and make sense of their lives... The ordering of daily life may be observed in archaeological contexts by examining the arrangement and use of space in the built environment (both intramural and extramural areas), the organization of domestic activities (e.g., food preparation, cooking, tool production and maintenance), and the spatial pattern of refuse disposal.

Elsewhere I have discussed the relative lack of information concerning the spatial organization of mission pueblos in *La Florida* (Blair 2013; see also Thomas 1987; 1993b); here I discuss the archaeological surveys and excavations that help define the spatial picture of Mission Santa Catalina.

SITE LOCATION

To locate the site of Mission Santa Catalina de Guale the American Museum of Natural History initiated a regional archaeological survey of St. Catherines Island in the late 1970s, locating and testing sites through a random sample design transect survey that combined shell probing, shovel test pits, and small-scale excavations (see details in 1987; Thomas 2008a, 2008b, 2008c). The data generated by this survey, combined with evidence from previous excavations

conducted by Joseph Caldwell (1972) and Lewis Larson (Brewer 1985) at the Wamasee Head (9Li13) and Fallen Tree (9Li8) sites, successfully narrowed the potential location of Mission Santa Catalina to the vicinity Wamasee creek on the western margin of St. Catherines Island (see also Griffin 1965a, 1965b; Larson 1953); see figure 4.1.

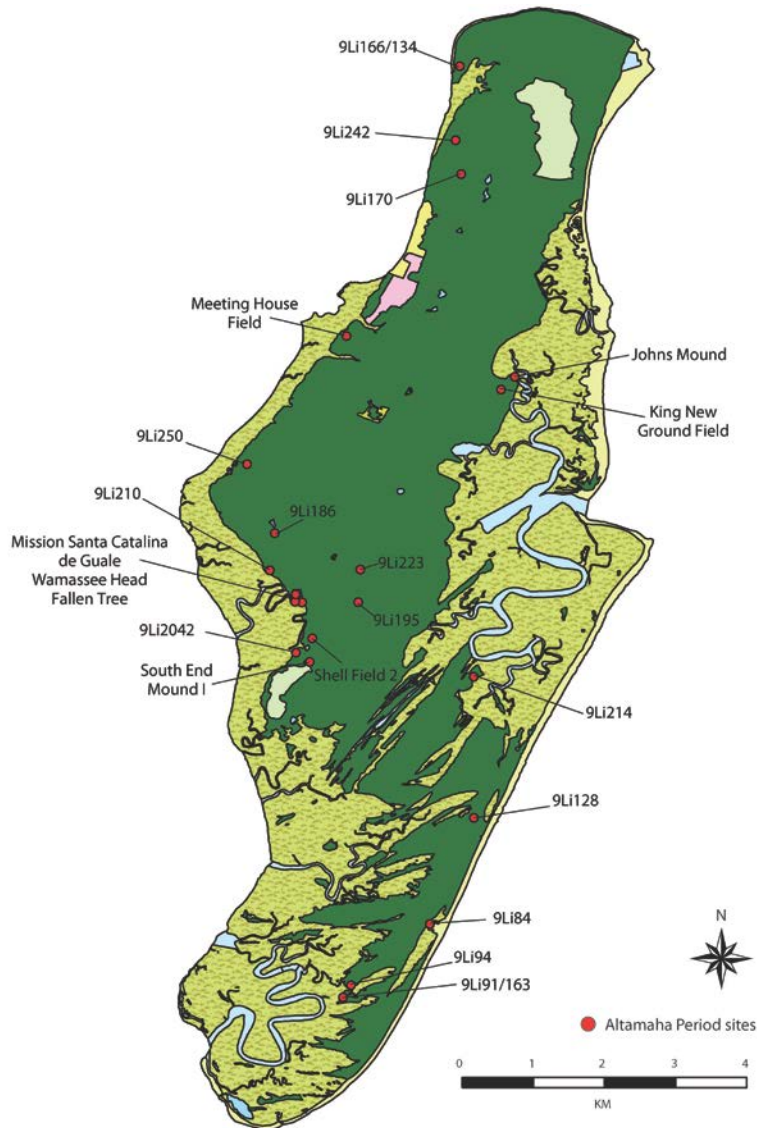


Figure 4.1. Location of Mission Santa Catalina de Guale and distribution of other Altamaha Period (A.D. 1580-1700) sites and isolated finds on St. Catherines Island (after Blair 2013: fig. 14.5 and Thomas 2008: fig. 32.14), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

Subsequent auger testing and geophysical prospection established the location of the central mission compound to the north of an unnamed freshwater tributary of Wamasee Creek (figure 4.2). This tributary currently drains Wamasee Pond, a freshwater pond enhanced for

waterfowl nesting habitat ca. 1949-1951 (Bishop, et al. 2007:75). Prior to the depletion of the Upper Floridan aquifer (and the enhancement of the pond), this tributary was fed by a natural artesian spring (Hayes and Thomas 2008) and provided a major source of freshwater at Mission Santa Catalina. The remnants of a “silted-in” stacked log dam that likely dates to the mission period is also still visible at the mouth of this tributary. Another, smaller, artesian fed drainage approximately 300 meters to north has generally been interpreted as the northern extent of the site.

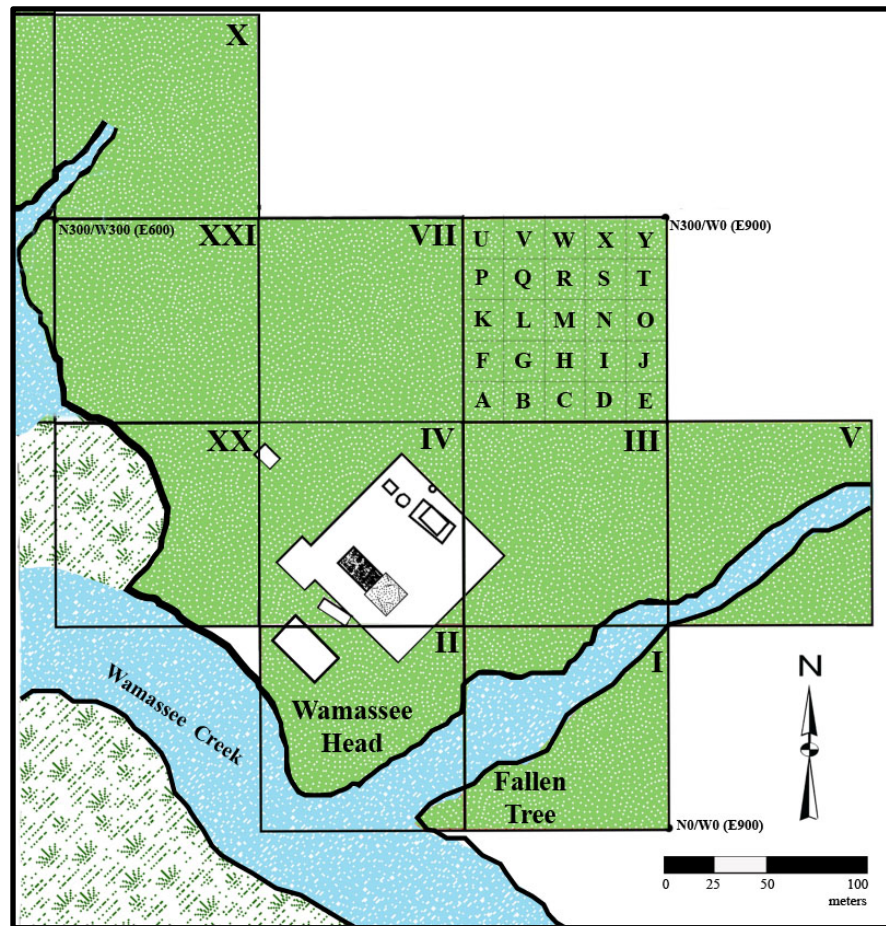


Figure 4.2. Location of Mission Santa Catalina de Guale, Wamassee Head, and Fallen Tree. Roman numerals designate 100 m x 100 m “Quads” and letters designate 20 m x 20 m “Blocks” (after Blair, Pendleton, and Francis 2009:133, fig. 15.7).

SITE LAYOUT

Archaeological excavations at Mission Santa Catalina, conducted by David Hurst Thomas and the American Museum of Natural History throughout the 1980s defined the general structure of the central mission quadrangle (Thomas 1987, 1988a, 1988b, 1993a, 2008a, 2008b, 2008c).

The mission complex itself (figure 4.3), likely surrounded by a stockade, consists of the church (*iglesia*), two friaries (*conventos*) built sequentially, one on top of the other, a 17th century kitchen (*cocina*), two wells, and a central plaza. The church is fronted by a shell covered *atrio*, and beneath the floor of the church a mission cemetery (*campo santo*) containing the remains of a minimum of 431 individuals was completely excavated (Larsen 1990; Saunders 1990; Thomas 1987, 1988a, 1993a, 2009b).

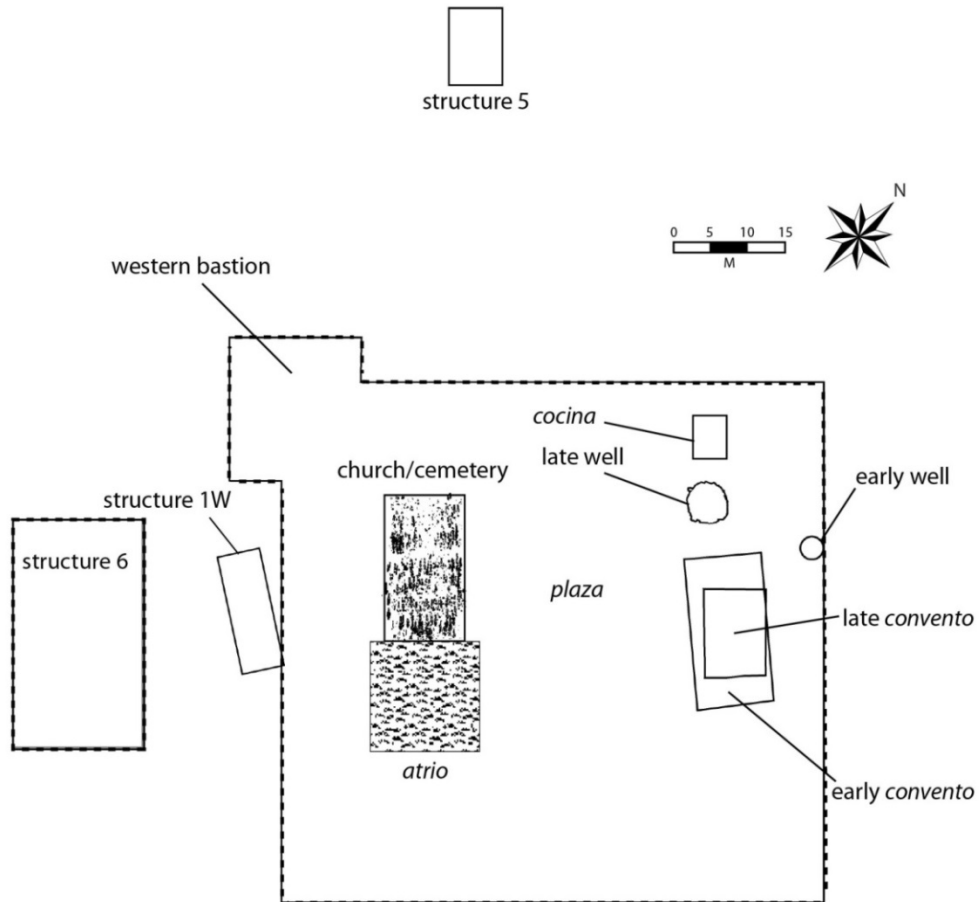


Figure 4.3. Map of Mission Santa Catalina de Guale quadrangle, oriented along the mission grid system, with “mission north” at the top of the page (Blair 2013:378, fig. 14.2), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

HISTORICAL EVIDENCE

While no historic maps exist of the pre-1680 mission on St. Catherines island, archaeological identification and interpretation of excavated features was aided by a 1691 map of Mission Santa Catalina de Guale de Amelia (Florida) (Saunders 1990; Thomas 1987, 1988a; 1993a, see figure 4.4). This site, from Amelia Island, Florida, was the post-1684 iteration of Mission Santa Catalina de Guale (Georgia) (Milanich and Saunders 1986; Saunders 1988, 1993; Worth 1995, 2009a, 2009b). Several researchers have suggested that this map represents a more generalized plan, or model, for Spanish missions in Florida, and thus is directly applicable to the earlier St. Catherines Island mission (Jones and Shapiro 1990; Nettles 1996; Saunders 1990, 1993; Thomas 1987, 1988a). Though no barracks have been identified, and the archaeological evidence for the stockade is equivocal, the relationship between church, plaza, kitchen, and convent identified archaeologically at Mission Santa Catalina matches the 1691 map very closely.

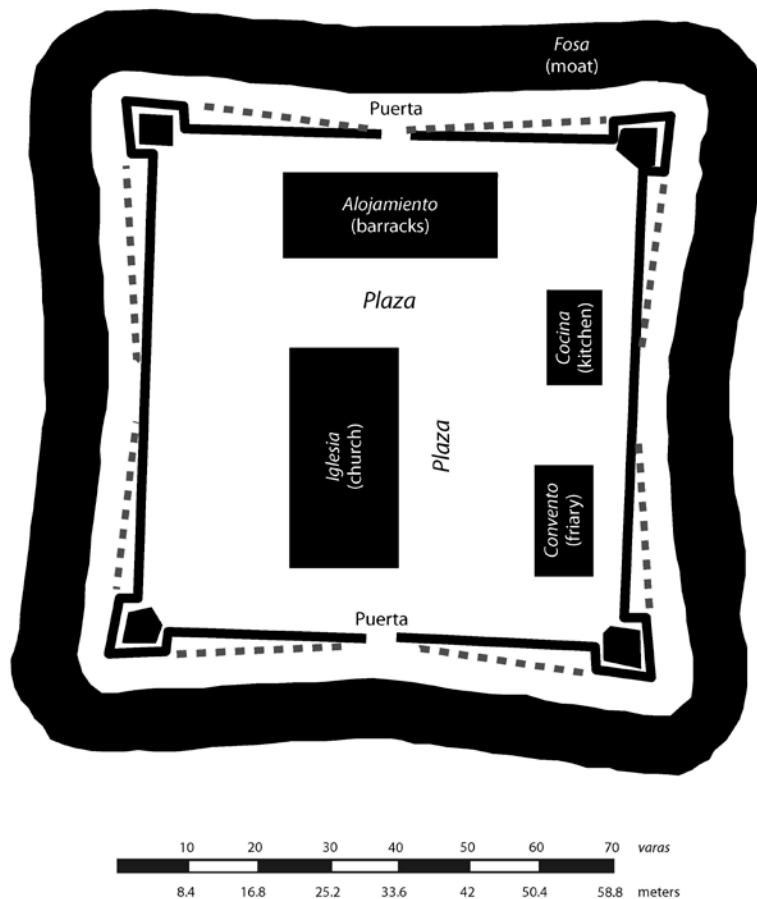


Figure 4.4. Redraft of the 1691 Mission Santa María map (from Blair 2013: fig. 14.4, see also Thomas 1987: figs. 7 and 8), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

Additional expectations of site structure can be derived from the 1573 Laws of the Indies, City Planning Ordinances, which mandated specific rules for the spatial arrangement of new communities, particularly the placement of the plaza and church (Crouch, Garr, and Mundigo 1982; Crouch and Mundigo 1977; Mundigo and Crouch 1977; Saunders 1990; Thomas 1987). It is unclear, however, how well these ordinances actually apply to Spanish Missions. Thomas (1987:75) has argued that “The laws of the Indies theoretically applied only to permanent civic settlements—not temporary missions or military encampments—but in practice there was little distinction between the two types of settlement in North America. The familiar ordinances were applied equally to urban centers and mission outposts (Crouch, et al. 1982:28; see also Bolton 1917:44).” In support of this argument, he has made two key points. First, noting the absence of Late Mississippian Irene ceramics from the mission excavations (Thomas 2009a:75), he has argued that Mission Santa Catalina was established on vacant land, a requirement of Ordinance 110. Second, he has argued that the archaeologically identified structures—the church, kitchen, and conventos—were clearly laid out along a rigid grid system, surrounding the central plaza and meeting the requirements of a number of other ordinances for shape, size and configuration (e.g., Ordinance 110, 112, 113, 114, 118, 120, and 128) (Thomas 1988a:105-110; 2009b:23-24).

An alternative interpretation is possible, and the recent documentation of substantial quantities of Late Mississippian Irene ceramics immediately to the south of the freshwater creek at the Fallen Tree site (Thomas 2009a:76, table 2.4 - section 1; see also chapter six), as well as the identification of an Irene Period cemetery at the site (Blair, et al. 2014; Keeton, et al. 2014; Napolitano 2014; Semon 2014; Thomas, Larsen, and Reitsema 2014), strongly suggest that Mission Santa Catalina was not established on uninhabited land. SETHA LOW (1993, 1995, 2000), has also made a strong argument that many of the features associated with Spanish communities in the new world in fact have many of their origins in pre-Hispanic architectural and spatial forms (e.g., plazas). She convincingly suggests that many of the rules established by the Laws of the Indies were actually appropriated by the Spanish from colonial settlements influenced by indigenous spatial conventions. Such features (e.g., central plazas) were common in Guale communities prior to contact. Given the uncertainty of the timing of the transition from Irene to Altamaha ceramics—that is, Altamaha ceramics might not be an entirely post-contact phenomena—there is still a distinct possibility that the spatial arrangement of Mission Santa Catalina, particularly the residential sector, primarily reflects an indigenous spatial order, rather than a Spanish one.

EYEWITNESS EVIDENCE

Several documented eyewitness accounts of Mission Santa Catalina exist. For example, in 1670 Maurice Mathews, an Englishman sailing from Barbados to Carolina, stopped at Santa Catalina to restock supplies and described it as “brave plantations with 100 working Indians”

(Mathews 1911:114).¹³ Two accounts—dating from shortly after the mission’s destruction in 1680— also relate the large size of the mission. In 1687 Captain Dunlop wrote: “...where the great Settlement was we see the ruins of severall houses which we were informed the Spaniards had deserted for ffear of the English about 3 years agoe; the Settlement was great, much clear ground in our view for 7 or 8 miles together” (Dunlop 1929:131). Similarly, Jonathan Dickenson, also observing the mission ruins, wrote that in 1696: “we got to the place called St. Catalena, where hath been a great settlement of Indians, for the land hath been cleared for planting, for some miles distant” (Andrews and Andrews 1985:70). Slightly later accounts—from 1736 (Hvidt 1980:39) and ca. 1720 (1720)—also emphasize the large extent of cleared land (see also Durham and Thomas 1978). These accounts are also consistent with Sandford’s (1911) description of Orista from 1666, which Jones (1978) synthesizes as characterizing a “dispersed town” with houses and maize fields scattered across an extensive area, rather than following a more nucleated settlement pattern.

ARCHAEOLOGICAL SURVEY

Considering these descriptions, emphasizing the spatial extent of the site, Thomas (2008c:1039-1043, fig. 32.14), has extensively described the distribution of other Altamaha period sites on St. Catherines Island, noting the general contraction of mission period components to the vicinity of Mission Santa Catalina. Indeed, he documents only 14 sites on the entire island having Altamaha or Spanish ceramics—most of which occur within 1 km of the mission. Figure 4.1 plots the location of all sites on St. Catherines Island from which either Altamaha ceramics and/or 16th-17th century European ceramics have been recovered. This figure differs slightly from that presented in Thomas (2008c:1040, fig. 32.14) in that it includes additional sites documented during the St. Catherines shoreline survey (DePratter, Paulk, and Thomas 2008), burial mounds with contact-era interments (Larsen and Thomas 1982; Larson 1998), as well as isolated finds and recent survey and excavation data (see also Blair 2013). Tables 4.1 and 4.2 summarize these mission-period sites and isolated finds.

But, even with these additional inclusions, the pattern is the same: mission-era ceramics on St. Catherines are almost entirely concentrated in the immediate vicinity of Mission Santa Catalina (see also Thompson, et al. 2013 for further discussion of this distribution). Indeed, if burial sites and sites where fewer than five Altamaha and/or colonial-era historic sherds were recovered are excluded, the picture becomes even more circumscribed. Altamaha ceramics have been recovered in small quantities at transect sites to the north of the mission: Site 9Li210, located in survey transect H-1, is primarily an Altamaha Period site, with site 9Li186, 500 meters further north, also potentially containing Altamaha ceramics. To the south, Shell Field 2 (9Li15)

¹³ Also of note in his account is the fact that Mathews and his party traded beads with the inhabitants of the mission, providing one of the few direct accounts for the likely origin of some of the numerous beads excavated at the site (Mathews 1911:114; see also chapter seven).

contains Olive Jar fragments and Altamaha sherds (Griffin 1965a; Thomas 2008b:582-583) as does the adjacent site 9Li2042.¹⁴ To the east of the mission, Altamaha ceramics have been found in low concentrations for almost the full width of the island—most recovered in a number of shovel test pits excavated along transect I-6 (Thomas 2008b:chapt. 20). Outside of this area, the only non-burial mound concentrations and non-isolate mission-era materials have been recovered at Little Sam Field (9Li242) and 9Li94 (DePratter, Paulk, and Thomas 2008; Thomas 2008c:1041). Very broadly then, I would suggest that the mission pueblo spans an area of roughly 1.5 km north/south and about 1.5 km east/west—much of this—particularly to the east—likely outlying fields, rather than habitation areas (see also Thomas 1993a).

Table 4.1. Distribution of Altamaha Period Sites on St. Catherines Island.

State no.	Common name	AMNH no.	Transect	Altamaha ceramics	All diagnostic ceramics	Non-diagnostic ceramics	Historic sherds	Total Aboriginal Ceramics
9Li003	South End Mound I	114	—	32	—	—	—	—
9Li008 ^a	Fallen Tree	441	I-6	345	382	920	3	1302
9Li013 ^a	Wamassee Head	208	I-6	2926	3374	1637	265	5011
9Li015	Shell Field 2	473	I-1	1	47	43	2 olive jar	90
9Li018	Johns Mound	110	—	30	—	—	—	975
9Li019	King New Ground Field	202	F-6	1	859	260	—	1119
9Li021	Meeting House Field	203	—	0	—	—	1 Columbia Plain	—
9Li084	Jungle Road 3	335	M-1	3	90	32	—	122
9Li091/163	—	342	N-1	0	38	83	6 El Morro; 1 annular ware	121
9Li094	—	345	—	13	13	75	—	88

¹⁴ Slightly further to the south, shovel test pits yielded several possible Altamaha sherds at South End Field (9Li194) (Thomas 2008b:598, table 20.5) and Griffin (1965a:9) reported Altamaha ceramics from Shell Field 1, and suggested that it might be an “outlying portion” of the mission settlement.

9Li128	—	379	L-6	1	65	5	—	70
9Li166/134	—	385	A-1	2	7	2	—	9
9Li170	—	411	C-6	2	—	—	—	58
9Li186	—	430	H-6	92	176	34	—	210
9Li195	South New Ground Field 7	443	I-6	3	4	30	—	34
9Li210	—	475	H-1	63	98	187	—	285
9Li214	Cracker Tom Hammock	483	J-6	4	70	63	—	133
9Li223	South New Ground Field 4	492	H-1	1	26	20	—	46
9Li242	Little Sam Field	517	B-1	21	30	30	—	60
9Li250	—	525	G-6	2	57	7	—	64
9Li274	Mission Santa Catalina de Guale	600	I-6	—	—	—	—	—
9Li2042	—	663	—	Present	—	—	1 olive jar	—

^aThe ceramic counts reported here from these sites only include sherds recovered in the transect survey excavations (Thomas 2008b).

Table 4.2. Distribution of Altamaha Period Isolates on St. Catherines Island.

Shovel test	Transect	Closest site	Note
31	F-6	40m from 9Li178	1 Altamaha stamped
50	G-6		1 Irene complicitaed or Altamaha Line Blocked and a glass fragment
1	I-6	associated with 9Li8/13	1 Irene/Altamaha punctated rim
6	I-6	associated with 9Li8/13	1Altamha Incised, 1 Altamaha stamped or Irene
17	I-6	60 m to 9Li196	1 Atamaha or Irene stamped
21	I-6	45 m north of 9Li193	1 Altamaha stamped
22	I-6	25m south of 9Li192	1 Altamaha Line Blocked
23	I-6	17m north of 9Li192	1 Altamaha Incised and punctated
28	I-6	9Li190	1 Altamaha

29	I-6	9Li190	3 Altamaha
7	J-6	9Li194	1 Irene/Altamaha
16	J-6	9Li194	2 Irene/Altamaha (1 decorated)

Lewis Larson (1978:132) described contact period Guale settlements (his Sutherland Bluff Complex) as follows:

The Sutherland Bluff [Guale/Altamaha] villages, like those of their pre-Spanish Guale ancestors, were located along the tidal creeks and rivers. These sites present a different picture from the Pine Harbor [pre-contact, Irene] sites. The numerous shell middens of the earlier sites are absent during the Spanish period—not that shell was no longer present in the middens, rather the low moundlike heaps were not now built. The Sutherland Bluff shell seems to have scattered over the entire site in rather an even layer. Perhaps, as evidence from the Harris Neck site seems to indicate, the shell was deposited along the edge of the site bordering the marsh or river¹⁵. One has the feeling that, quantitatively, the amount of shell on the sites is much smaller than that on Pine Harbor sites.

But, beyond Larson’s impressionistic observation, each of the lines of evidence I just discussed—historical maps, eyewitness accounts, and archaeological data—emphasizes either the location and extent of 17th century communities, or the plan of the mission quadrangle. We still have little archaeological data that describes the actual physical layout of a mission pueblo.¹⁶ That is, because most archaeological work has focused on the mission quadrangle we have limited understanding of the spatial layout of the residential sector of the community where the neophytes resided. The most detailed descriptions of Guale mission communities, in fact, are primarily drawn from considerably limited ethnohistoric and archaeological data and are somewhat, and openly, speculative (Saunders 2000a, 2000b; Thomas 1987, 1988a, 1988b, 1990, 1991, 1993a, 2011a; Worth 2004a). But, almost certainly, as described by Thomas (2009a:72), the mission pueblo likely consisted of rectangular structures, separated by streets, and perhaps divided into neighborhoods, as well as a ball court and a council house.

In the next several sections I discuss the recent history of surveys conducted at Mission Santa Catalina de Guale, reviewing the multiple auger, topographic, geophysical, and pedestrian surveys that have occurred. Each of these surveys was conducted and organized using the AMNH “Quad and Block” system imposed on the Santa Catalina landscape. Quads consist of 1 ha (100 x

¹⁵ However, more recent work at Harris Neck (Braley, O’Steen, and Quitmyer 1986:32) has described middens as “discrete,” and “compact and well circumscribed,” in addition to having areas of sheet midden. The areas of sheet midden however, only yielded sand tempered or undiagnostic sherds—seemingly pre-dating the mission-era deposits.

¹⁶ But see Thompson et al. (2013) for a discussion of post-contact Guale land use on a regional scale.

100 meter) squares, subdivided into 25 20x20 meter blocks. Quads were numbered sequentially using roman numerals, and blocks were lettered A to Y. Figure 4.2 shows the Quad and Block survey grid configuration used at Mission Santa Catalina (Thomas 1987:142-143, fig. 49). Following this description of each of these surveys, I conclude this chapter with an integrated and synthetic model of the mission pueblo layout that incorporates data from each of these surveys, defining five “neighborhoods” that frame the analysis in the subsequent chapters.

AUGER SURVEYS AT MISSION SANTA CATALINA

Following the completion of the St. Catherines Island regional transect survey and the successful identification of dense mission-era deposits in the vicinity of Wamassee Creek, the AMNH survey strategy shifted from regional to intra-site. After an aborted random test pit approach (see chapter five), a power auger survey, modeled on that conducted by Deagan (1981) in downtown St. Augustine, was conducted across nine hectares of the site (Thomas 1987:114-116, fig. 25 and 27; 1993a:6-7). While primarily designed to narrow the search area for the location of the mission church and central quadrangle, the ceramic distributions generated by the auger survey also provided excellent preliminary data on site structure across much of the mission settlement. Based on these data Thomas (1987:114) suggested that the mission may have been divided into discrete neighborhoods, divided by walls and fences along which refuse accumulated. Figure 4.5 show the distribution of mission-era ceramics recovered during this survey. Table 4.3 lists the survey parameters.

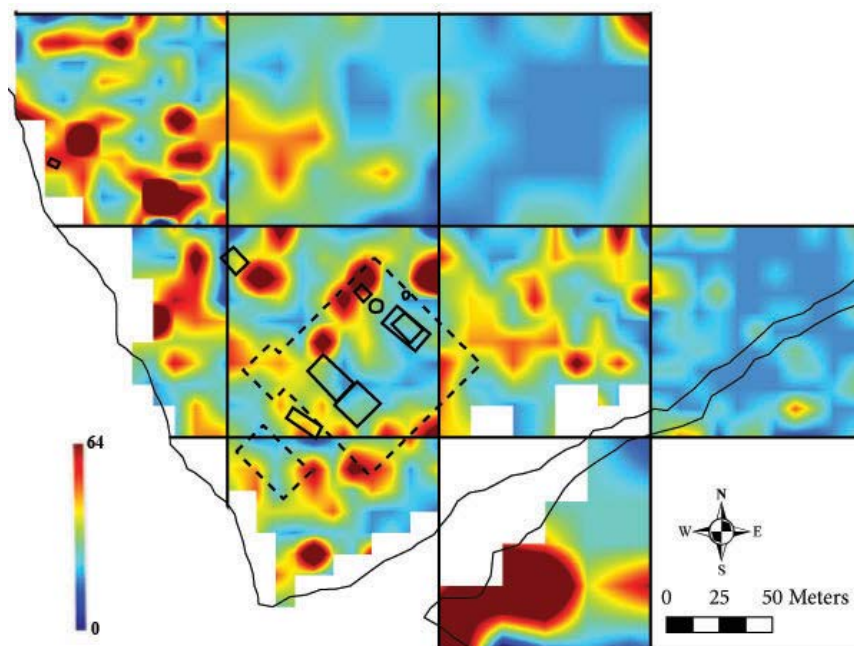


Figure 4.5. Density map of mission-era ceramics at Santa Catalina, based on raw ceramic counts from the 1980 power auger survey (after Thomas 1987:fig. 27). The image is a smoothed image pixel map generated in Archaeofusion, overlaid with the outlines of excavated structures.

Table 4.3. Parameters for the 1980 and 1988-1992 Power Auger Surveys at Mission Santa Catalina

Quad	Sample Interval (1980 Survey)	Auger Bit size (1980 Survey)	Sample Interval (1988-1992 Survey)	Auger Bit (1988-1992 Survey)
I	20 m	20 cm	10 m	20 cm
II	10 m	35 cm	10 m	20 cm
III	10 m	35 cm	10 m	20 cm
IV	10 m	35 cm	5 m	35 cm
V	10 m	35 cm	NA	NA
VI	20 m	35 cm	NA	NA
VII	20 m	35 cm	10 m	20 cm
XX	10 m	35 cm	5 m	20 cm
XXI	10 m	35 cm	5 m	20 cm
XXV	NA	NA	10 m	20 cm
XXVII	NA	NA	10 m	20 cm

Following the success of the initial auger survey—both as a tool for locating the central mission quadrangle and for initially projecting site structure of the mission pueblo—a second auger survey was initiated in 1988. This second survey was designed to both expand the survey area, as well as to refine some of the survey parameters. Particularly, in addition to recording artifact counts, artifact weights and the weight of marine shell from each auger test were also recorded. Table 4.3 details the parameters for this second auger survey,¹⁷ while figures 4.6 and 4.7 show the distribution of mission-era ceramics (by weight) and marine shell generated during this second systematic auger survey. The data generated by this second auger survey largely parallels that generated by the first survey, though the increased sample interval and shell distributional data significantly refines our understanding of the distribution of midden deposits across the site.

¹⁷ For this second auger survey the auger bit size varied between Quad IV and the rest of the areas surveyed. Because of this, artifact counts and weights from Quad IV were reduced by a ratio of 0.2363, based on the mean difference in soil excavated using the different auger bits (Jimenez 1993).

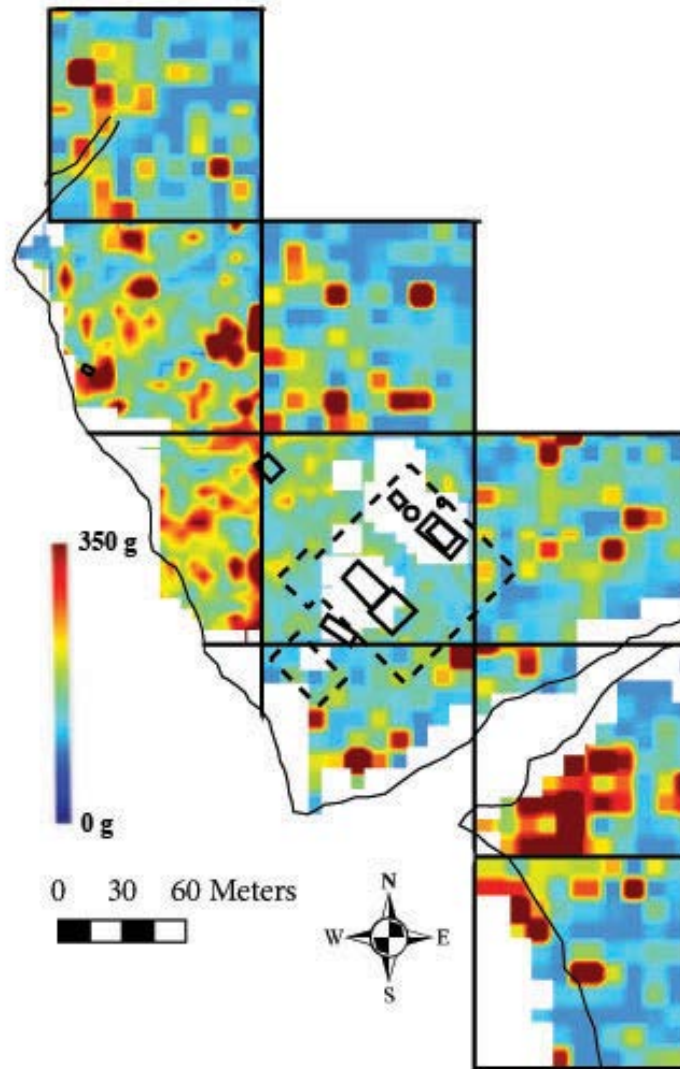


Figure 4.6. Density map of mission-era ceramics at Santa Catalina, based on normalized ceramic weights from the second (1988-1992) power auger survey. The image is a smoothed image pixel map generated in Archaeofusion, overlaid with the outlines of excavated mission structures.

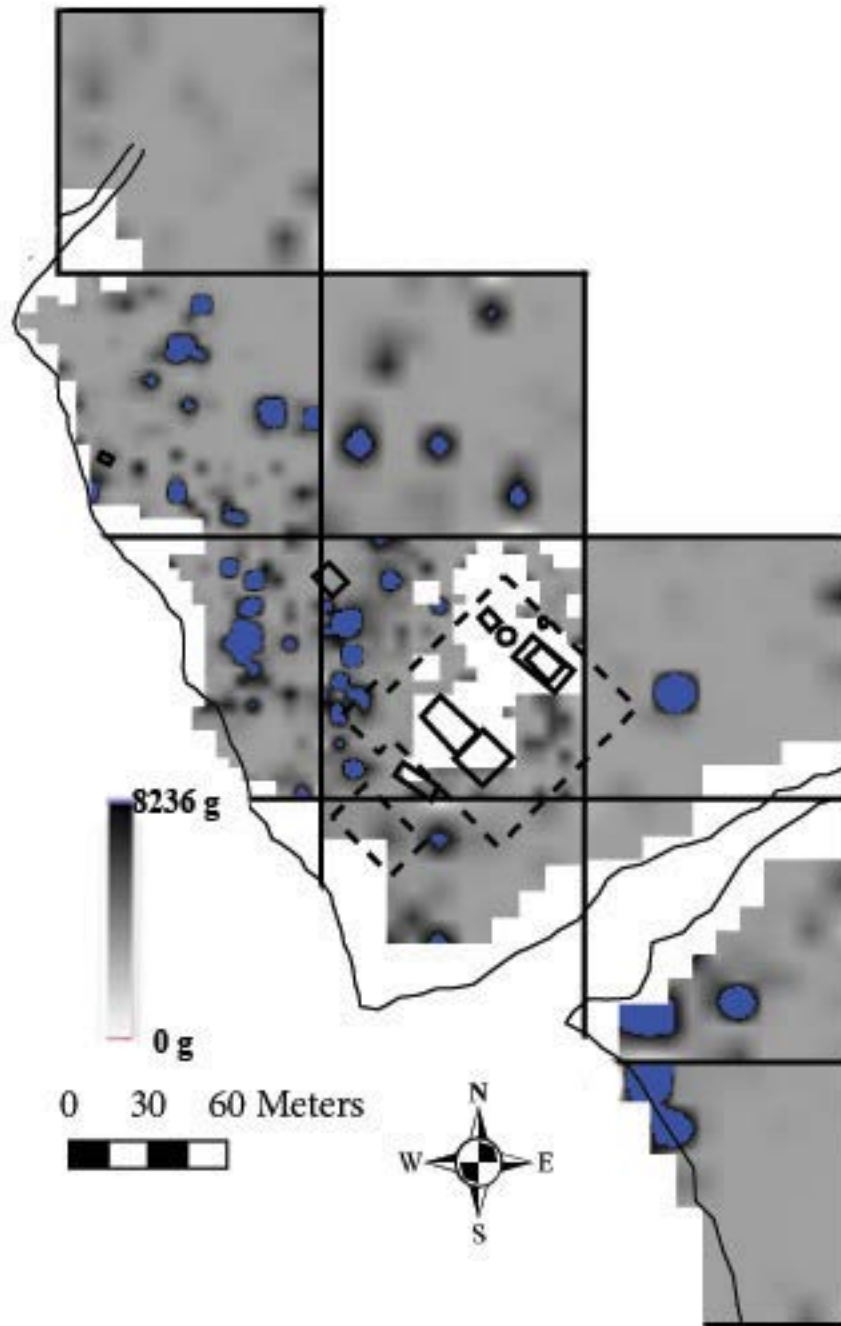


Figure 4.7. Density map of marine shell at Santa Catalina, based on normalized shell weights from the second (1988-1992) power auger survey. The image is a smoothed image pixel map generated in Archaeofusion, overlaid with the outlines of excavated mission structures.

TOPOGRAPHIC MAPPING

At the same time that the second auger survey was being conducted, detailed topographic mapping was also completed across much of the Santa Catalina site. Data were collected with a

Leitz SET 4A total station at systematic two meter intervals across the entire site. Elevation data was collected in reference to the site datum located at N200 E700, arbitrarily given a reference elevation of 50 meters. In addition to collecting elevation data, each survey point was also tested with a steel probe in order to detect subsurface shell deposits (see Thomas 1987:110). Each survey point was subsequently coded in the data collector (Leitz SDR24) for the presence of shell, elevation changes due to tree root systems, and other topographically and archaeologically relevant information. Figure 4.8 is a greyscale elevation map. The most obvious topographic features evident are modern roads, large shell middens, and a likely antebellum field boundary ditch paralleling the northwestern bank of the freshwater creek.

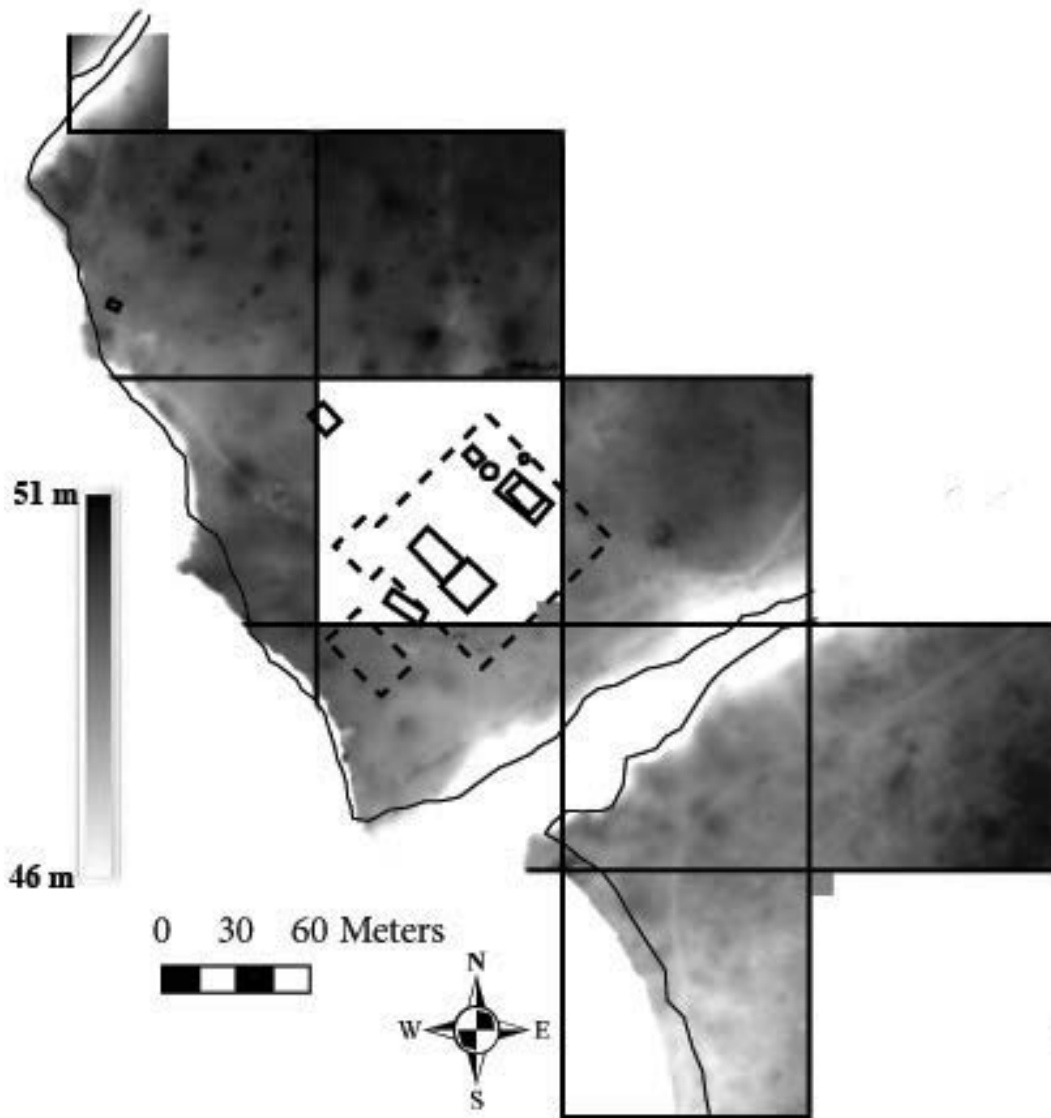


Figure 4.8. Greyscale topographic map of Mission Santa Catalina. Image is a smoothed image pixel map generated in Archaeofusion, with elevations ranging from 46 meters to 51 meters. All

elevations are in reference to survey benchmark at N200 E700, arbitrarily set at 50 meters elevation.

SHALLOW GEOPHYSICS

Geophysical survey has been an important methodological tool for archaeologists working on the Georgia coast for a considerable period of time (e.g., Baker 1982; Blair 2013; Elliott 2009; Elliott and Honerkamp 2014; Garrison, Baker, and Thomas 1985; Keene 2002; Mahar 2010, 2013; Shapiro and Williams 1984; Thomas 1987; Thompson 2006; Thompson, et al. 2004), and for the last 30 years geophysical surveys have played a critical role in archaeological and geological research on St. Catherines Island. These surveys have included magnetometry, electrical resistivity, conductivity, and ground penetrating, though here I primarily limit my discussion to magnetic gradiometry and electrical resistivity. The technical details of how these methods work have been well covered in numerous places (e.g., Aspinall, Gaffney, and Schmidt 2009; Clark 1997; Conyers 2012; Gaffney and Gater 2003; Johnson 2006; Milsom 2003; Oswin 2009; Schmidt 2013; Wiseman and El-Baz 2007). In this discussion, rather than recovering this terrain, I limit my discussion to survey specific methodological parameters.

While many of these surveys have had notable successes as prospection methods, much of this research has also proceeded with an agenda specifically designed to link the “technology into the mainstream of archaeological theory” (Thomas 1987:64). Thomas (1987:64-67) has forcefully argued that geophysical surveys must be integrated into archaeological middle-range theory building—specifically linking archaeological concepts with observed phenomena. Somewhat similarly, Thompson et al. (2011) argue for an “inquiry-based geophysics” in which the theoretical justification for an archaeological project must be directly connected with the geophysical methods employed (see also Thompson and Pluckhahn 2010). In their example they suggest that shallow geophysical techniques can be linked with approaches such as persistent place grounded in landscape archaeology (e.g., Dooley 2004, 2008; Schlanger 1992; Thompson 2010). Kvamme (2003) discusses the potential for geophysics to be linked to landscape based approaches due to the increased survey coverage possible because of the increasing speed of newer geophysical instruments and the increased processing power of modern computers. At Mission Santa Catalina, such enhanced coverage—if not broad enough to facilitate a landscape approach—can allow for a “community study approach” (e.g., Cusick 1995) and provide the type of resolution necessary to facilitate comparative analyses of households and neighborhoods.

At Mission Santa Catalina the history of geophysical surveys can be roughly divided into three iterations, occurring in the 1980s, 1990s, and at present, each of which can be explicitly articulated as an “inquiry-based approach” (Thompson, et al. 2011; Thompson and Pluckhahn 2010). The first iteration, as briefly discussed above, had three specific goals: 1) locating and defining the mission complex; 2) defining the configuration of unexcavated structures and features, and 3) employing remote sensing as a tool for mid-range theory building (Thomas

1987). The second iteration, discussed in Thomas (1993a), had similar goals, but was additionally oriented towards specific questions about the spatial layout of the Guale pueblo. The most recent iteration, conducted as part of this dissertation research, has the same goals as both of the previous series of surveys, but with a theoretical focus transformed by recent developments in archaeologies of colonialism, household archaeology, and guided by new insights emerging from ethnohistoric research (Blair 2013).

Early Geophysical Surveys at Mission Santa Catalina¹⁸

MAGNETOMETRY: The very first shallow geophysical survey at Mission Santa Catalina occurred in May of 1981. At this time, using a Geometrics Proton Magnetometer, Model 806A, Ervan Garrison and James Tribble conducted a magnetometer survey of Quad IV at 2 meter intervals (Baker 1982; Garrison, Baker, and Thomas 1985; Thomas 1987). Initial, field testing of high magnitude anomalies resulted in the identification of three mission era structures: the church (St. 1), the *cocina* (St. 2), and a barrel well (St. 3). Due to the successes of this survey, coverage was expanded to portions of 9 hectares (Quads I, II, III, IV, VI, VII, XX, XXI, and XXII) (Garrison, Baker, and Thomas 1985; Thomas 1987:122, fig. 34). In this second iteration of early magnetic survey a Geometrics G-816 proton magnetometer was employed using similar field procedures. These data, including a re-survey of Quad IV using the latter instrumentation, is what is presented in Thomas (1987) and Garrison et al. (1985). Based on these initial surveys, several initial conclusions were drawn about site structure at Mission Santa Catalina and some middle range theories, equating specific magnetic signatures with their archaeological correlates, were proffered (Thomas 1987:118-126; fig. 132-137).

RESISTIVITY: In May of 1982 an electrical resistivity survey was initiated at Mission Santa Catalina when Mark Williams and Gary Shapiro, using a Williams Model 103 resistivity meter (Williams 1984), surveyed portions of Quad IV using a double dipole probe configuration (Thomas 1987:126-134). The initial results were so successful that the survey was expanded to Quad IV in its entirety, and some quite extraordinary conjectural interpretations of site structure across Quad IV were generated (Shapiro and Williams 1984; Thomas 1987:fig. 42-43).

GROUND PENETRATING RADAR: In April and May of 1984, Red-R Services conducted a Ground Penetrating Radar (GPR) survey within Quad IV (Thomas 1987:134-141). They used an SIR System 8, manufactured by Geophysical Survey Systems, Inc., with a 500 megahertz antenna, an analog control unit, and a gray scale printer/recorder. This approach produced an average penetration of 2 m below the ground surface, but data capture was a major problem because the only available result was the physical printout produced on site. Despite some initial success—identifying potential palisade and bastion architectural features to the northwest of the mission

¹⁸ Here I only briefly discuss the early geophysical surveys at Mission Santa Catalina; these have been covered in considerable detail by others (Baker 1982:95-100; Garrison, Baker, and Thomas 1985; see especially Thomas 1987).

quadrangle)—the resulting profiles remain mostly unanalyzed (Thomas 1987:140). Since these GPR surveys took place before the development of time slice software (Conyers 2010; Conyers and Cameron 1998; Goodman, Nishimura, and Rogers 1995), they provide little broad-scale interpretable imagery.

At roughly the same time these “first generation” surveys were taking place at Mission Santa Catalina de Gualte (and the Pueblo North and East sectors), similar geophysical exploratory surveys were occurring south of the freshwater creek at the Fallen Tree site (9Li8) (May 2008). In 1983 May conducted limited GPR surveys at Fallen Tree; these were most successful in identifying the extent of shell middens (May 1985). May (1983, 2008) also completed roughly two thirds of a hectare of magnetometry survey at Fallen Tree, using similar instrumentation and protocols to those described above (portions of Quads I, II, and XXVIII) . These surveys were hindered by the large quantity of modern metal debris scattered across the site (May 2011, personal communication) but provided some assistance in placing excavation units.

MARINE GEOPHYSICS: A maritime geophysical survey was also undertaken to seek marine dumps, docks, shipwrecks, and careening stations in the shallow creeks and intertidal marshland at Wamassee Head and Fallen Tree (Anuskiewicz 1989). This survey used paired proton magnetometers operating in “differential mode,” one serving as a mobile unit and the other measuring diurnal variation at a base station. A metal detector was also employed to detect non-ferrous metals that might be associated with nautical features. Anuskiewicz (1989) also conducted a limited marine magnetometer survey of navigable waterways surrounding Mission Santa Catalina. While modern wrecks and ferrous debris was detected, no 17th-century nautical features were observed.

GEOPHYSICAL SURVEY ON ST. CATHERINES ISLAND IN THE 1990S

As was strongly articulated by Thomas (1987), the initial geophysical surveys at Mission Santa Catalina were not conceived merely as prospection tools, but rather they were intended as tools for delineating site structure and building mid-range theories linking geophysical signatures and archaeological features. As part of this vision, and building upon a belief in multi-technique geophysical methods, beginning in the early 1990s a second iteration of geophysical survey with new instrumentation and data processing techniques were initiated at Mission Santa Catalina (Thomas 1991, 1993a). This second phase of geophysical research was designed to both help delineate the broader site structure of Mission Santa Catalina, as well as test the utility of additional geophysical techniques (e.g., electrical conductivity). Based upon preliminary testing at the Late Mississippian Meeting House Field site (9Li21) using paired proton precession magnetometers, a fluxgate gradiometer, and an EM conductivity meter, as well as testing of 1200 m² in Quads IV and XX at the mission pueblo using conductivity and gradiometry, a broadscale geophysical survey of the mission pueblo was instituted using paired proton precession

magnetometry and electrical resistivity (Weymouth 1990a, 1990b, 1991, 1992, n.d.). During this time approximately 7.3 hectares (Quads I, II, III, IV, VII, XX, XXI) were surveyed using a Geoscan RM-15 resistivity meter (twin-probe array, 1 meter sample and traverse interval, 0.5 meter probe separation) and approximately 2.3 hectares of magnetometry data were collected using two Geometric 856 magnetometers.

While these surveys were promising, and in fact were highly successful in terms of prospection—directly leading to the partial excavation of two mission period structures (St. 5 and 6, see chapter five)—because of the lack of powerful geophysical data processing software and modern mapping software, the potential for these surveys to reveal large scale community patterning was significantly limited. Additionally, Weymouth (1992) correctly noted that while the resistivity surveys were particularly good at identifying broad-scale patterns, the magnetometry data appeared to be limited to identifying metal point features—either from the colonial period or modern trash. This latter conclusion, however, is partially due to a limitation of the sampling interval used in the survey. While the Geometric 856 instrument was quite sensitive (± 0.2 nT) the sampling interval (1 meter) was not nearly fine-grained enough to identify low-magnitude features or identify low-magnitude broad-scale patterning.

Recently, Hayden (2007) returned to these data, initiating a re-examination of the surveys conducted in the early 1990s. In her work she was able to resurrect large portions of the resistivity data, transforming unformatted data files (stored on floppy disks) into interpretable xyz data spreadsheets, which she subsequently imported into Surfer for data visualization. But, due to the difficulties inherent in attempting to utilize a mapping software as a substitute for a geophysical processing software (see Keene 2002), she found many edge discontinuities in the data due to the fact that the pueblo surveys had occurred over several years and had employed varying instrumentation settings (primarily determined by varying soil moisture conditions). Additionally, she also found much of the magnetic data to be stored in now un-readable file formats, though, as noted above, these data had previously been largely useful only as a means of identifying specific metallic point features.

21ST CENTURY GEOPHYSICAL SURVEY ON ST. CATHERINES ISLAND

Based on Hayden's success in "decoding" the resistivity data collected in the 1990s, and the impossibility (and limited utility) of recovering the second generation magnetometry data, beginning in 2009 I began a new round of geophysical surveys, designed to update and address the "gaps" in the previous work. First, while it was clear that magnetometry had great potential at the site (Garrison, Baker, and Thomas 1985; Thomas 1987), it was still impossible to clearly identify broad-scale, low-magnitude magnetic anomalies from the site. As was evident from the second generation survey (see Weymouth 1992), significantly greater sampling density was required for the benefits of magnetic survey to be truly reaped. Therefore, I began conducting additional magnetic surveys across all quads of the mission pueblo using a Geoscan FM256

fluxgate gradiometer (0.1 nT resolution), with a sample interval of 0.125 meters and a traverse interval of 0.5 meters. Over several field seasons I surveyed approximately 8.5 hectares using this instrument configuration at the mission pueblo, including Fallen Tree. Figure 4.9 presents these data.

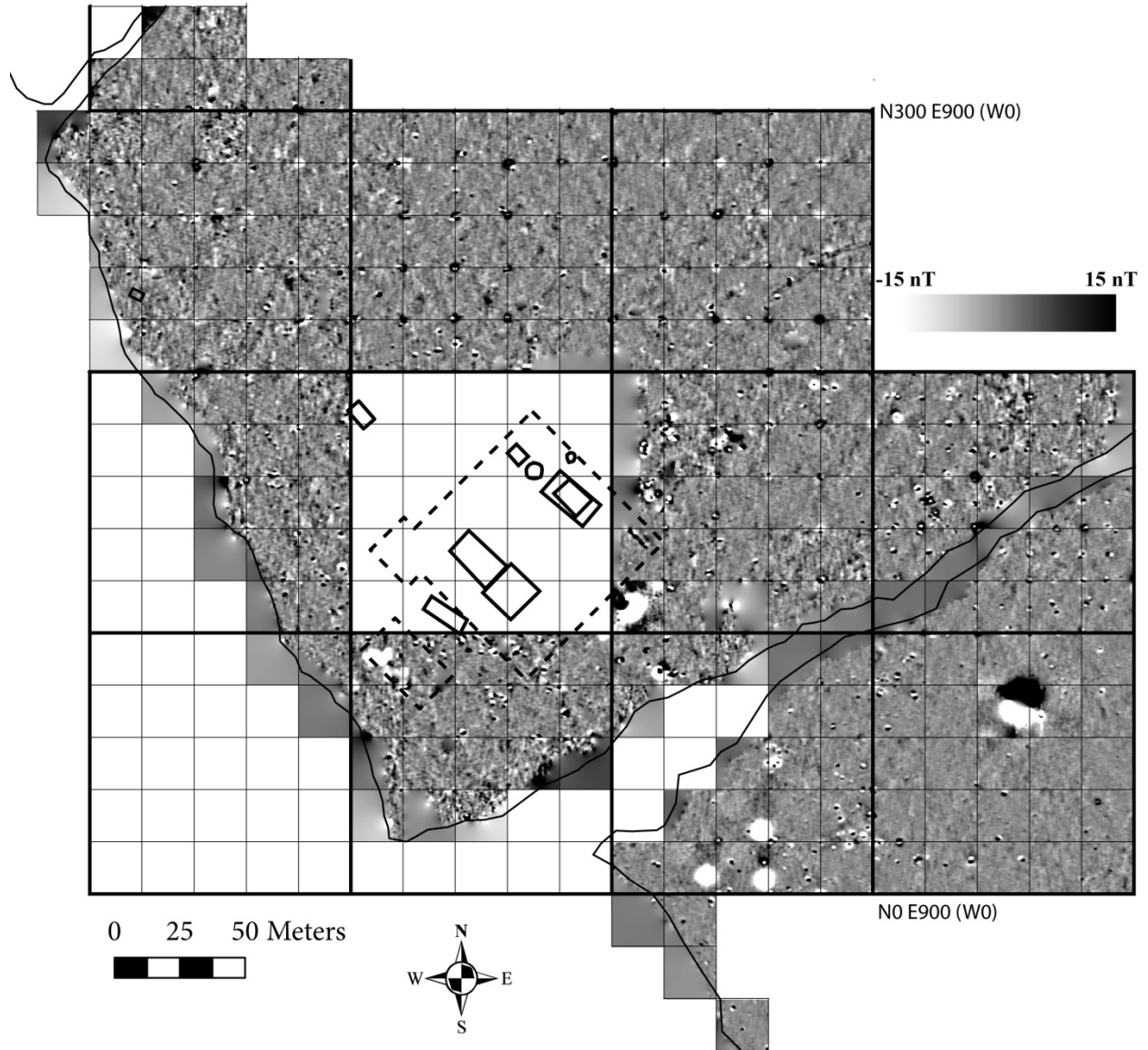


Figure 4.9. Magnetic gradiometry survey data from Mission Santa Catalina de Guale, plotted from -15 nT to 15 nT.

The second stage in the re-initiated geophysical research involved importing the 1990s resistivity data [primarily de-coded by Hayden (2007)] into a modern geophysical processing software. Importing the old data into a geophysical processing software allowed despiking, edge-matching, and spatial filtering to be applied to the data to remove the majority of edge

discontinuities—enabling broad-scale patterns to become increasingly discernable across a uniform data-set.

The other component of the updated resistivity survey included expanding the survey area to include portions of the site not surveyed in the 1990s (i.e., Quads V and VI and small portions of Quads X, and XXVI). All recent surveys were conducted using a Geoscan RM-15D (with a multiplexor) with a 0.5 meter sample and traverse interval using a parallel twin-probe array with 0.5 meter probe separation.

Figure 4.10 presents the combined resistivity data, including the surveys conducted in 1982 (Quad IV), the early 1990s, and from 2009-2013, presented together to enhance the ability to identify broadscale spatial patterning across the site. The most significant features in the resistivity data are the discrete shell middens that manifest as distinct, generally circular to oblong, areas of low resistance.

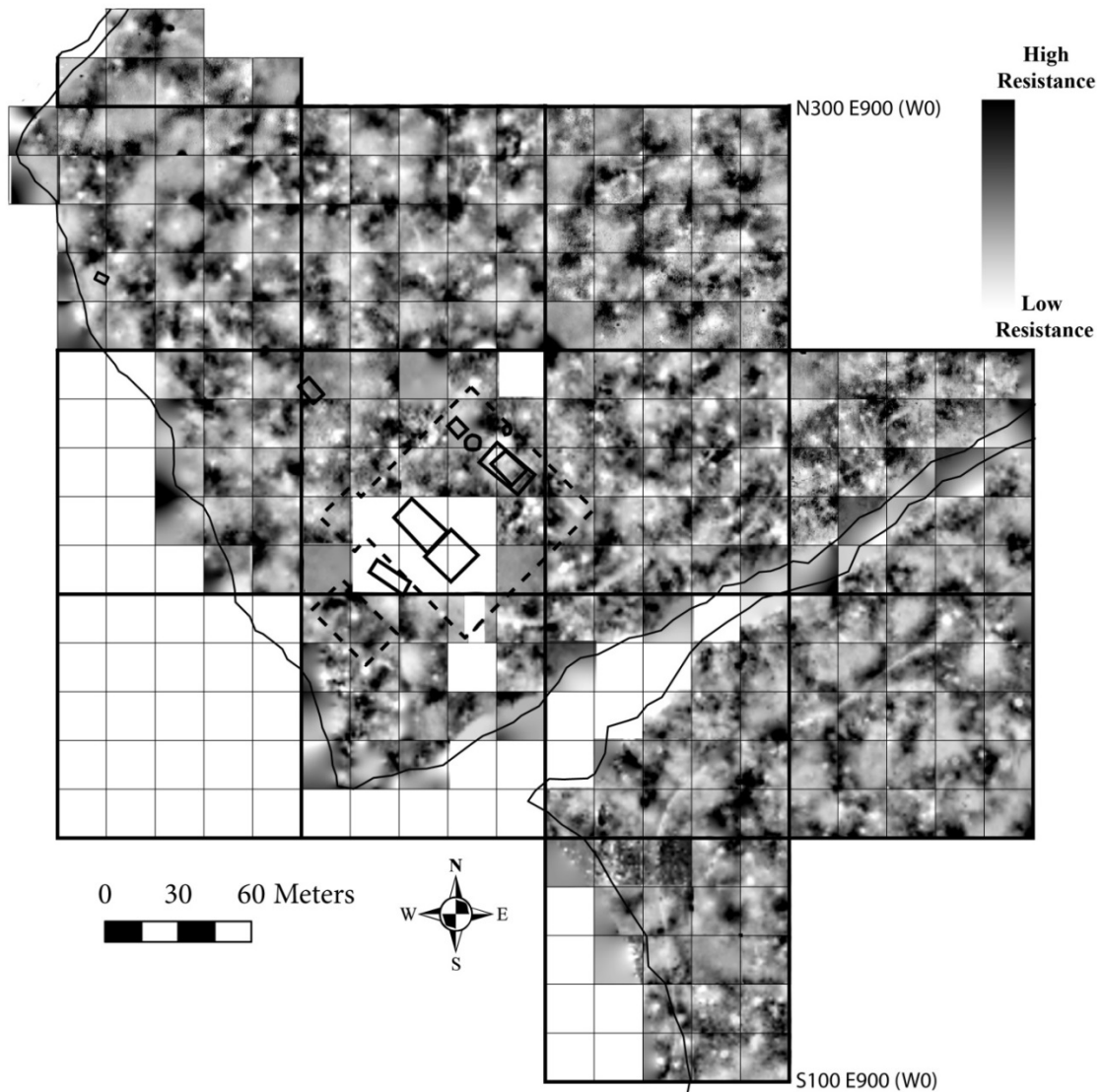


Figure 4.10. Electrical resistivity survey data from Mission Santa Catalina.

PEDESTRIAN SURVEYS

Finally, I use data from two pedestrian surveys in the analysis of the Santa Catalina pueblo. The first survey, conducted in the summer of 2010 was a shoreline survey of the western margin of St. Catherines Island. Walking from South End Dock to Meeting House Field, I used a Trimble GeoXT GPS to map every exposure of eroding shell midden. This survey served two functions. First, it provides a datum to monitor the ongoing erosion of the western margin of St. Catherines that threatens archaeological sites as sea-level rises and storm surges increase (Meyer 2013; Meyer, et al. 2013). Secondly, it provides spatial data on the specific locations of visible midden deposits, which I correlated with the other survey data (e.g., geophysics, auger) in order to test and confirm the midden “signatures” generated by the other techniques.

The second pedestrian survey was designed to explore the northern portion of the mission pueblo and establish the density of archaeological deposits between the northern extent of the geophysical, topographic, and auger surveys at Mission Santa Catalina and the primarily Altamaha period site 9Li210. The survey was conducted using the same parameters as the original AMNH probing survey—a team of archaeologists spaced at 10 meter intervals walked systematic north/south transects and used a metal rod to probe (every 2-3 meters) for buried shell deposits (Thomas 1987; 2008a:303-304). All deposits encountered were delineated and mapped using a Trimble GeoXT GPS.

During this survey continuous midden deposits were encountered all the way to site 9Li210. Though no subsurface testing was conducted as part of this survey, limited surface collection strongly suggests that the majority of these deposits date to the mission-era, though future archaeological work will need to be done to confirm this point.¹⁹ Midden deposits also extended continuously from the western shoreline of the island eastward to a major soil transition zone. Figure 4.11 plots the results of this survey on top of the USDA soil map of St. Catherines Island. Midden deposits in this area closely follow the transition between Foxworth and Echaw/Centenary and Rutledge soils. As Thomas (2011b:53-55) has pointed out, Rutledge soils exist in areas of former wetlands previously sustained by artesian springs and the now depleted Floridan aquifer (see also Hayes and Thomas 2008; Looper 1982). Midden deposits appear to closely track the edge of this former wetland.

¹⁹ My suspicion is that while the majority of these midden deposits are mission-era, the particularly large and amorphously shaped deposits located at the northern extent of the site (figure 4.11) are likely earlier Woodland period deposits.

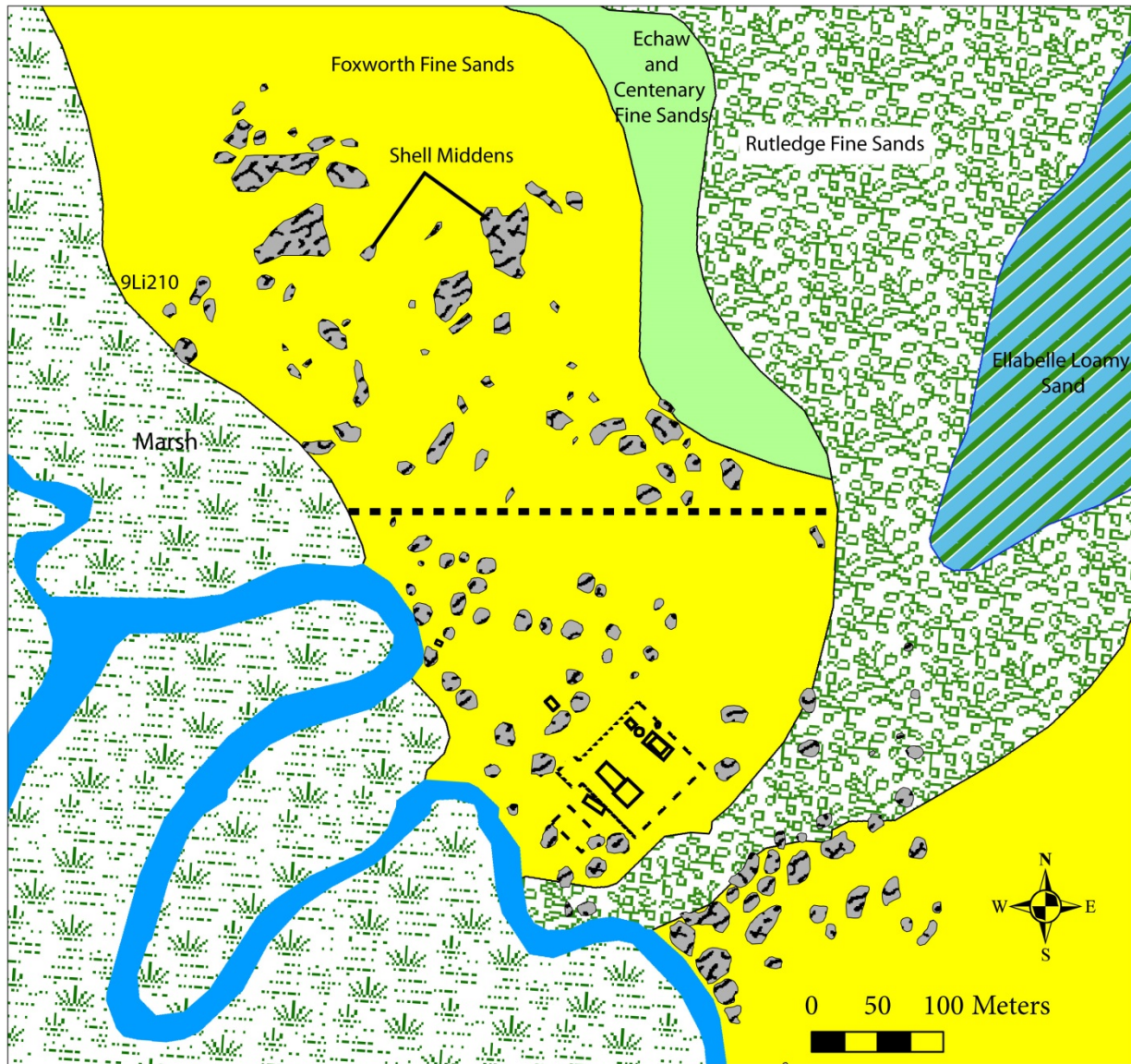


Figure 4.11. Distribution of shell middens at Mission Santa Catalina. Midden deposits located to the north of the dotted line were only located via pedestrian survey and probing; no auger, topographic, or geophysical surveys were conducted in this portion of the site.

DISCUSSION

The most significant outcome of the synthesis of these various surveys is the establishment of a detailed map of the distribution of mission-era shell midden deposits. These deposits are highly evident as distinct areas of low resistance and topographic rises. The deposits are also readily identifiable by shell probing and closely correspond with ceramic and shell concentrations uncovered during the auger surveys. Figure 4.12 plots the distribution of these

shell deposits across the entire mission pueblo.²⁰ Significantly, and contra Larson (1978), it is clear that the mission settlement is characterized by the presence of discrete, mounded midden deposits—with each likely associated with an individual household or cluster of households, much like the waste disposal pattern evident during the earlier Irene period (Saunders 2000b).

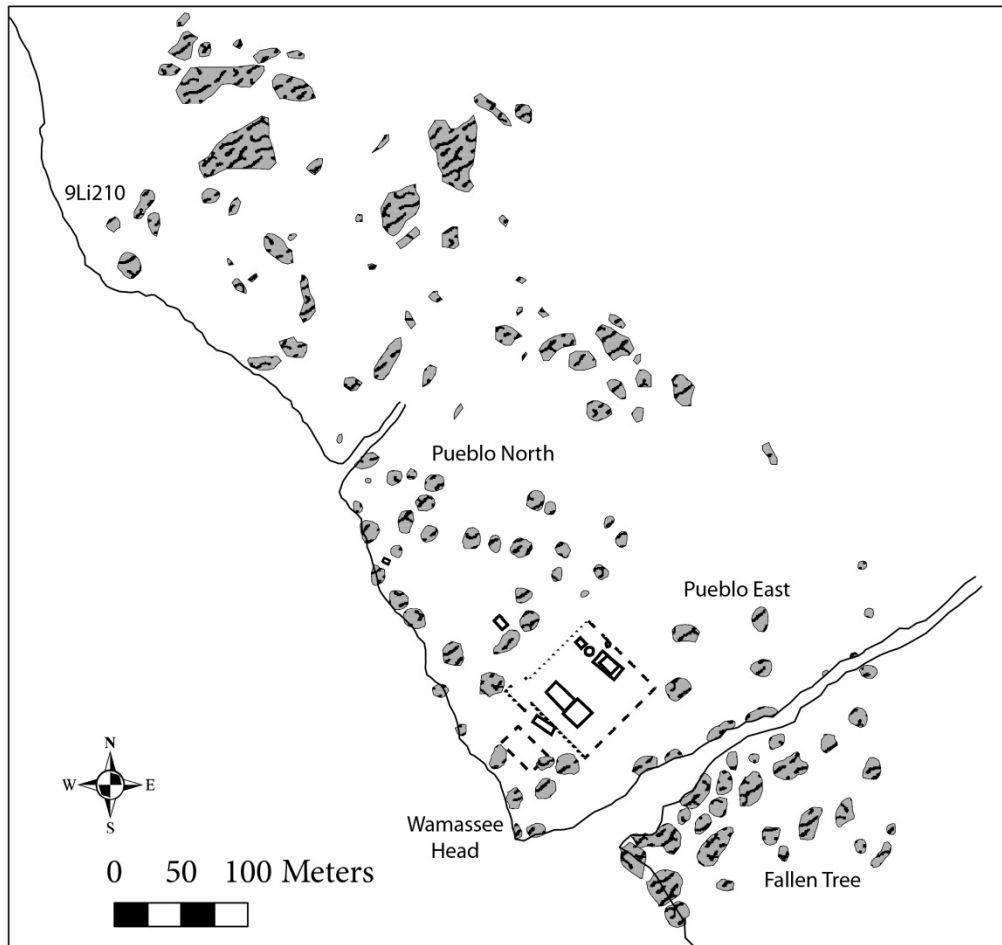


Figure 4.12. Shell middens and “neighborhoods” at Mission Santa Catalina.

Much like the earlier magnetometry surveys, the results of the most recent survey largely failed to yield either highly magnetic features or broadscale architectural evidence. Most significantly, I interpret this to strongly suggest that buildings located within the mission pueblo were *not* constructed from wattle and daub, unlike the burned wattle and daub structures of the central compound, which were readily detected during the earlier surveys (and yielded fired daub fragments during the auger surveys). The majority of magnetic features detected were small

²⁰ I have not plotted midden deposits within the central mission quadrangle.

dipole features associated with modern metal debris, particularly metal pin flags associated with earlier surveys and excavations (clearly evident at survey block corners, figure 4.9).

Based on these surveys I define five neighborhoods within the mission pueblo.²¹ These neighborhoods provide the basic spatial framework that I use to structure the analyses presented in the rest of this dissertation. Working from south to north, these neighborhoods are: Fallen Tree, Wamassee Head, the Pueblo East, the Pueblo North, and 9Li210.

THE FALLEN TREE NEIGHBORHOOD

The Fallen Tree neighborhood is defined as the sector of the mission neighborhood located to the south of the freshwater creek. This portion of the site—particularly adjacent to Wamassee Creek and the freshwater creek—is characterized by a particularly dense and somewhat “messy” distribution of shell middens. These middens can be clearly seen in figure 4.13 as areas of low resistance. To the southwest of the modern road—evident as a distinct linear low resistance feature in figure 4.13—midden deposits are very distinct, well bounded, and more regularly spaced. Numerous other features—particularly low resistance areas that do not represent shell middens—are also present and likely represent mission-era structural deposits.

The magnetometry data from Fallen Tree (figure 4.14) reveal numerous dipolar features, though many of these represent survey pins used to map the site in 1980 and others, not marking grid corners, are likely the result of modern metal debris. Four major magnetic features also evident in figure 4.14. The largest—an enormous dipole—was caused by an old piece of farm equipment. The remainder—three regularly spaced circular features approximately 5 meters in diameter and primarily manifesting as negatively magnetic—are perplexing and may represent significant archaeological features, though the regular spacing and high magnitude of the features suggests that they might represent modern debris. Further archaeological work is needed to clarify this issue.

²¹ I would also suggest that a sixth “neighborhood” could also potentially be defined. Located to the northeast of the Pueblo North—and in the portion of the site only subjected to pedestrian survey—a distinct cluster of shell middens are present along the boundary between the Foxworth fine sands and the Echaw and Centenary sands (figures 4.11 and 4.12). Definition of this “lacustrine” neighborhood located adjacent to the former wetland awaits further archaeological investigation.

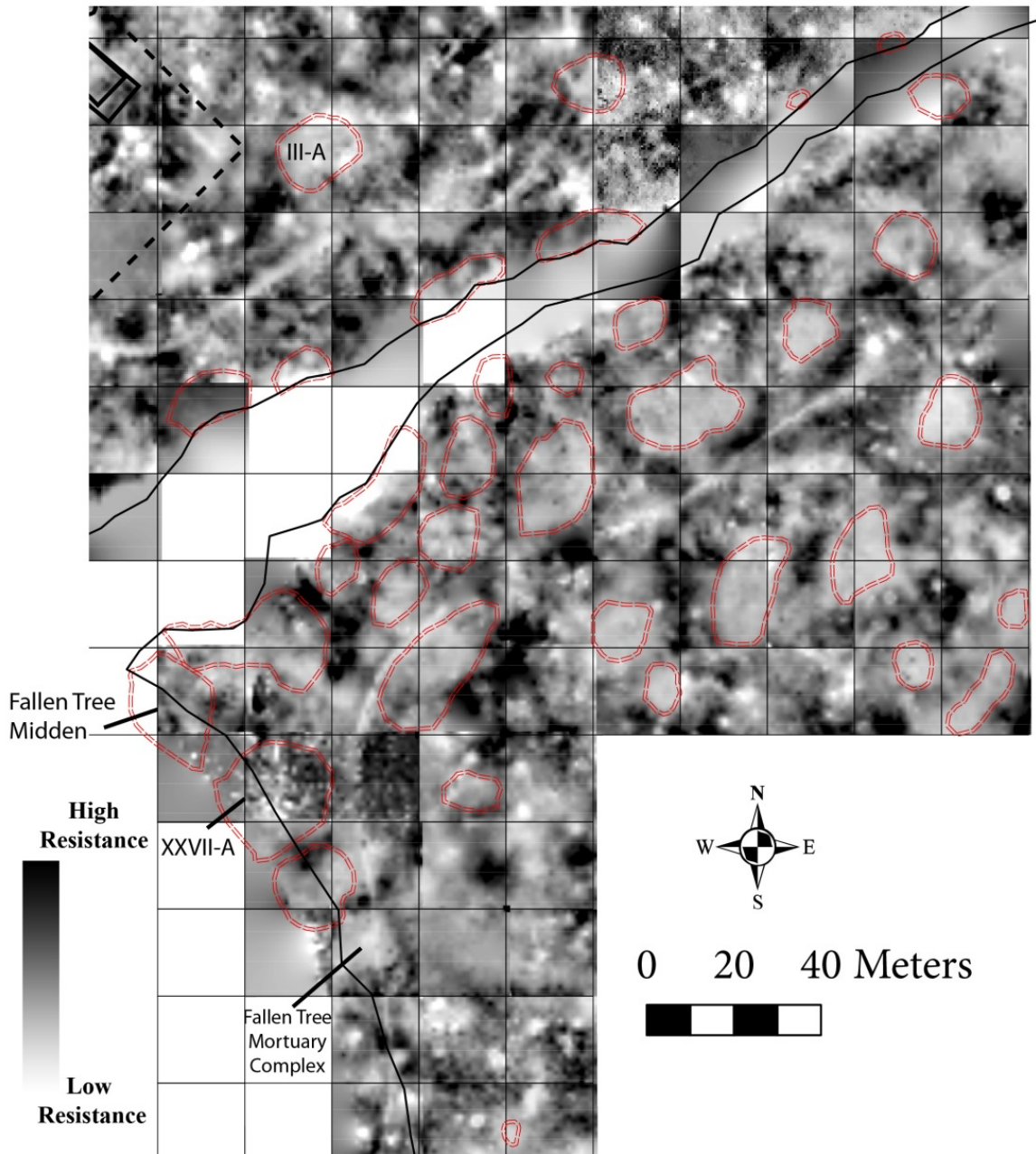


Figure 4.13. Distribution of shell middens (outlined in red) at Fallen Tree, plotted on top of resistivity data. Modern roads—manifesting as linear areas of low resistance—can also be seen paralleling both sides of the freshwater creek.

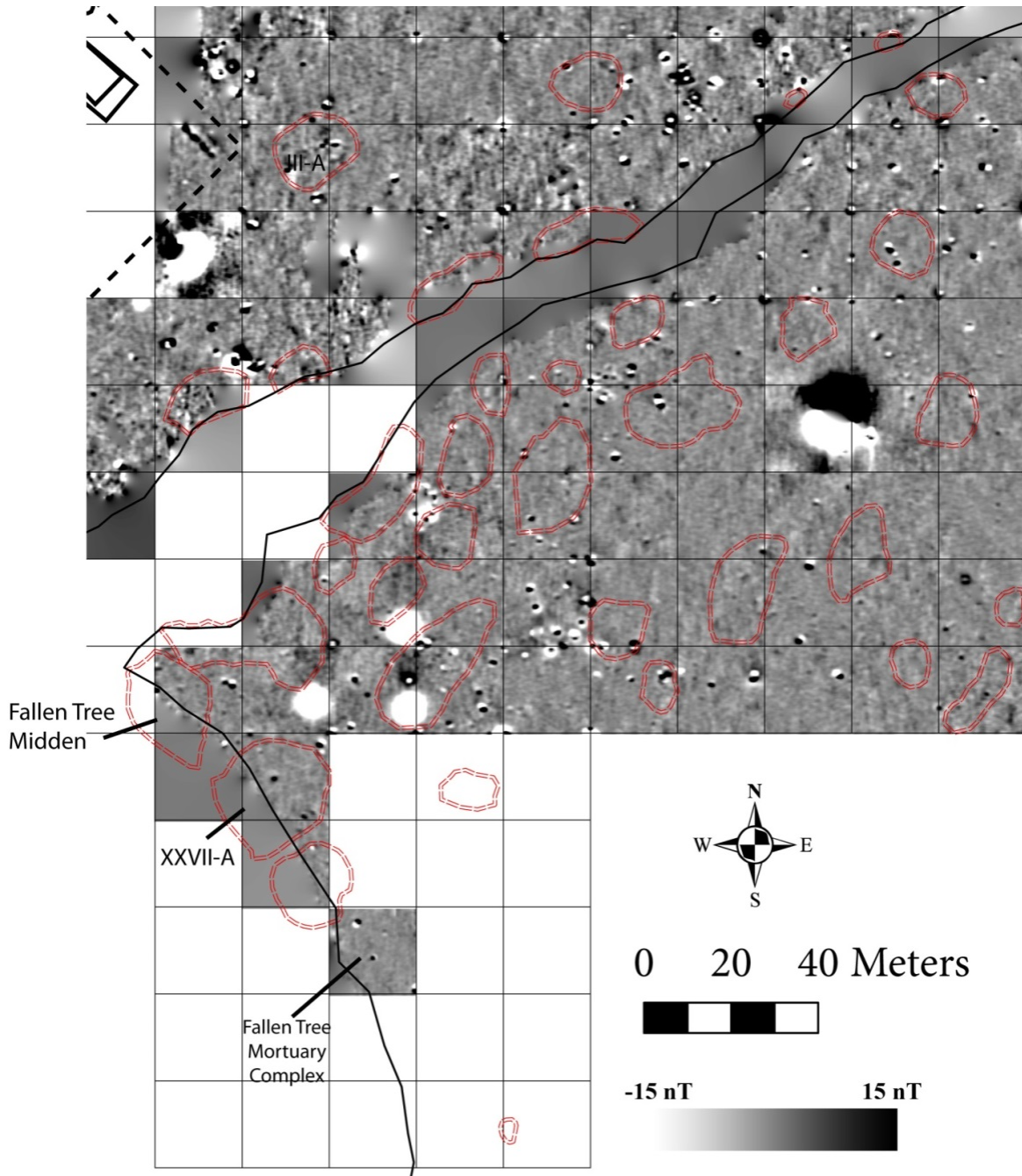


Figure 4.14. Distribution of shell middens (outlined in red) at Fallen Tree, plotted on top of magnetometry data.

THE WAMASSEE HEAD NEIGHBORHOOD

While Wamassee Head was originally the name for the entire site where Mission Santa Catalina was eventually located, here I use the name to refer only to the neighborhood located south of the mission quadrangle and north of the freshwater creek. This neighborhood is characterized by at least seven discrete shell middens and a number of distinct rectilinear high

resistance features that likely represent structural remains surrounding them (e.g., to the west of Midden II-D; figure 4.15). The magnetometry data from Wamassee Head (figure 5.16) reveals numerous dipolar features across the neighborhood. Many of these, especially towards the north, and near the central mission quadrangle, likely represent metal debris associated with the decade long intensive AMNH excavations of the mission quadrangle.

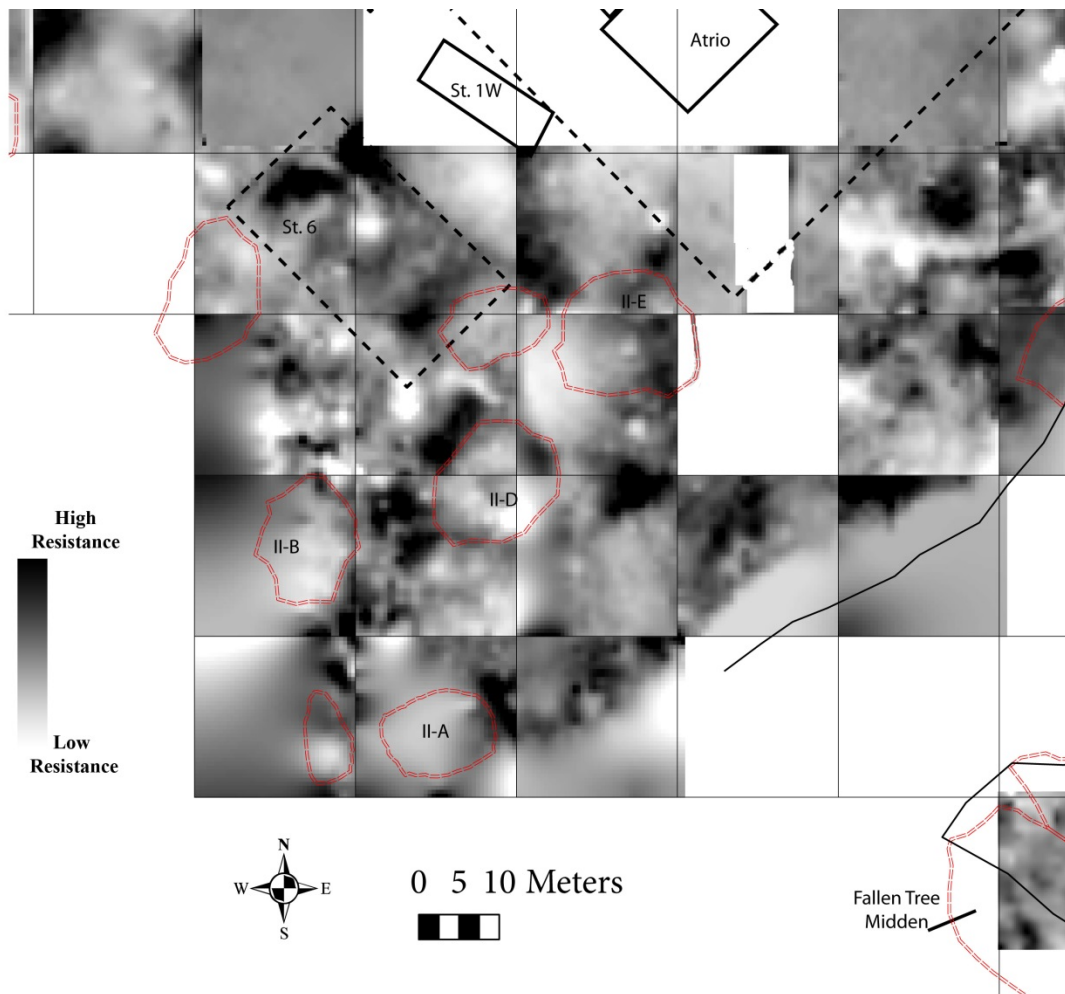


Figure 4.15. Distribution of shell middens (outlined in red) at Wamassee Head, plotted on top of resistivity data.

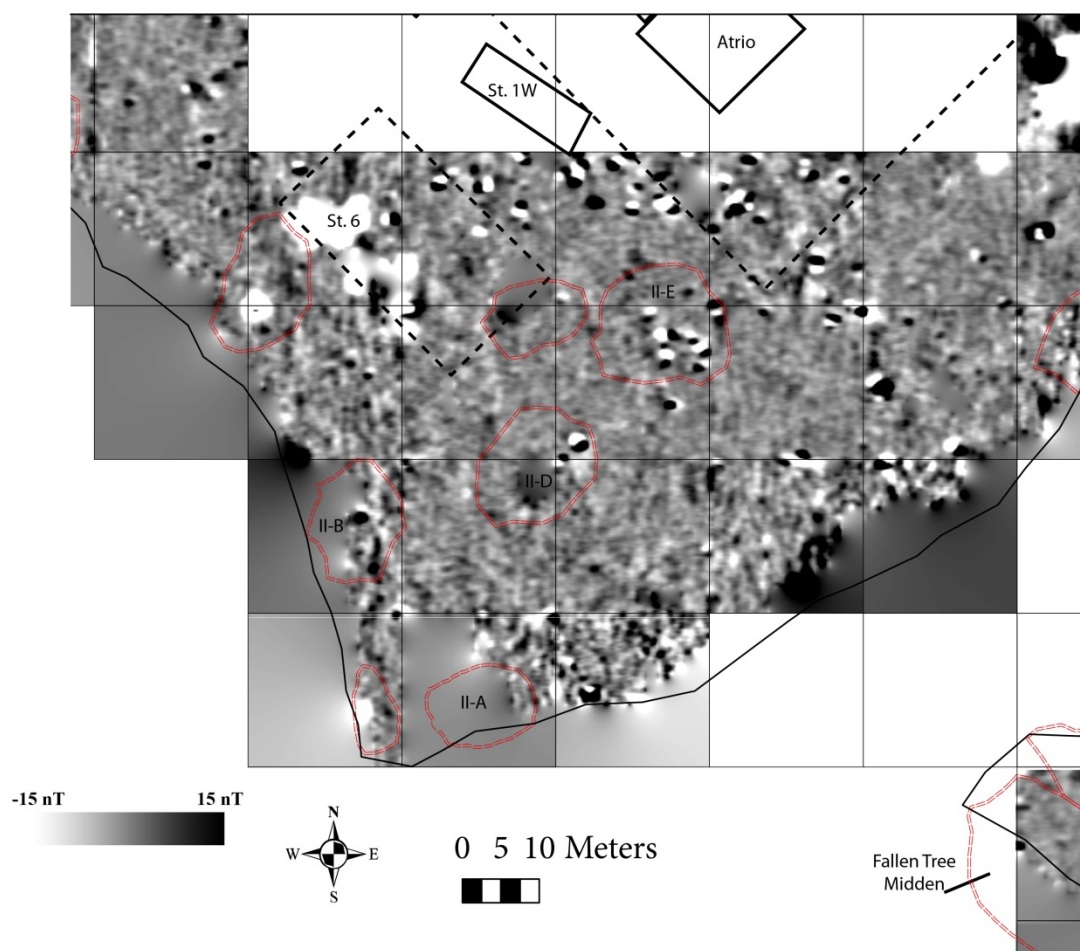


Figure 4.16. Distribution of shell middens (outlined in red) at Wamasee Head, plotted on top of magnetometry data.

THE PUEBLO EAST NEIGHBORHOOD

The Pueblo east consists of that portion of the community located to the east of the central mission quadrangle. A number of well-defined midden deposits, somewhat regularly spaced (figures 4.17 and 4.18), are located in this neighborhood, though the occupational density appears to be more limited than within the neighborhoods located further to the north and south. Several distinct, but enigmatic, linear features also are present in the magnetometry data (see figure 4.18). The first of these is a linear feature running northwest/southeast, perfectly in line with the northeastern wall of the convento. Also evident as a linear area of low resistance, I interpret this as likely being a portion of the mission stockade, or perhaps a fence line associated with the friary complex. The second broadscale magnetic feature is also a linear feature, more than 100 meters in length, crossing the northwestern corner of Quad III and the southwestern corner of Quad VI, with small dipolar features regularly spaced approximately every 15 meters.

This feature is perfectly aligned with the northwestern wall of the (late) convento. While the shape and size of this feature also suggest a stockade line, the location of this feature does not support that interpretation. The northern extent of this neighborhood is characterized by several distinct features evident in the resistivity data, as well as a distinct absence of shell midden deposits.

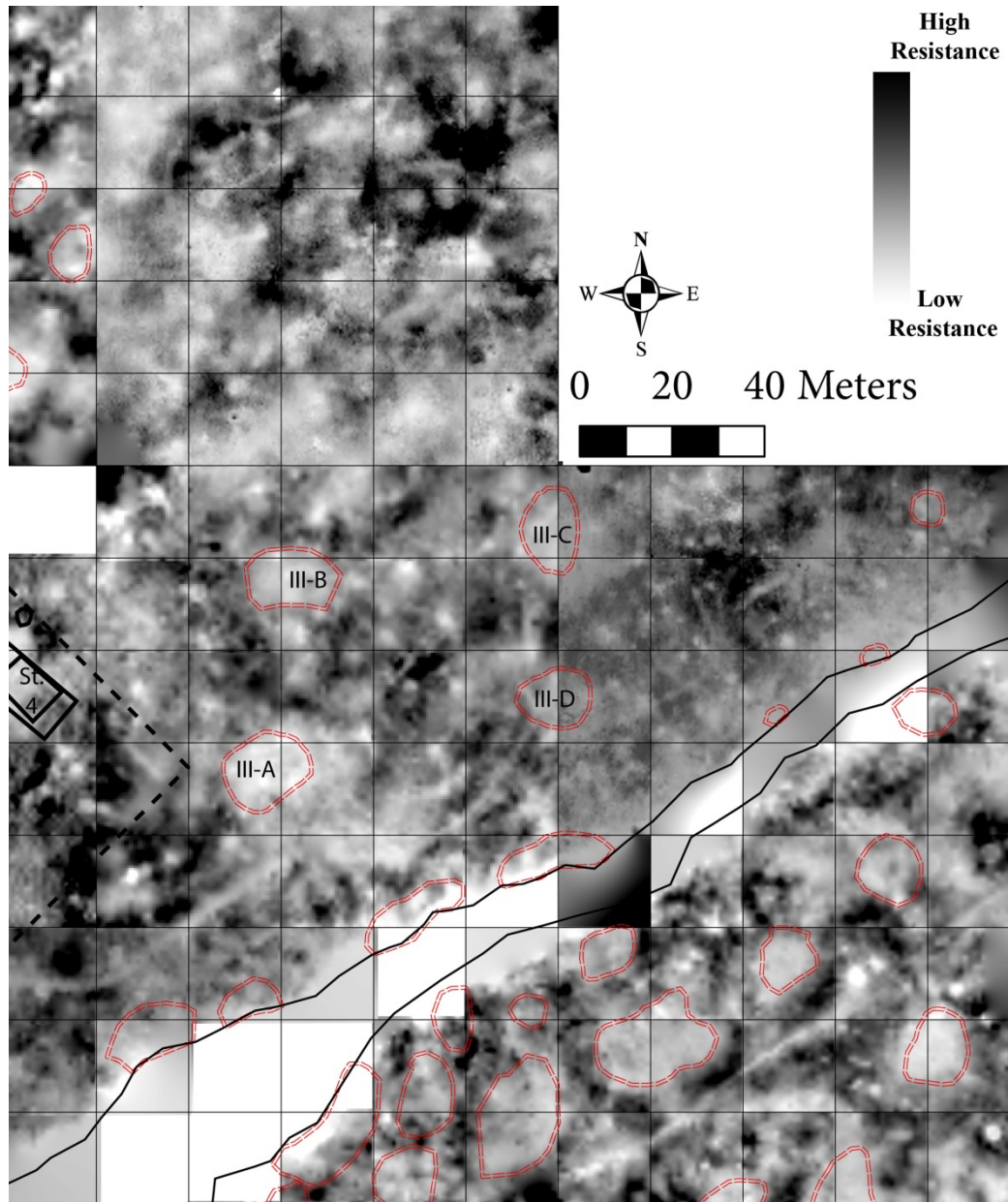


Figure 4.17. Distribution of shell middens (outlined in red) at the Pueblo East (north of the freshwater creek), plotted on top of resistivity data.

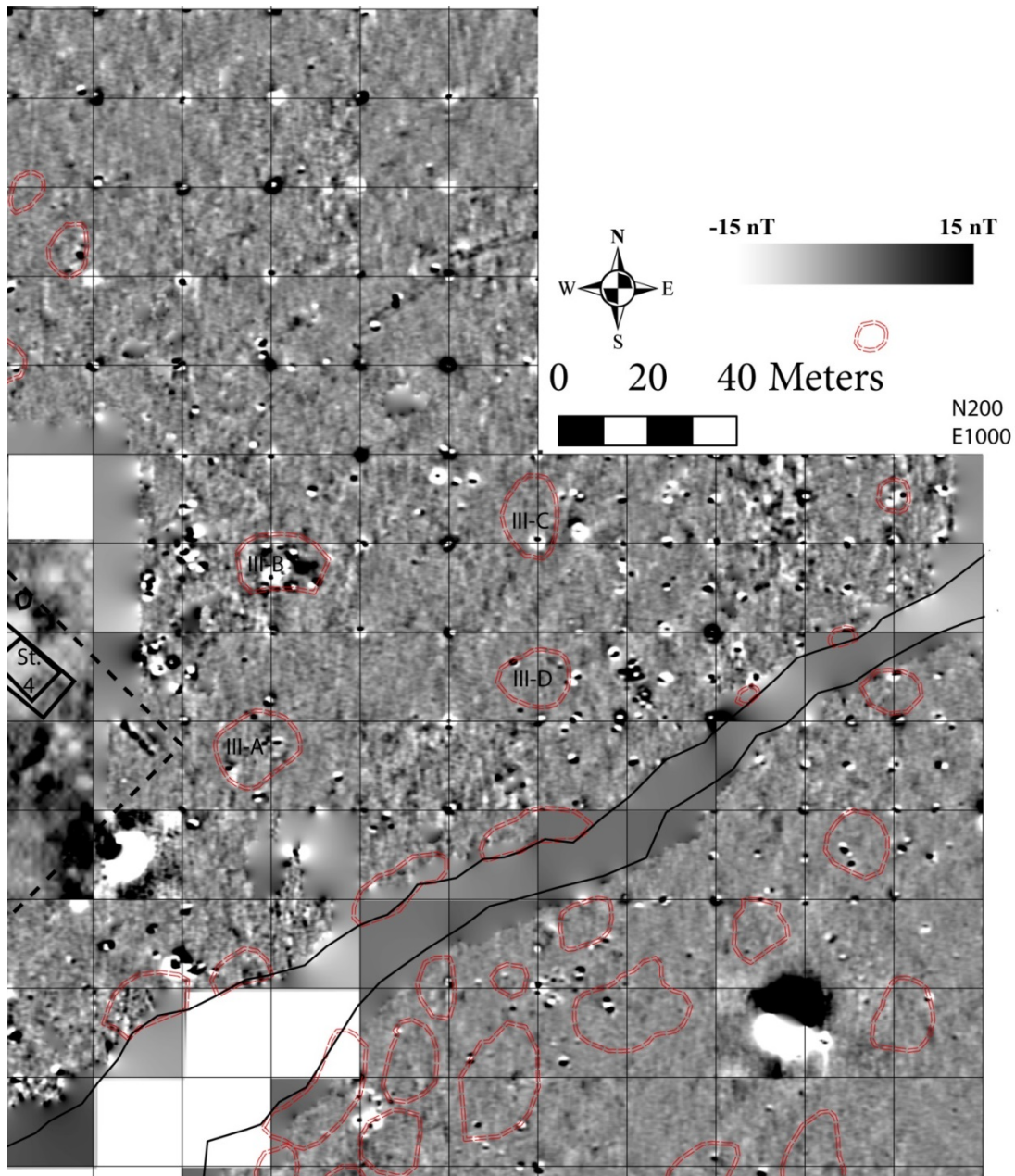


Figure 4.18. Distribution of shell middens (outlined in red) at the Pueblo East (north of the freshwater creek), plotted on top of magnetometry data.

THE PUEBLO NORTH NEIGHBORHOOD

The Pueblo North consists of the portion of the community located to the north and west of the central mission quadrangle, but south of the small freshwater artesian outflow (figures 4.19 and 4.20). This portion of the pueblo is characterized by a distinct gridded form (evident in the resistivity data), oriented with the central mission quadrangle. Midden deposits in this neighborhood are well bounded and discrete, and almost certainly correspond to refuse deposits

associated with individual households or small clusters of households. Most distinctive—and clearly evident in figures 4.19 and 4.20—is the somewhat circular configuration of midden deposits surrounding an open “clearing” comparatively free of refuse. A strong possibility is that this “clearing” served as the location of the main mission plaza and/or ball court, much like the one recognized at Mission San Luis in Tallahassee (Hann and McEwan 1998; McEwan 2014; Shapiro 1987). Numerous “streets” or “paths” are also clearly evident in the resistivity data (Blair 2013:391), particularly evident in figure 4.19 are two distinct low resistance linear features crisscrossing the clearing. One of these “paths” runs approximately 100 meters eastward from Midden XXI-B, while the other runs approximately 80-100 meters to the northwest from structure 5.

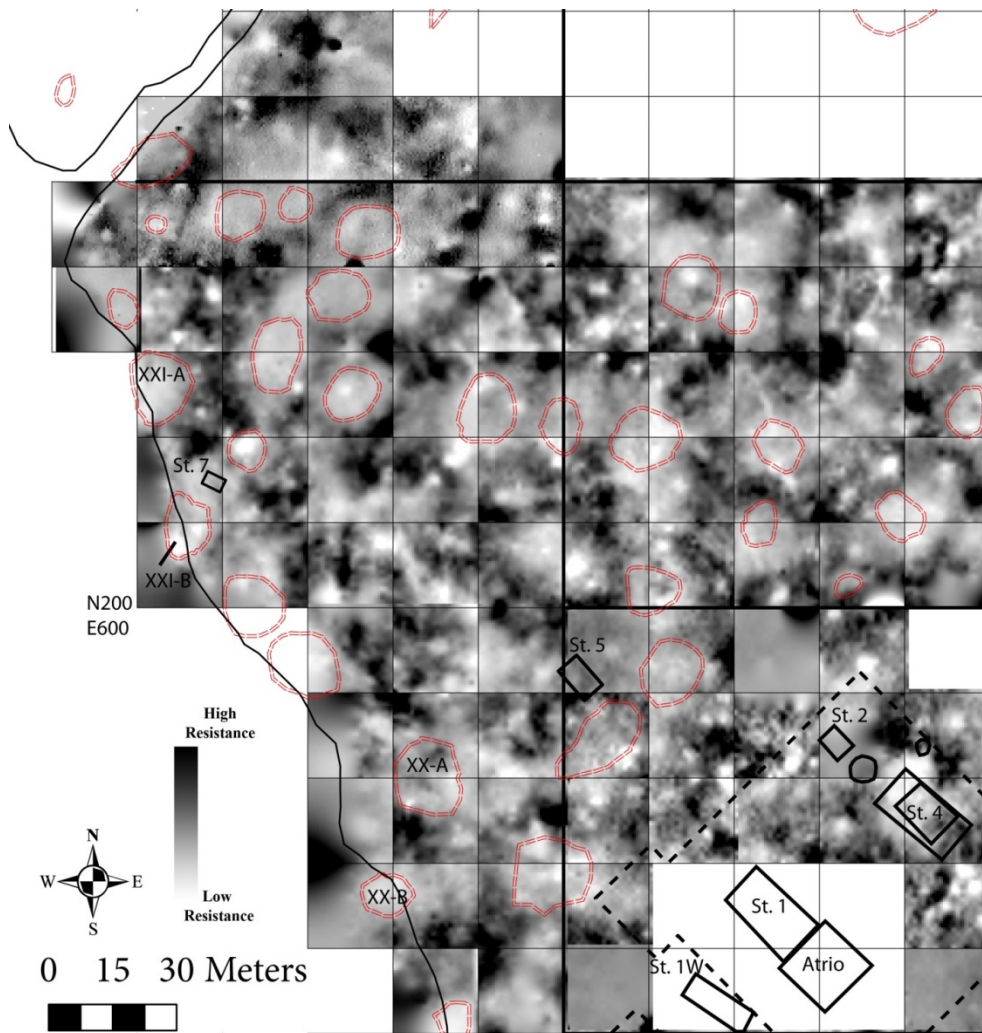


Figure 4.19. Distribution of shell middens (outlined in red) at the Pueblo North, plotted on top of resistivity data.

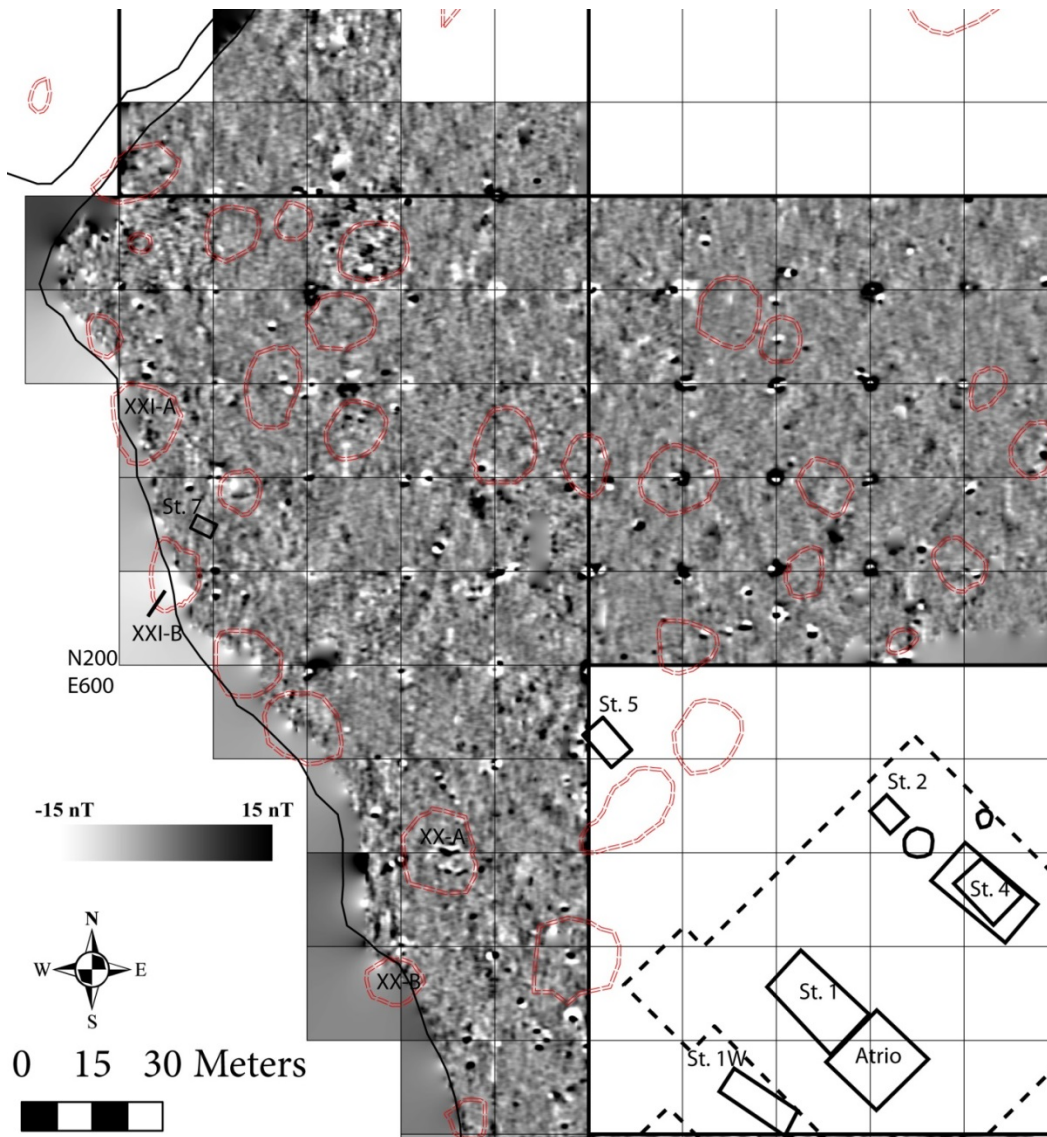


Figure 4.20. Distribution of shell middens (outlined in red) at the Pueblo North, plotted on top of magnetometry data.

THE 9Li210 NEIGHBORHOOD

9Li210 is located approximately 300-400 meters north of the central mission quadrangle (see figure 4.12). This site was located during the AMNH transect survey and has traditionally been considered a different site than the rest of the mission complex (Thomas 2008b). Because of this, no topographic or geophysical data have been collected in this sector of this mission pueblo and little can be said about the spatial layout, though the middens furthest to the west seem to define a semi-circular arrangement facing the western shoreline. The pedestrian surveys described above strongly indicate that the residential component of the pueblo continue *at least* as far north as 9Li210, and potentially several hundred meters further. Additionally, the ceramic

data from this portion of the site (discussed in chapter six) confirm that this neighborhood was occupied during the mission-era.

The data presented in this chapter present a clear picture of the Mission Santa Catalina pueblo organized into a series of distinct neighborhoods surrounding the central mission quadrangle. Using the neighborhoods I just defined as the spatial framework for the rest of this dissertation, in the subsequent chapters I explore and compare the archaeological remains from these neighborhoods in order to better understand the social relationships between community members residing within these neighborhoods.

Chapter 5. Excavations in the Mission Santa Catalina de Guale Pueblo

Archaeological excavations have been conducted at the site of Mission Santa Catalina de Guale since 1959 (Thomas 2008a:9-21). The majority of the excavations have occurred within the central compound of the mission and have been well described by Thomas (1987, 1988a, 1988b, 1991, 1993a, 2009a, 2009b, 2010a, 2011a); further publications on this material are currently in preparation at the American Museum of Natural History. Most of the excavation and subsequent publication has focused on the central mission quadrangle, including the excavation of the mission church (Structure 1)—with the accompanying shell covered *atrio*, as well as the mission kitchen (Structure 2), friary (Structure 4), and two wells (Structure 3 and Structure 2/4). The mission cemetery, located beneath the floor of the church, was completely excavated by Clark Spencer Larsen (1990), and extensive bioarchaeological studies have been conducted on these remains (Larsen 1990, 2001). While the glass beads recovered from all excavations, particularly the mission cemetery, are included in the analysis presented in chapter seven (see also Blair, Pendleton, and Francis 2009), the focus of this chapter—as well as chapters four and six—is specifically the excavations within the mission pueblo, or the residential neighborhoods of the mission neophytes.

This chapter has two primary objectives: first, to briefly describe and summarize the history of the excavations occurring within the mission pueblo, emphasizing those contexts from which the ceramic sample discussed in chapter six were selected. For my purposes I divided the mission pueblo into five analytic “neighborhoods” (see figure 5.1). These, from south to north, are Fallen Tree (9Li8, AMNH 441), Wamassee Head (9Li13, AMNH 208), the Pueblo East, the Pueblo North, and 9Li210 (see also Blair 2009a; Thomas 2009b, 2010a). Within each neighborhood I describe the excavations using a combined chronological (by excavation project) and spatial approach. The second purpose of this chapter is to summarize the architectural evidence that has emerged from excavations within the mission pueblo. While full reports of all the pueblo excavations are in preparation and will be reported elsewhere, several tantalizing patterns evident in the architectural variation between the various pueblo neighborhoods provide another line of evidence that complements the ceramic analysis presented in chapter six and the social network analysis of bead consumption presented in chapter seven.

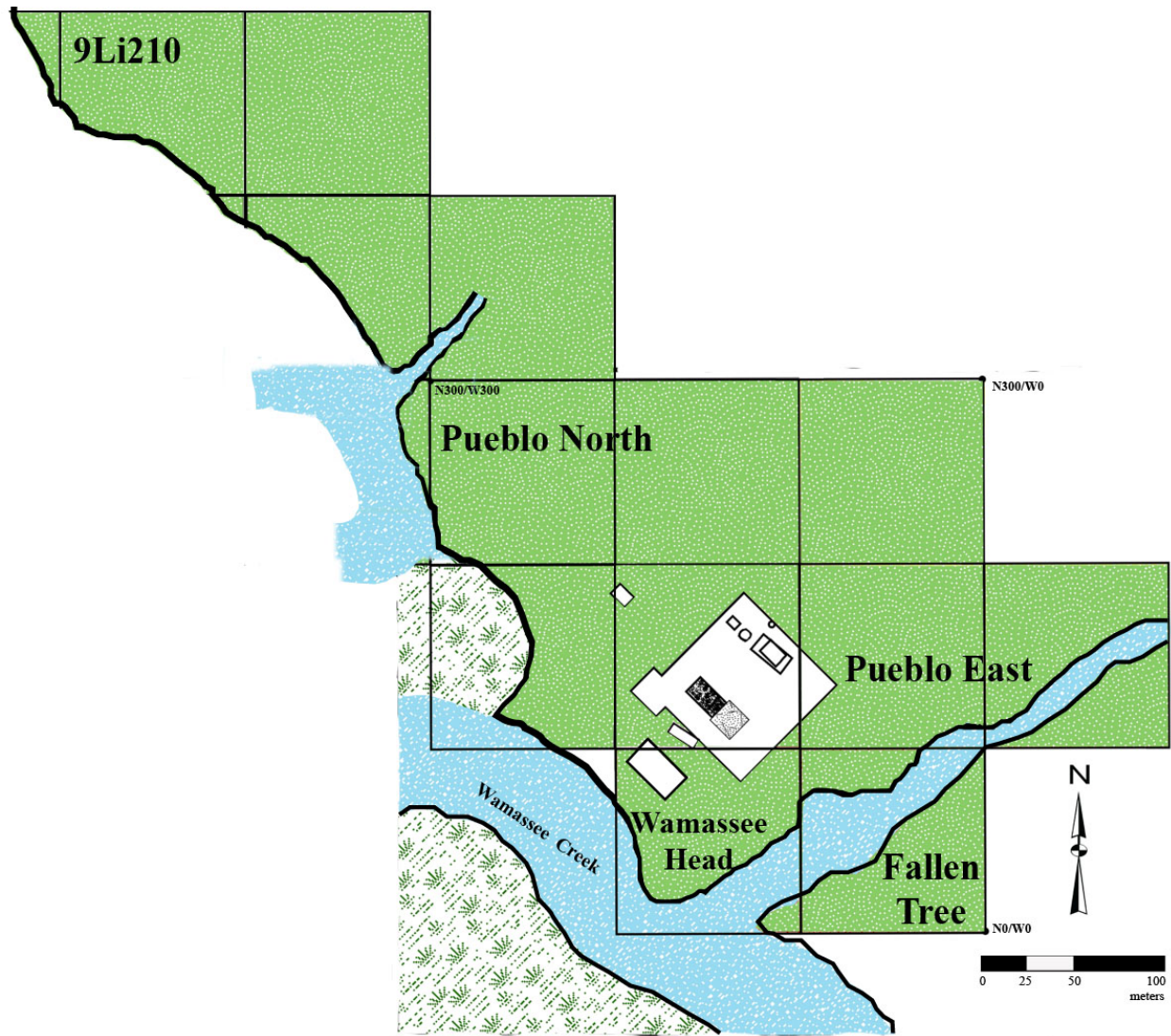


Figure 5.1. Locations of residential “neighborhoods” at Pueblo de Santa Catalina de Guale.

THE FALLEN TREE NEIGHBORHOOD (9Li8; AMNH 441)

The site of Fallen Tree (9Li8; AMNH 441) is the neighborhood of the mission pueblo located immediately south of an artesian-fed freshwater creek emptying into Wamassee Creek (see figure 5.2). The first excavations to occur at Fallen Tree (and at Mission Santa Catalina in general) were conducted in 1959 by Lewis Larson, working for the Georgia Historical Commission. Larson opened two excavation areas at this time—one, a large (900 sq. feet) areal block (Unit 1), which revealed the possible remains of several structures (discussed below) and

another, smaller (50 sq feet), excavation (Unit 3) that was placed into a large shell midden deposit (Midden XXVII-A, see also figures 4.14 and 4.15).²²

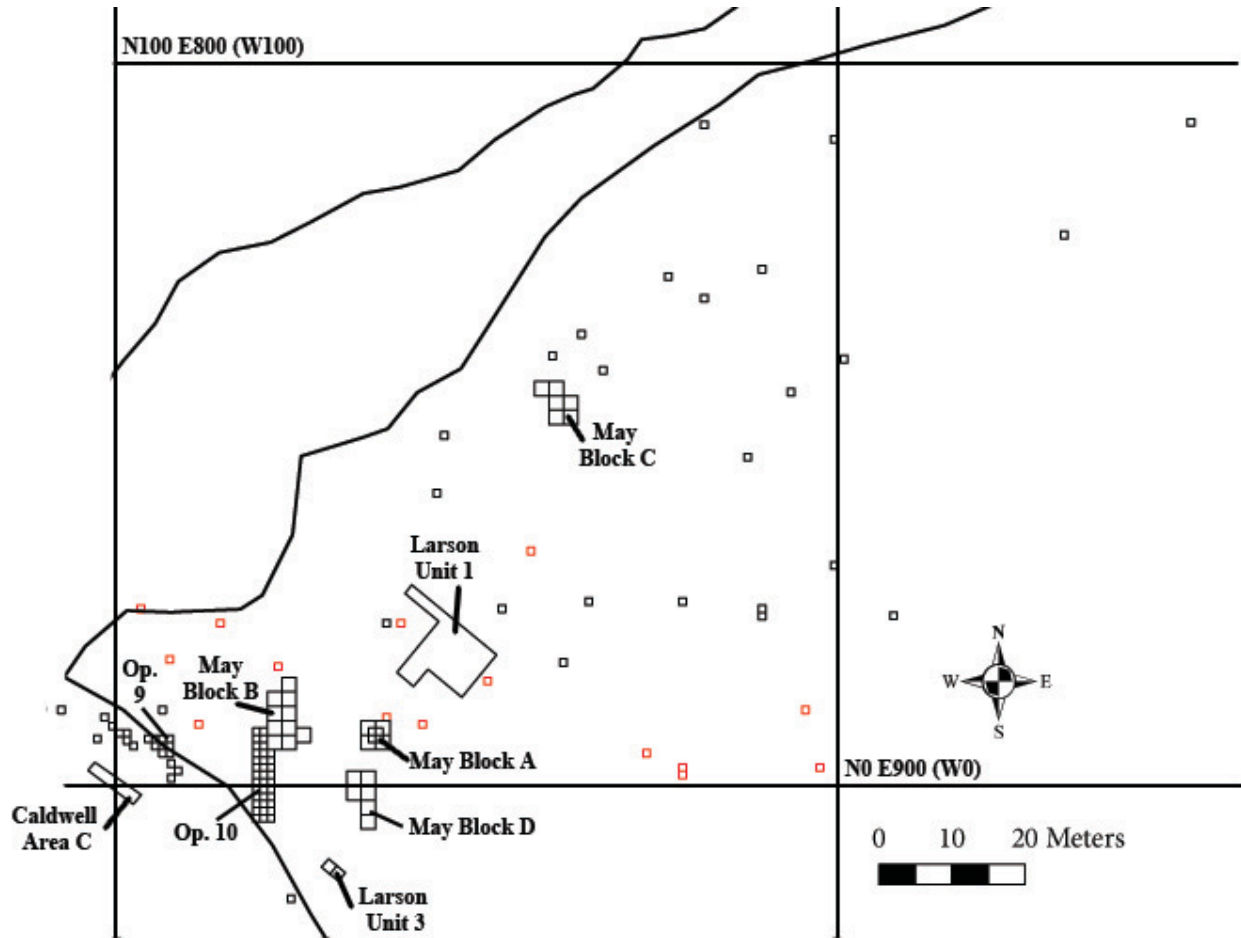


Figure 5.2. Units excavated at Fallen Tree, with select units labeled. Ceramic samples discussed in chapter six were obtained from the units outlined in red.

Following Larson, the next archaeological excavations to take place at Santa Catalina were directed by Joseph Caldwell from the University of Georgia. Caldwell conducted three field seasons on St. Catherines Island (1969-1971) and during this time excavated a number of units at Santa Catalina. The majority of these occurred to the north of the freshwater creek at the Wamasse Head site (9Li13), though three units were excavated at Fallen Tree. The first of these occurred during the 1969 excavations and was designated Test Pit 7 (not illustrated in figure 5.2,

²² Larson also excavated a single 5x10 foot unit on the north side of the freshwater creek. This excavation, designated “Unit 2” yielded neither artifacts nor features and was quickly abandoned. Its precise location is unknown (Larson and Scott 1959).

see figure 5.5). This excavation, described in Kent Schneider's (1969) field log, is noted to have had no features and only a few Altamaha Line Block sherds were recovered.

Caldwell's (1972) report on field work on St. Catherines Island plots two additional excavation units at Fallen Tree: Area C and Area I. Area C was an approximately 5x15 foot block placed into a large shell midden—located immediately south of the freshwater creek confluence with Wamassee Creek—that Caldwell designated “Fallen Tree Midden.” Caldwell (1972) noted that the lower levels of this excavation “showed a distinctive proto-historic pottery complex which we have named Fallen Tree [Complicated Stamped].” It is currently unclear what criteria Caldwell used to distinguish this pottery from either Altamaha Line Block or Irene Complicated Stamp.

No field notes exist for the unit at Fallen Tree labeled “Area I” on Caldwell's 1972 map. One possibility is that Area I corresponds with the earlier excavation of Test Pit 7. In that all of Caldwell's 1969 excavations were reportedly backfilled, this could explain why this unit has never been located. Neither Test Pit 7 nor Area I are depicted in figure 5.2.

Following Caldwell's excavations the next work to occur at Fallen Tree took place in 1978 when the American Museum of Natural History removed radiocarbon samples from the exposed sidewall of Caldwell's Area C excavation and excavated five 1x1 meter test pits²³ at the site as part of the random sample survey of St. Catherines Island (Thomas 1987, 2008a, 2008b, 2008c). One of these (TP IV) was placed into a midden in Quad I, while the rest were excavated further to the east in Quad XXVIII.

In 1980, as part of the early search by the AMNH for Mission Santa Catalina de Guale, a randomized test pit survey was initiated. Beginning in Quad I, two 1 x 1 meter units were placed randomly into each 20 meter survey block (Thomas 1987:112-114, fig. 25). While this survey strategy was quickly abandoned as it failed to yield structural remains, the material culture recovered from these 34 excavations provides an excellent sampling of material culture from a diverse suite of contexts at Fallen Tree. Ceramics from of fifteen of these units comprise the Fallen Tree ceramic sample of the comparative ceramic analysis presented in chapter six.

Three years later, in 1983, J. Alan May began conducting additional excavations at Fallen Tree as part of a post-doctoral fellowship (May 1983, 1985, 2008). During this time he excavated an additional five 1x1 meter units into Caldwell's Fallen Tree Midden, as well as four larger areal excavations (May Blocks A-D in figure 5.2) located further to the east. These excavations yielded numerous artifacts and features dating to the mission-era occupation of the site, though no definitive structural remains were identified.

²³ Only large excavation blocks are labeled in figure 5.2. No 1x1 meter test pits at Fallen Tree are labeled.

In 2005 the American Museum returned to Fallen Tree and excavated an additional seven 1x1 meter units into the eroding bluff edge. Seven of these were placed into Caldwell's Fallen Tree Midden (TP A, B, D, E, F, G, and H). TP C was placed further south into midden XXVII-A, likely the same midden deposit tested by Larsen (Unit 3, figure 5.2) in 1959.

In 2013 additional excavations were once again conducted by the AMNH at Fallen Tree: Operations 8, 9, and 10. Operation 8 (located to the south of the area depicted in figure 5.2) is an ongoing excavation into a large Irene Phase cemetery located at the southern portion of the site (Blair, et al. 2014; Keeton, et al. 2014; Napolitano 2014; Semon 2014; Thomas, Larsen, and Reitsema 2014; Triozzi and Semon 2014). Extremely limited historic materials indicate that at least some of the burials within this cemetery likely date to the 16th century occupation of Mission Santa Catalina.

Operation 9 was a block excavation placed into the previously tested Fallen Tree midden. This excavation was conducted for three primary reasons: 1) to conduct finely controlled excavations into a potentially stratified midden deposit thought to span the Irene to Altamaha period, 2) because of the rapid erosion at the site this midden deposit will soon be completely eroded into Wamassee Creek, and 3) due to the presence of potential post features observed in the eroding cutbank beneath the midden deposit. Analyses of the materials from this excavation are ongoing.

Finally, Operation 10 was a large block excavation placed contiguous with May's Block B, hoping that a larger scale exposure might clarify some of the possible architectural features observed during the earlier excavations (May 2008). The excavations within this operation are ongoing.

ARCHITECTURAL EVIDENCE FROM FALLEN TREE: THE 1959 LEWIS LARSON EXCAVATIONS

Despite the extensive history of excavations conducted at Fallen Tree, evidence for architectural remains is surprisingly sparse. While May (2008) uncovered some potential post features and smudge pits during his excavations in the early 1980s,²⁴ the best evidence for architectural remains comes from Larson's initial excavations (unit 1) at the site in 1959.

Artifacts resulting from these excavations were transferred to the American Museum of Natural History for analysis in the early 1980s (Thomas 1987), and a preliminary analysis of these materials was presented by May (2008). Unfortunately no field notes accompanied the transfer and all interpretations of the excavations are entirely derived from the artifacts themselves, the accompanying artifact catalog, and packaging labels accompanying the original material transfer. Recently, however, while conducting research at the Antonio J. Waring, Jr. Archaeology

²⁴ The ongoing AMNH excavations at Operation 10 will likely help clarify the configuration and function of these features.

Laboratory at the University of West Georgia, Hannah Morris obtained copies of Lewis Larson's previously unexamined field notes, maps, and photographs from his excavations on St. Catherines Island (Larson and Scott 1959) and made them available to me. Based on these notes and photographs I have re-plotted (figure 5.2) the location of Larson's units 1 and 3 (c.f., Thomas 1987:106, fig. 18) and drafted a plan map of the features uncovered in unit 1 (figure 5.3).

Unit 1 consisted of a large block excavation including 19 contiguous 5 x 10 foot excavation squares. In addition to considerable quantities of Altamaha ceramics—including two almost complete vessels, olive jar, majolica, iron nails, a single glass bead, and botanical remains including charred corn cobs and peach pits, Larson also uncovered a series of almost two dozen post holes, three refuse pits, as well as a possible clay lined hearth and wall trench.

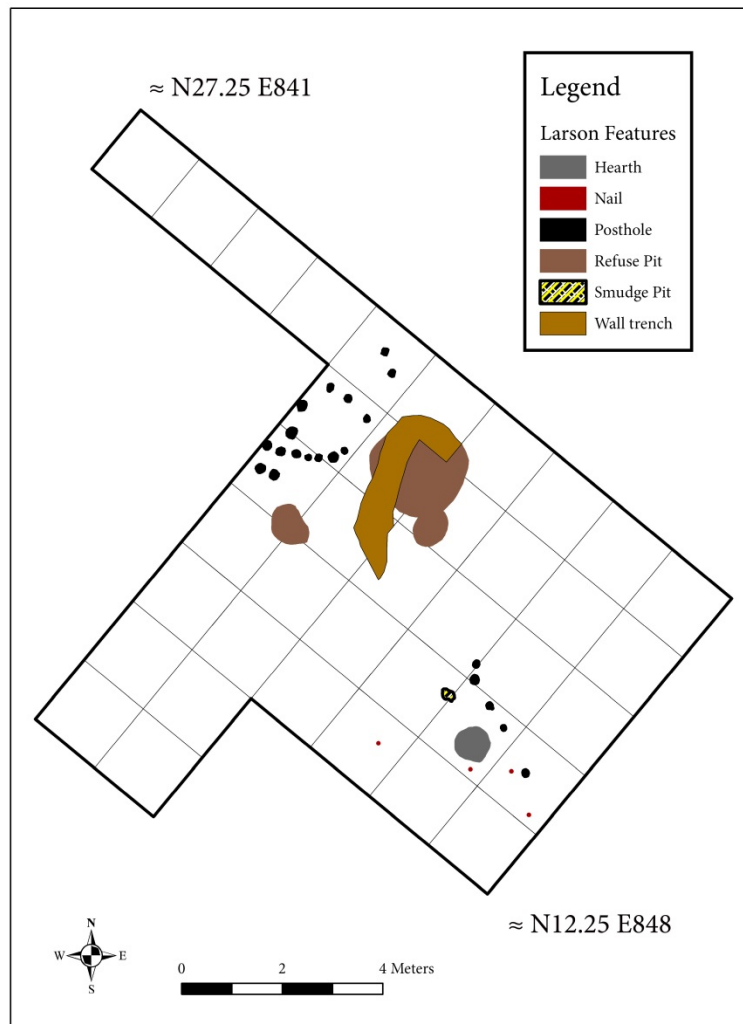


Figure 5.3. Features identified in Larson's Unit 1, drafted from his unpublished field notes housed at the University of West Georgia, Antonio J. Waring Laboratory of Archaeology.

The southern portion of the block contained a burned clay feature interpreted as a possible hearth, alongside a row of postholes, nails, and a cob filled smudge pit. Larson identified these features as clear structural evidence of a single structure, though the multiple construction techniques (wall trench and single set post) suggest that these features might reflect the presence of multiple native structures.

THE WAMASSEE HEAD NEIGHBORHOOD (9LI13; AMNH 208)

When Lewis Larson first recorded the site form for Wamassee Head in 1952 (then site Lb8) the designation referred to the entire site, despite the fact that the majority of Larson's excavations occurred in the sector of the site now designated as Fallen Tree. Since then, however, Wamassee Head has come to more narrowly refer to only a specific neighborhood of the Santa Catalina pueblo: Quad II, north of the freshwater creek (see figures 5.1 and 5.4, also chapter four).

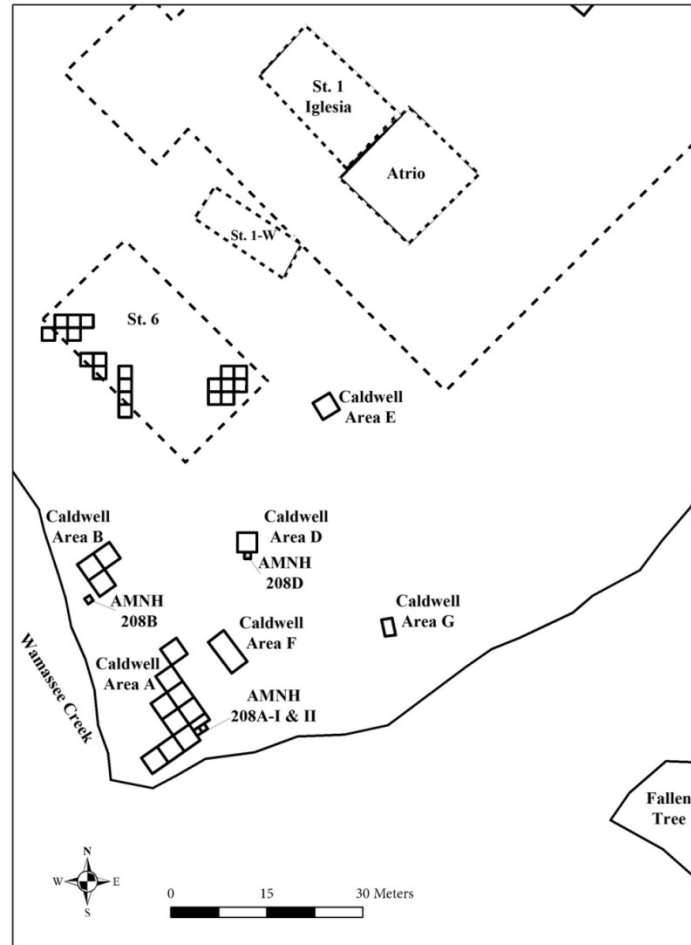


Figure 5.4. Excavations at Wamassee Head. Dotted lines represent interpreted structural boundaries.

The first excavation to occur in this portion of the site was likely Larson’s Unit 2 (1959), though no artifacts were reported and its precise location is unknown. Following this, the first productive excavations were those conducted by Joseph Caldwell and the University of Georgia, beginning in 1969. The 1969 excavations include TP 2, 3, 4, 5, 6, 8, and 9. Rough locations of these units are shown in figure 5.5, a lightly edited version of the University of Georgia’s 1969 field map. Due to the crude form of this sketch map, and because all of the 1969 units were backfilled, more accurate locations of these units cannot be determined; these units—along with Larson’s Unit 2—are not included in figure 5.4.

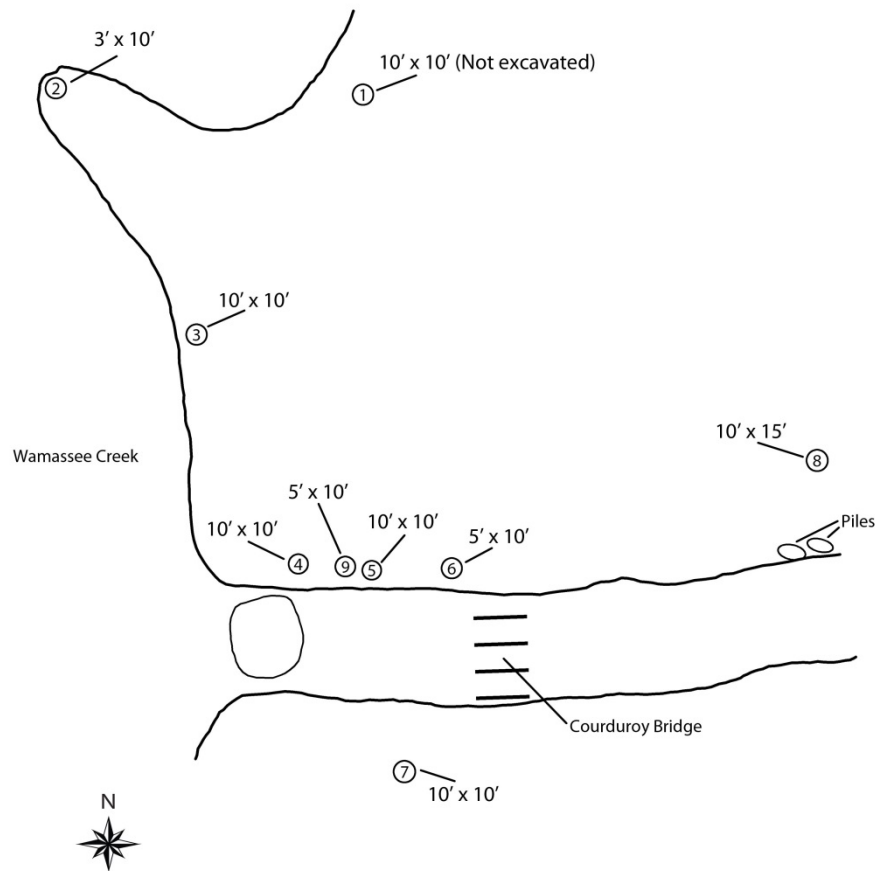


Figure 5.5. 1969 Caldwell excavations at Wamassee Head and Fallen Tree, map drafted from Kent Schneider’s (1969) field notes.

The following year Caldwell conducted further excavations, consisting of Areas A, B, D, E, F, and G. With the exception of Areas A and B, no field notes exist from the 1970-71 Caldwell excavations at Wamassee Head. Area A, discussed in more detail below, yielded the only architectural remains found by Caldwell. Two 1x1 meter units (208A-I and 208A-II) were excavated adjacent to this block excavation as part of the AMNH transect survey in 1978 (Thomas 2008b).

Area B was excavated into a shell midden adjacent to Wamassee Creek. Ceramics from the lower levels of the unit primarily dated to the Woodland Deptford III/Walthour period (Smith 1972; Thomas 2008b:579). AMNH transect survey unit 208B was excavated adjacent to Caldwell's excavation in 1978. Area D consisted of a single ten foot square placed into a prominent shell midden (figure 5.6). AMNH transect survey unit 208D was excavated contiguous with this unit. Ceramics from both units comprise the Wamassee Head ceramic sample discussed in chapter six.



Figure 5.6. View of Midden II-D, looking southwest towards Wamassee Creek. Photo by Anna Semon.

In the early 1990s 19 2x2 meter square units, in 4 small areas (St. 6 in figure 5.4), were excavated into a distinct, rectilinear, high resistance feature measuring approximately 30 meter NW/SE and 18 meters NE/SW (Hayden 2007:32, fig. 13; Weymouth 1992). These excavations, discussed in more detail below, yielded a number of posthole features, and while the precise configuration of this structure (or structures) is not well understood, it has been designated Structure 6 (Blair 2009a).

ARCHITECTURAL EVIDENCE AT WAMASSEE HEAD (9L113, AMNH 208)

Excavations at Wamasee Head yielded remains from two potential structures. The first of these was uncovered by Caldwell during his excavations in Area A (figure 5.7). During these

excavations Caldwell uncovered numerous mission-era artifacts, including three complete Altamaha vessels (28.0/0258, 28.0/0259, 28.0/0260), an iron latch, fragments of majolica, and peach pits and charred maize fragments. Excavated features included several pit features, a section of wall trench adjacent to a “burned floor,” and a cob filled smudge pit. Most significantly, the distinctive “L-shaped” wall trench feature—appended to the larger wall trench section—is strikingly similar to numerous features exposed by Sheila Caldwell during her excavations at the Fort King George site (e.g., Caldwell 2014:141-145, 149, 152, fig. 6-9, 14, 17). Sheila Caldwell excavated numerous of these “pigtail-like extensions” (her term) attached to the exterior of mission-era structures, strongly suggesting that the “burned floor” identified by Joseph Caldwell at Wamassee is likely the interior of a building. Like Larson’s excavations at Fallen Tree, the precise configuration of the partially excavated structure is unclear, though future excavations adjacent to Caldwell’s units could likely clarify the issue.

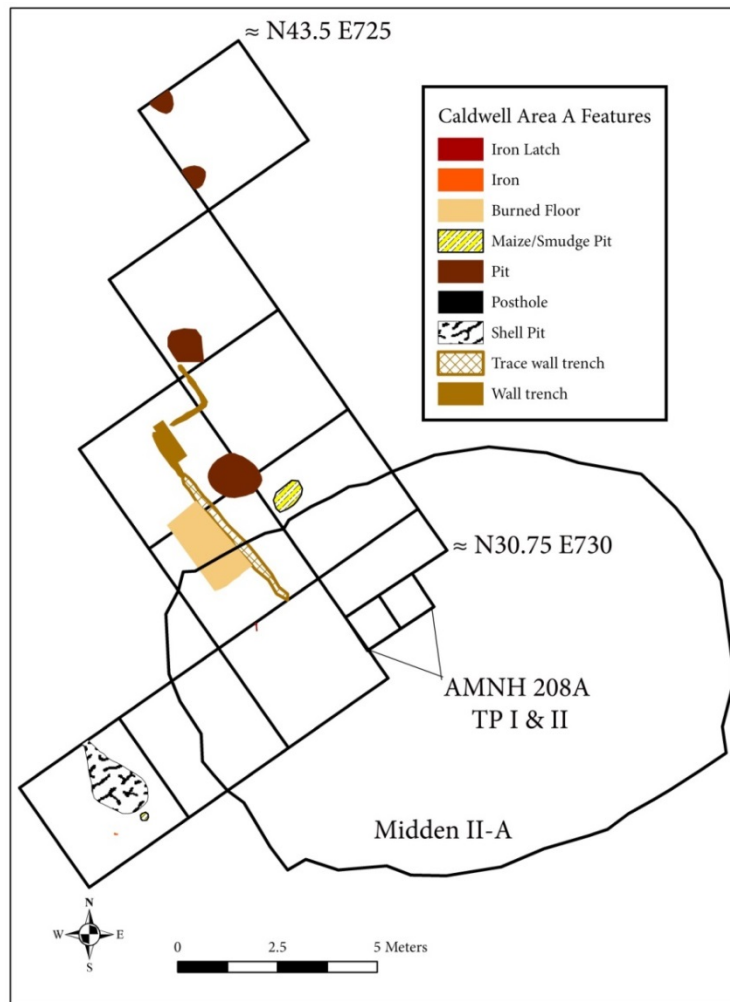


Figure 5.7. Features identified in Caldwell’s Area A, drafted from unpublished field notes on file at the Nels Nelson North American Archaeology Laboratory, American Museum of Natural History.

The second potential structure excavated at Wamassee Head has been designated Structure 6 (Blair 2009a), and was excavated in 1992-93 by the AMNH. Excavations in this area included four small blocks (Areas A1, A2, A3, and B, figure 5.8) situated around the perimeter of a rectilinear feature evident in the resistivity data (see chapter four, figure 4.10 and 4.15). During these excavations considerable numbers of artifacts were recovered, including native ceramics, majolica, glass beads, and metal fragments. Most notable in these excavations is the configuration of postholes uncovered in Area B that appear to form a right angle—potentially the corner of the structure. Unlike Larson and Caldwell’s excavation, no evidence of wall trench architecture or cob filled smudge pits were observed during the St. 6 excavations. Like those excavations, however, further excavations are required in order to define the precise configuration of the structure (or structures) evident in the St. 6 excavations.

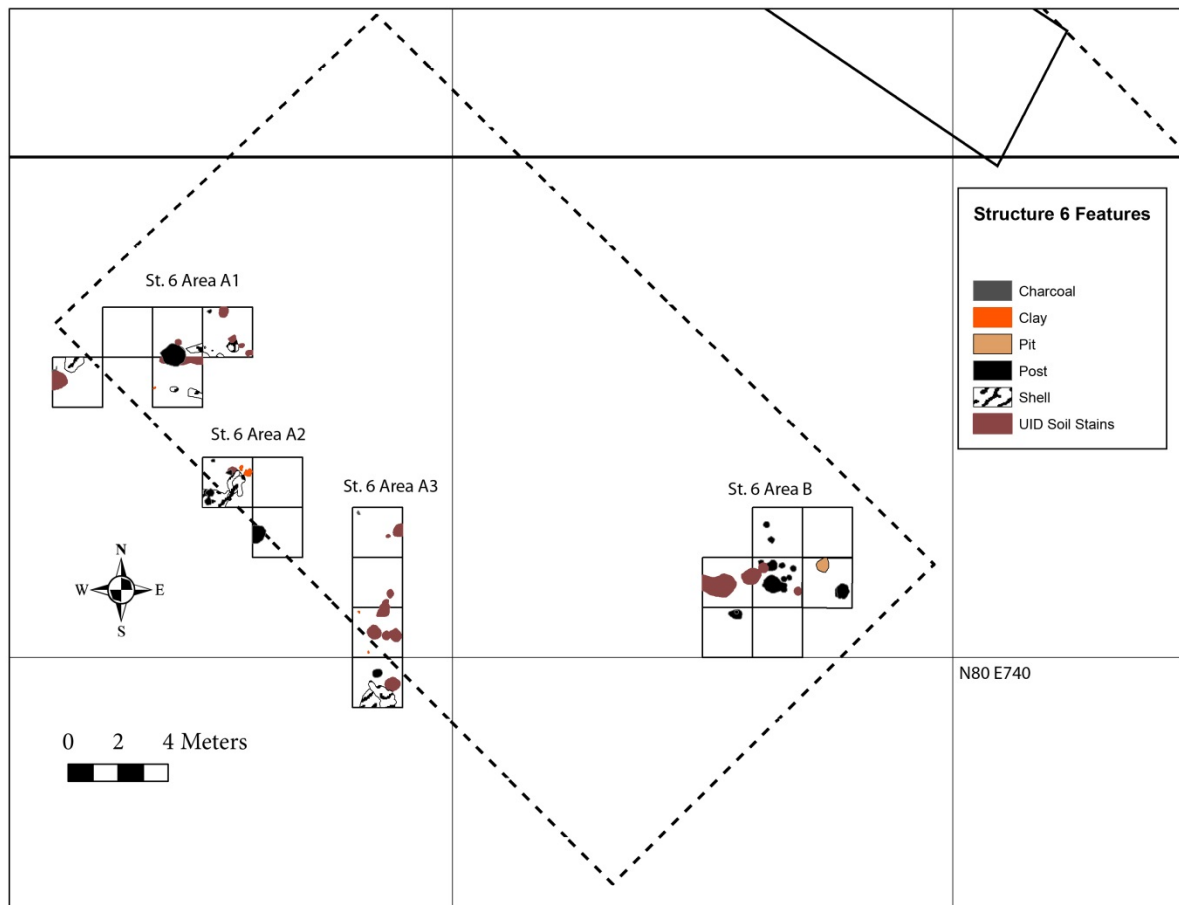


Figure 5.8. Features identified during the Structure 6 excavations. Dotted lines represent interpreted structural boundaries based on the electrical resistivity survey.

Limited excavations have occurred to the east of the central mission compound; here I refer to this neighborhood as the Pueblo East (see figure 5.1 and 5.9, also chapter four). The first of these excavations was conducted by Caldwell in 1969 and include TP 6 and 8 (see figure 5.5). In 1970 another excavation, Area H (“Kent’s excavation”) was also placed in this area. No field notes exist for this unit. In 1978 the AMNH put a survey unit (208 I) into the north bank of the freshwater creek. Thomas (2008b:578) suggests that 208I and Caldwell’s excavation were contiguous, though field notes are equivocal on this point. Caldwell’s TP 6 and 8, as well as AMNH 208I are not included in figure 5.9 due to uncertainty as to their precise locations.

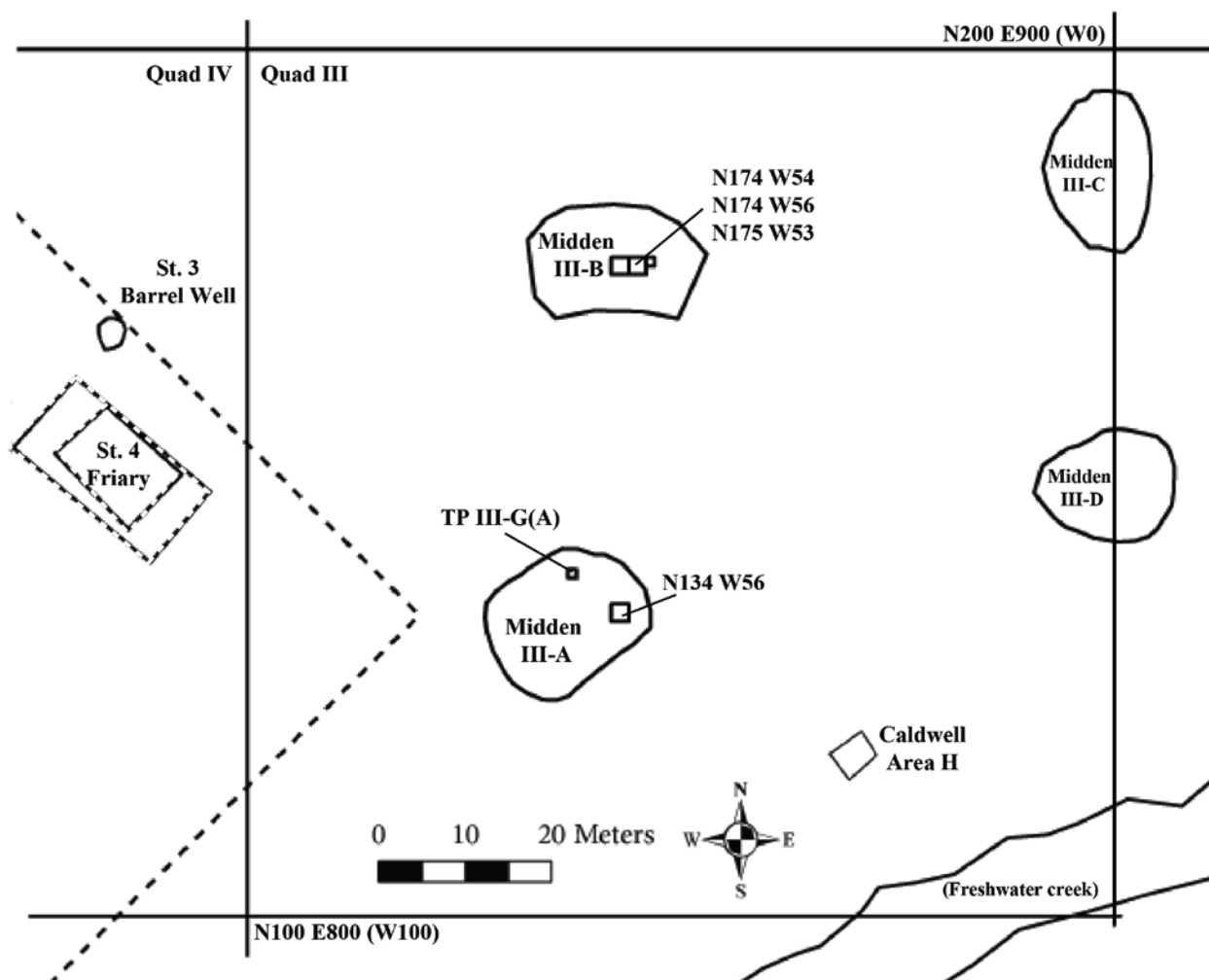


Figure 5.9. Excavations in the Pueblo East. Dotted lines represent interpreted structural boundaries.

MIDDEN III-A

Located to the northwest of these excavation, two units were placed into a large shell midden deposit (III-A) (figure 5.10). The first of these units was a 1x1 meter excavation block

designated TP IIIG(A). This unit was excavated in November, 1980.²⁵ In addition to numerous aboriginal ceramics and faunal remains, excavation in this unit also yielded two olive jar sherds and one unidentified majolica fragment.



Figure 5.10. View of Midden III-A, looking west towards Quad IV. Photograph by Anna Semon.

Five meters southwest of IIIG(A) a 2x2 meter unit (N134 W56) was excavated into the same shell midden in 1983. Again, like TP IIIG(A), this unit yielded numerous aboriginal sherds and faunal remains, as well as small quantities of olive jar, majolica, and unidentified metal fragments. An opaque turquoise blue glass bead and a shell bead were also recovered. An ivory whittle-tang “knife” handle (28.1/1904)—identified by Anibal Rodriguez of the AMNH (using techniques described in Espinoza and Mann 2000)—was also recovered from this unit (figure 5.11).

²⁵ This unit was excavated during the 1980 SCDG auger survey and placed into this midden because the shell deposit was too dense for the power auger to penetrate.



Figure 5.11. Ivory whittle-tang “knife” handle (28.1/1904) recovered from Midden III-A. Photograph by Denis Finnin, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

One intriguing—though speculative—possibility is that this ivory knife handle corresponds to one of the “knives with yellow handles” requested by the Guale caciques in ransom for Fray Ávila during the aftermath of the 1597 Guale revolt. Francis and Kole (2011:100, note 5) note that Fray Ávila’s captivity narrative indicates “that the Salchiche *cacique* of Tulufina was one (the only?) of the alleged recipients of the governor’s ransom.” If the correlation between the Salchiches, Sadkeche, and Satuache is correct, as well as the association with Tulufina (Blair and Thomas 2014:37; Green, DePratter, and Southerlin 2002; Worth 2004b:248; see also chapter one, this volume) and my interpretation of chronology (late) and ceramics (different) from this midden is also correct (see chapter six)—associating this midden with the immigrant Satuache population and connecting the knife with the 1598 ransom goods is a plausible, if somewhat speculative, possibility.

MIDDEN III-B

Roughly 35 meters north of Midden III-A a small excavation was also placed into Midden III-B in 1983. This unit was initially placed to test a “right angle” identified in the early magnetometry survey (Thomas 1987:122, fig.34). More recent geophysical data (chapter four) reveal significant magnetic anomalies within this midden (figure 4.18), though it is currently unclear if the anomalies reflect archaeological features or caused by modern metallic debris associated with the 1983 excavations.

This small block consisted of two contiguous 2x2 meter units and a 1x1 meter unit. Unit N174 W54 was excavated in arbitrary 10 cm levels, of which the first 40 cm consisted of dense shell midden deposit. The 2x2 meter unit immediately to the west of N174 W54—N174 W 56—was only excavated for 10 cm before the excavation was terminated. Two features were identified during the excavation of this block. The first, FS(N174W54)-1 consisted of a small shell filled pit located along the eastern edge of the unit and underlying the general shell midden matrix. A second feature, FS (N174W54)-2, was located immediately to the north of feature 1. Found within the feature was a dense concentration of pig bones in association with a double-frame

“figure-eight” iron buckle (28.1/1899; figure 5.12). Because it is attached to a metal plate it is likely that the buckle was attached to a leather strap, perhaps as part of a belt, and being made of iron, rather than brass, it is unlikely it was associated with military armor (Cajigas n.d.; Deagan 2002:180-187; 2009a:281; South, Skowronek, and Johnson 1988:109-114, 122-125).



Figure 5.12. Iron buckle (28.1/1899) recovered from FS(N174 W54) – 2, Midden IIIB. Photograph by Dennis Finnin, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

ARCHITECTURAL EVIDENCE FROM THE PUEBLO EAST

No architectural features have been exposed during excavations in the Pueblo East, though two significant linear features, discussed in chapter four, are evident in the geophysical surveys (figures 4.17 and 4.18).

THE PUEBLO NORTH NEIGHBORHOOD

The neighborhood designated the Pueblo North includes those portions of Quads IV, XX, and XXI located to the northwest of the central mission compound. Numerous excavations have occurred in this sector of the mission pueblo, yielding considerable material culture and architectural remains. These excavations include the testing of geophysical anomalies in the early 1990s, the complete excavation of a native structure designated “Structure 5,” and seven archaeological operations conducted from 2011-2013.

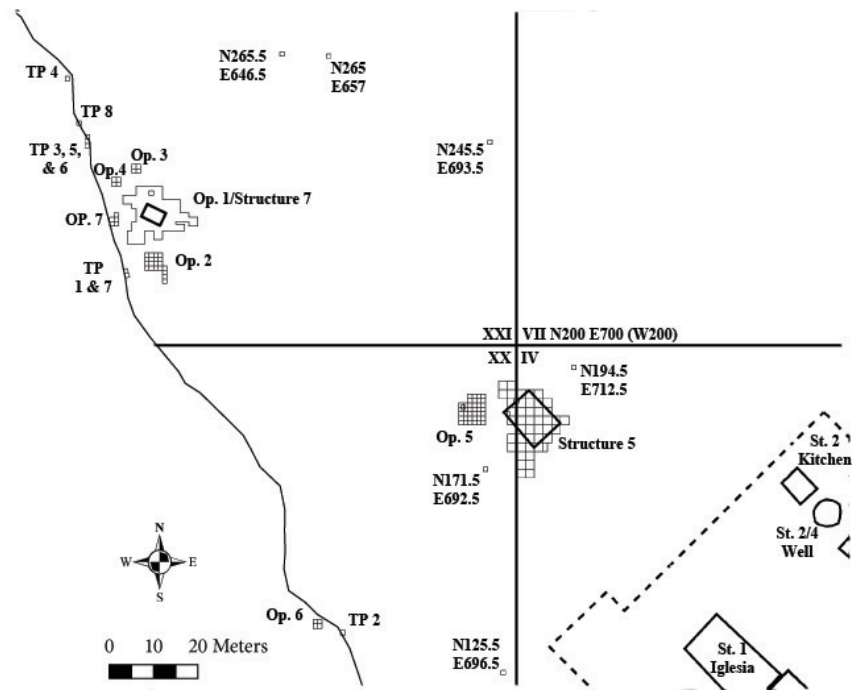


Figure 5.13. Excavations at the Pueblo North.

The first excavations to occur in this portion of the site include 8 1x1 meter placed to test geophysical anomalies identified in the early 1990s (designated by grid coordinates in figure 5.13). While most of these were fruitless—often yielding metal range pins as the source of magnetic anomalies—several provided possible evidence of architectural features, including postholes and a clay surface (unit N125.5 E 696.5).

STRUCTURE 5

As a direct outgrowth of these tests, as well as a desire to test a large rectilinear area of high resistance (Blair 2009a:155; 2013:390; Hayden 2007:38, fig. 18; see also chapter four, figure 4.19), a native structure—designated St. 5—was identified and excavated in the early 1990s. This structure measured 9 x 5 meters with the long axis running northwest/southeast. The structure was defined by two well defined corner features—one filled with shell—and seems to have been constructed of single-set posts. No evidence of wall trenches was found. Additionally, the structure seems to likely have been thatched, in that despite complete excavation, no evidence of wattle and daub or planking was encountered. Excavation within the structure revealed at least four cob-filled smudge pits, a likely interior hearth feature, and a single interior posthole supporting the roof, and perhaps forming part of a subdivision dividing the structure into multiple rooms (figure 5.14). Shell deposits appear to have accumulated around the exterior of

the structure. The northwestern corner of the structure also has a considerably greater density of features, including numerous posts.

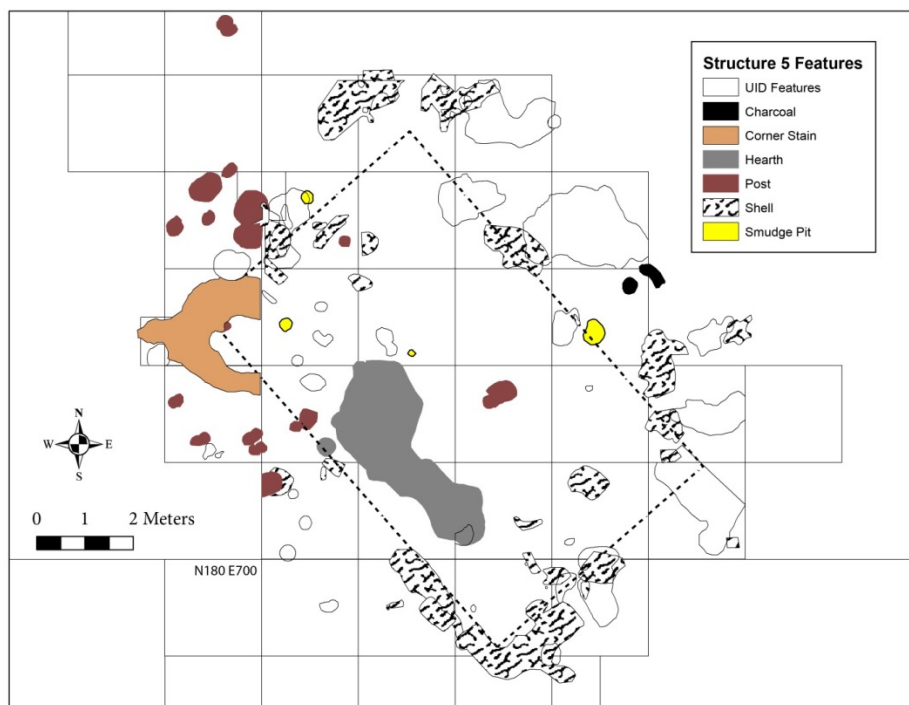


Figure 5.14. Features identified during the Structure 5 excavations.

AMNH 680, "DOLPHIN'S BEND," AND EROSION MITIGATION IN 2005

In 2005 the American Museum returned to Mission Santa Catalina and conducted limited excavations (8 1x1 meter units) within the northern pueblo, testing three middens (XX-B, XXI-A, and XXI-B, labeled in figure 4.19 and 4.20) that were currently eroding into Wamasee Creek. At the time these excavations were given locus number AMNH 680; they have also occasionally been identified as "Dolphin's Bend" (Blair 2009a:155; Thomas 2009a:77-78, table 2.4 - section 2, fig. 2.18). Both terms have no real utility other than designating the date (2005) and very general location of these excavations. All ceramics recovered from these excavations were examined and comprise the Pueblo North ceramic sample discussed in chapter six.

PUEBLO NORTH "OPERATIONS"

From 2011-2013 the American Museum of Natural History returned to the Pueblo North with the objective of testing geophysical features identified in the most recent geophysical surveys (chapter four) that were threatened by erosion. During this period seven archaeological operations were conducted (operations 1-7, figure 5.13).

OPERATION 1: Operation 1 began as a single 1x1 meter unit, excavated in the fall of 2011. Over the next two years this operation expanded to encompass an area of 122 square meters. The first unit (N231 E616) was placed to test an area of low resistance that corresponded with a low mound. Initial excavation of the unit uncovered a very dark brown organic soil, rich with mission-era artifacts. Approximately 20 cm below the surface a dense shell deposit was encountered. Due to a crushed shell feature (Feature (2011) 2 and 3²⁶) located in the southeastern corner of the unit, a second unit (N231 E617) was opened immediately to the east. Like the first unit, the first 20-25 centimeters contained dark brown, organic soils rich with mission-era artifacts, below which a dense shell layer was evident. Excavation of this layer revealed it to be only a 10 cm thick shell lens, lacking any mission-era artifacts. Indeed, all recovered ceramics from this “sheet midden”, as well as F(2011)2 and 3, appear to date to the Woodland period (DePratter 1979, 1991).

Once the sheet midden was removed feature (2011) 22, located in the northeastern corner of N231 E617, was identified and excavated. This feature ended up being a substantial posthole that, in profile (fig. 5.15), clearly cut through the Woodland Period midden deposit. A grit-tempered Altamaha ceramic was recovered in the postfill, serving as a terminus post quem for dating the post.



Figure 5.15. Profile of feature (2011) 22 northwestern corner post from Structure 7, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

Expanding in all directions over the next several field seasons, excavation revealed ten additional postholes defining a building, designated Structure 7, that measures approximately 4.5 meters x 3 meters, with the long axis oriented NW/SE (see figure 5.16). Almost all of the

²⁶ Features from the recent Mission Santa Catalina excavations are designated sequentially by excavation year. For example, F(2011)2 is the second feature defined during the 2011 excavations at the site.

postholes excavated contained diagnostic Altamaha period ceramics, clearly demonstrating that, despite the numerous Woodland features and artifacts recovered in the operation, the structure dates to the mission period. While analysis of the artifacts and features recovered from this operation are ongoing, several preliminary observations can be made. First, no evidence for either wall trenches or cob filled smudge pits were encountered during excavations. Additionally, no evidence of wattle and daub construction was found, strongly suggesting that this structure was likely thatched. Other than the central post feature, no other interior features, clearly dating to the mission-era were encountered. The entrance to the structure may have been in the southeastern wall of the structure, where the largest post spacing in the structure occurred. Interestingly, immediately outside this possible doorway, a bone die fragment (figure 5.17) was recovered (see Deagan 2002:292-295; South, Skowronek, and Johnson 1988:166, for a discussion of dice on Spanish colonial sites).

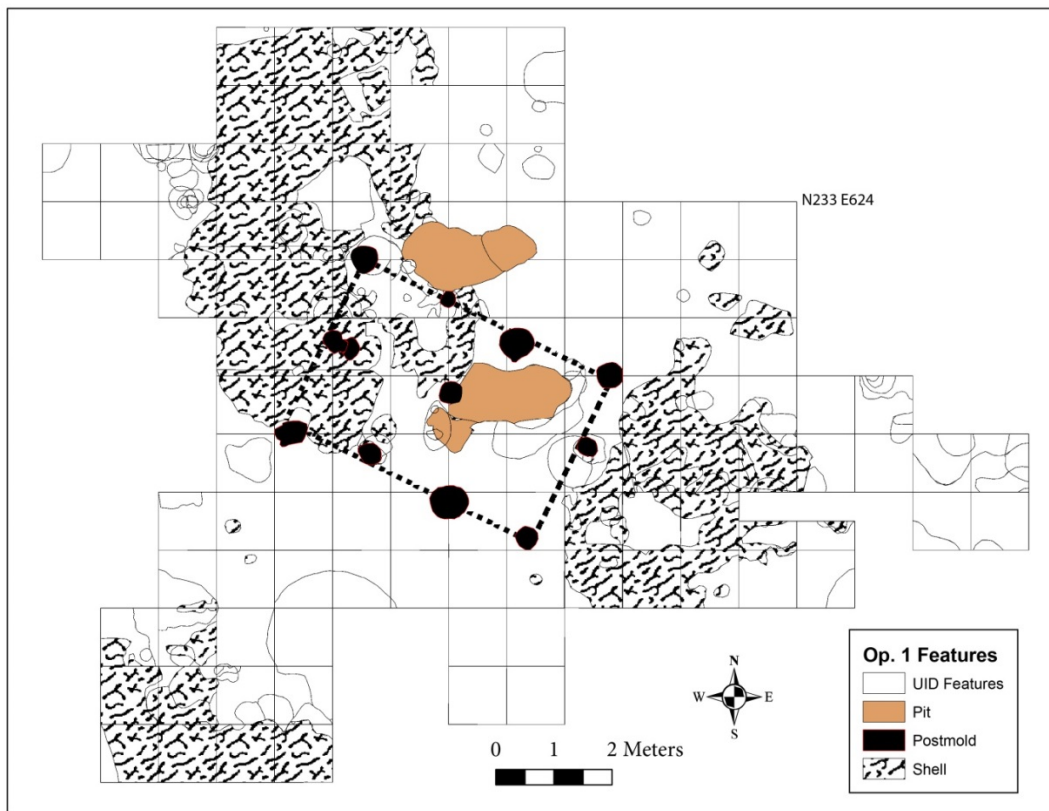


Figure 5.16. Operation 1 and Structure 7 features. Shell deposits surrounding and within structure 7 almost entirely date to the Woodland period, and all St. 7 postholes clearly cut through these earlier features and contain mission-era ceramics. The shell deposit located to the southwest of St. 7 dates to the mission-era.



Figure 5.17. Bone die (27.2/3410) recovered from Operation 1. Photograph by Nick Triozzi, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

OPERATION 2: Operation 2, located immediately to the south of operation 1, initially consisted of a 1 x 4 meter trench placed into what was interpreted as a circular pattern of magnetic anomalies, approximately 7-10 meters in diameter (figure 5.18). This trench was placed to span several of these magnetic features and hopefully provide evidence of architectural features as well as an interior/exterior boundary. While no mission-era features were uncovered, this trench did contain an abundance of Spanish artifacts (e.g., glass beads, nails, majolica), particularly when compared to other excavations in this sector of the pueblo. In 2012, a follow-up 4 x 4 meter block was excavated next to the exploratory trench, expanding the excavation into an area rapidly eroding into Wamassee Creek (Meyer 2013). Although this block excavation did not yield additional architectural features, artifacts were found in very high concentrations—including a concentration of metal ball buttons, including the one pictured in figure 5.19, an assemblage of metal artifacts interpreted by Glen Keeton of the AMNH to comprise a “dagger” handle (figure 5.20), and an intact Altamaha stamped ceramic vessel, sitting on the mission-era ground surface just outside of the circular magnetic feature.

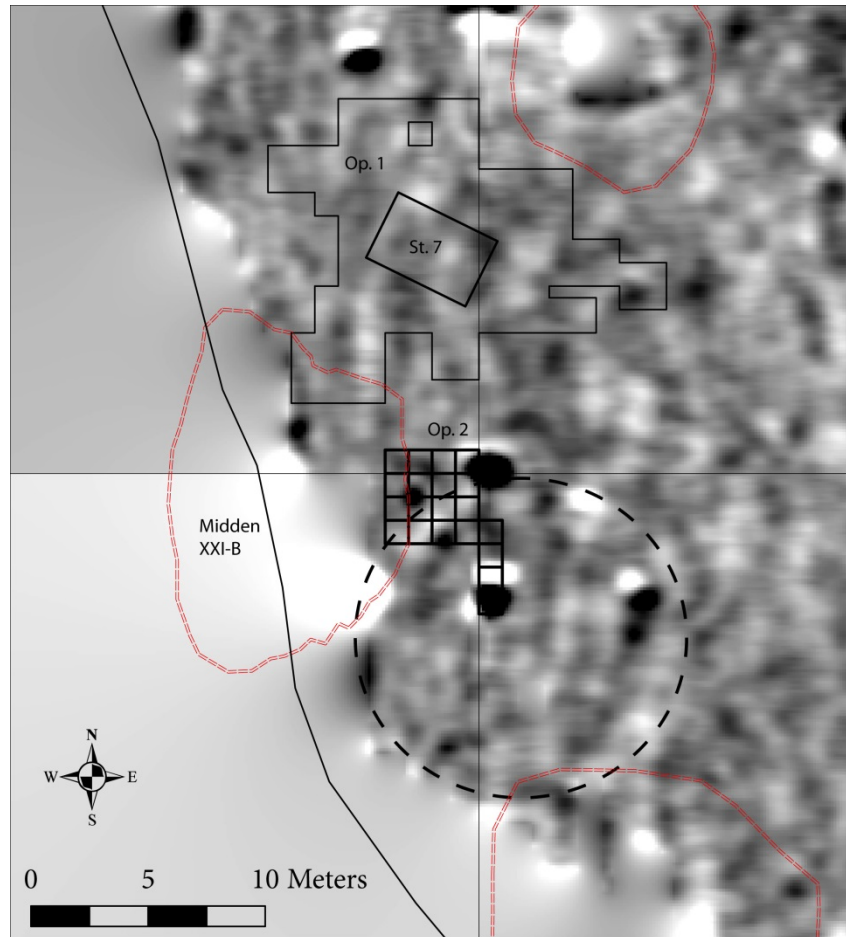


Figure 5.18. Operation 2 excavation block, positioned to test “circular” configuration of magnetic features.



Figure 5.19. Metal ball button (27.1/4373) recovered from Operation 2. Photograph by Nick Trriozi, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.



Figure 5.20. Dagger parts (27.1/1970, 27.1/2024, 27.1/4202, 27.1/4948, 27.1/5334) recovered from Operation 2. Photograph by Nick Trriozzi, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

OPERATION 3: Operation 3 is a 2x2 meter square placed into a high resistance area 3 meters north of operation 1 (figure 5.13). Few artifacts and features were recovered from this operation.

OPERATION 4: Operation 4 was a 2x2 meter unit placed 3.5 meters west of Operation 1 (figure 5.13). This unit was placed to span a high/low resistance boundary. Numerous features were identified and excavated in this unit, with most being concentrated in the western (low resistance) portion of the unit. Most features date to the Woodland (Late Deptford/Early Wilmington) period, with few diagnostic mission-era features apparent.

OPERATION 5: In March of 1992, a number of magnetic dipolar point features at the mission pueblo—identified during the early magnetometry surveys—were selected for archaeological test excavations. While many of these highly magnetic features proved to be modern metal debris, several test excavations yielded 17th-century ferrous artifacts. Unit N185.5 E688.5 (figure 5.13) yielded numerous mission-era artifacts, a possible posthole (later designated Feature (2012) 17), and a large fragment of iron barrel strap (in the unit sidewall) that was almost certainly responsible for dipolar feature. In 2012, the AMNH placed a 2 x 2 meter unit around the previous excavation in order to recover the fragment of barrel hoop partially exposed in 1992, while also mapping and excavating several mission-era postholes. This test unit was subsequently expanded into a major block excavation (Operation 5) in order to explore low-magnitude magnetic features surrounding the original excavation, as well as to explore a distinct shell free, circular, area of high resistance (figure 5.21A). Because of the size of this shell free area (20 meters in diameter) and its location—adjacent to structure 5 and between the Pueblo North “plaza” and the central mission quadrangle—my suspicion was that this area was a good

candidate for the location of the Santa Catalina council house. The Operation 5 excavations in this area revealed numerous architectural features, particularly an overlapping series of heavily-burned features (F(2012)64)—including postholes, charred wood and timber fragments, and a possible clay-lined hearth. These features correspond directly with a distinct magnetic anomaly evident in figure 5.21B. Analyses of the artifacts and features from this operation are ongoing, and the overlapping postholes and evidence of burned and collapsed timbers still preclude any definitive architectural identification.

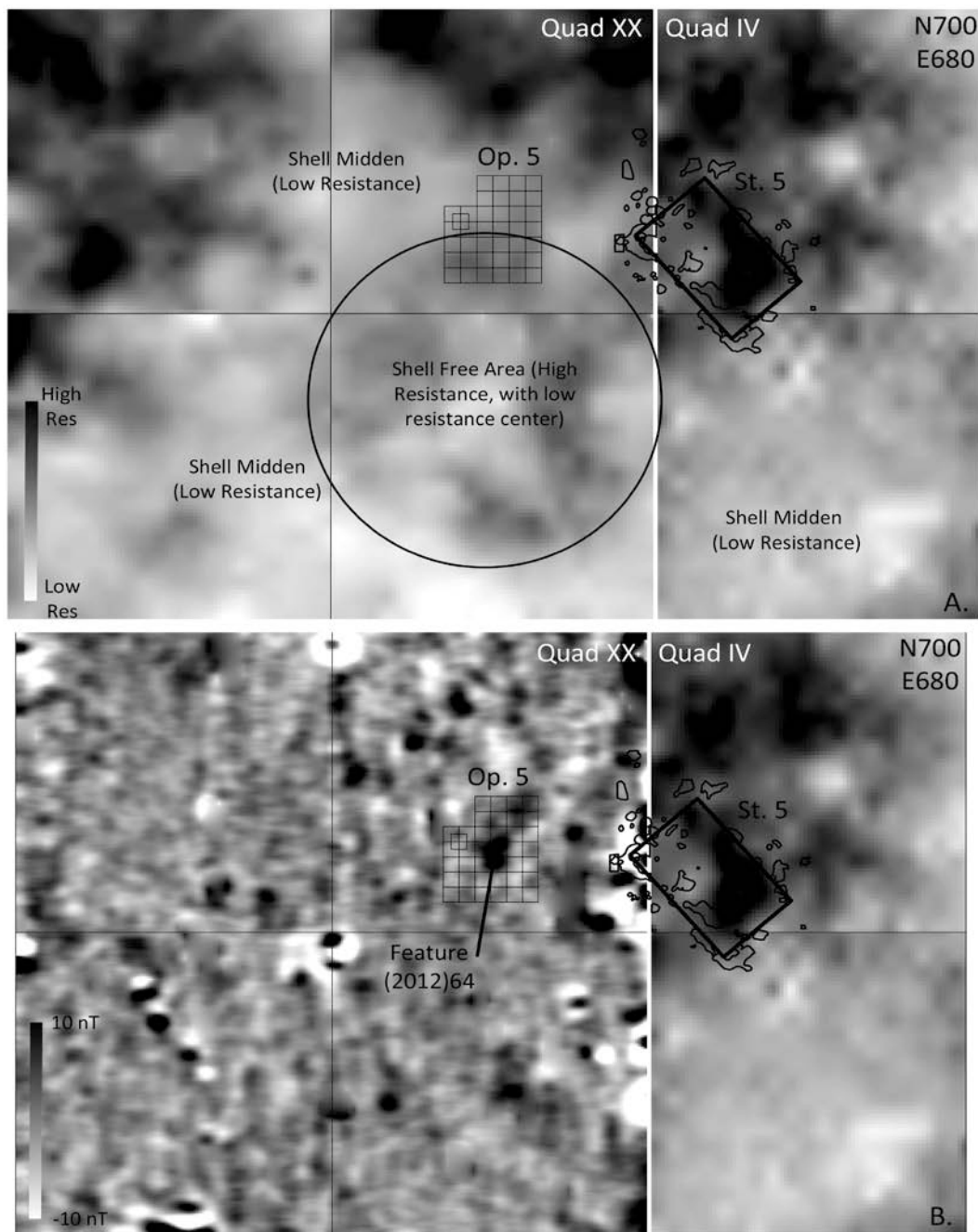


Figure 5.21. Detail of geophysical imagery in the vicinity of Structure 5 and Operation 5. (A.) Resistance data. Labeled low resistance areas correspond to surface and subsurface shell middens. Circular high resistance area is strikingly clean of shell. Other high resistance features clearly align with the 45 degree orientation of mission structures. (B.) Magnetometry data (Quad XX). Feature (2012) 64, identified in Operation 5, is an area of heavily burned soil containing postholes, burned wood and timbers, and a possible clay lined hearth that clearly corresponds with a positive magnetic feature. Grid lines are at 20m intervals.

OPERATION 6: This excavation consisted of a 2x2 meter unit placed over a shell feature (Feature (2013) 24) eroding into Wamassee creek (figures 5.13 and 5.22). This shell filled pit was highly unusual in that it was square in both plan view and profile. Numerous mission-era artifacts were recovered from this feature, and the glass beads recovered from it are included in the analysis presented in chapter seven.



Figure 5.22. Operation 6, Feature (2013) 24, eroding into Wamassee Creek. Photograph by Nick Triozzi, reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

OPERATION 7: Located several meters west of Operation 1, Operation 7 was placed into the eroding creek bank in order to recover an eroding dog burial (figure 5.13). No artifacts were recovered with the skeleton, and it is currently unclear if the dog burial dates to the mission occupation.

THE 9LI210 NEIGHBORHOOD

Site 9Li210 (AMNH 475), located and tested in the late 1970s, is the westernmost site in survey transect H-1 (Thomas 2008b:571, 564, fig. 20.9). Due to its distance (500 meters) from the survey transect (I-6) that intersected both Fallen Tree and Wamassee, the site was never considered to be directly associated with Mission Santa Catalina. Six 1 x 1m test pits were excavated into several large, distinct shell mounds (see figure 5.23), yielding a mix of faunal

remains and aboriginal ceramics. Seasonality estimates for the site indicate 4 season occupation (O'Brien and Thomas 2008). Though no historic materials were recovered, Thomas (2008b:571) reported that 67% of the ceramics date to the Altamaha Period.

In 2012 pedestrian surveys conducted between 9Li210 and the N300 line at the Mission Pueblo determined that continuous archaeological deposits exist between 9Li210 and the northern extent of the Pueblo. While subsurface testing has not yet demonstrated that all of these deposits date to the mission-period, the strong likelihood is that 9Li210 is part of a continuous mission-era occupation. Indeed, Altamaha ceramics were also recovered in considerable number from the next survey transect to the north (H-6) at site 9Li186 (AMNH 430) (Blair 2013:379-383, fig. 14.5, table 14.1; Thomas 2008b:569). This picture of an extensive mission landscape is consistent with contemporary observations and descriptions of the community (Dunlop 1929; Mathews 1911; see also Thomas 1987). The ceramics from 9Li210 were reanalyzed and are discussed in chapter six. No European artifacts were recovered from these excavations, nor were any architectural materials recovered.

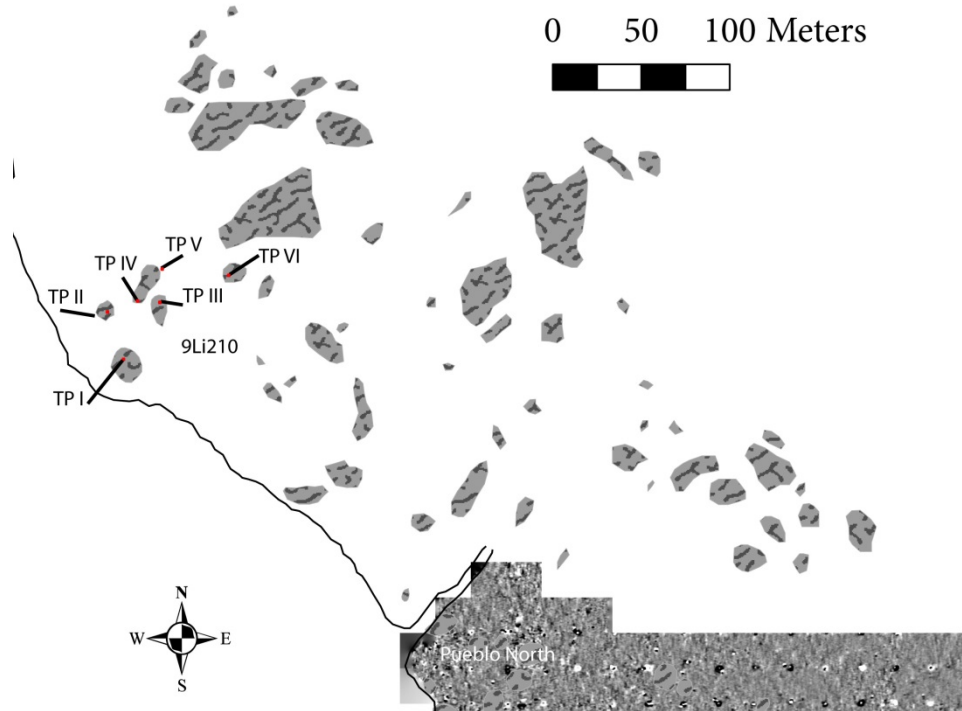


Figure 5.23. Distribution of shell middens and test pits at 9Li210. Northern extent of geophysical surveys within the Pueblo North shown at the bottom of the figure.

DISCUSSION

While a full report describing the excavations at the Mission Santa Catalina pueblo is currently in preparation for publication through the AMNH, in this chapter I limited my discussion to a brief review the history of archaeological excavations within the five neighborhoods of the mission pueblo that I defined in chapter four and emphasized those contexts that have yielded architectural data (table 5.1). As discussed above, excavations in the Santa Catalina mission pueblo, in addition to uncovering considerable material remains, also provide more limited evidence of architectural remains, though at this point few robust patterns are discernable. Notably, none of the structures appear to have been constructed of wattle and daub, a common construction technique during the earlier Irene period (Keene and Garrison 2013), as well as for mission buildings located in the quadrangle (e.g., church, friary) (Saunders 1990; Thomas 1993a). Only two structures (St. 5 and St. 7—both located in the Pueblo North) have been completely excavated. Both of these were rectangular, contained central posts—likely supporting a peaked roof, and were constructed of single set posts. More limited excavations at Fallen Tree and Wamassee Head by Lewis Larson, Joseph Caldwell, and the American Museum of Natural History provide more limited evidence of at least three additional structures, though the precise configuration of these buildings remains less well defined. Additional excavations, however, could likely clarify their orientation and architectural details. Comparatively, the most interesting architectural detail amongst the pueblo structures is the presence of wall trenches in the two partial buildings uncovered by Larson and Caldwell—both located in the southern portion of the site. Wall trench architecture has been reported from the Irene Phase Red Bird Creek Site (Keene and Garrison 2013; Pearson 1984; Sipe 2013b), as well as from mission-era contexts at Harris Neck and Fort King George (Caldwell 1953, 1954, 2014; Larson 1980b). Other than these sites, however, post construction appears to have been most common during the late Mississippian Irene period and the mission-era (Keene and Garrison 2013; Saunders 1990, 1993). While the structural data is currently too limited to suggest a pattern of wall trench architecture in the southern neighborhoods, and post construction in the northern neighborhoods, the possibility is tantalizing—particularly when compared with the variation between ceramic production and bead consumption within the mission neighborhoods, as I discuss in the following two chapters.

Table 5.1. Summary of structural data from the mission pueblo

Structure	Neighborhood	Construction	Cob Filled Smudge Pits	Hearth	Shape	Dimensions	Notes
Larson "Structure"	Fallen Tree	Wall trench and single set posts; no daub	Yes	Yes	Unknown	Unknown	
Caldwell "Structure"	Wamassee Head	Wall trench, no daub	Yes	Unknown	Rectangular?	Unknown	"Pig-tail" extension
St. 6	Wamassee Head	Single set posts; no daub	No	Unknown	Rectangular?	Unknown	
St. 5	Pueblo North	Single set posts; no daub	Yes	Yes	Rectangular	9 x 5 meters	
St. 7	Pueblo North	Single set posts; no daub	No	No	Rectangular	4.5 x 3 meters	

Chapter 6. Ceramic Communities of Practice at Mission Santa Catalina

Native made ceramics are, without question, the most abundant and intensively studied artifact type recovered at Southeastern Spanish colonial mission sites. In the province of Guale these ceramics consist of Irene and Altamaha series wares—primarily stamped and incised grit-tempered—related to the broader Lamar ceramics of the South Appalachian Mississippian region (Ferguson 1971; Hally 1994; Holmes 1898; Williams and Shapiro 1990). Many studies have well established the broad contours and temporal patterns of these, examining stylistic changes over time and elucidating the colonial transformation from the Irene to the Altamaha ceramic series (e.g., Braley 1990; Braley, O'Steen, and Quitmyer 1986; Cook 1978, 1980, 1986; Deagan and Thomas 2009; DePratter 1979, 1984, 2009; Moore and Jefferies 2012; Pearson 1984; Saunders 1992a, 1992b, 2000b, 2001, 2004, 2009, 2012; Thomas 2009a). Additionally, while these wares were originally considered to have been almost exclusively associated with the Guale people of the Georgia coast, recent research has shown that in addition to the Guale, Irene ceramics were also produced by the Orista/Escamacu in South Carolina (DePratter 2009; Worth 2009a) and during the 17th and 18th centuries Altamaha ceramics also came to be produced by the Yamassee (DePratter 2009; Green 1991; Sweeney 2003), the Mocama (Ashley 2009, 2013; Ashley, Rolland, and Thunen 2013; Gorman 2013; Hemmings and Deagan 1973; McMurray 1973; Rock 2006, 2010), and by numerous peoples in the vicinity of St. Augustine (Cordell and Deagan 2013; Deagan 1993, 2009a, 2009b; Merritt 1977, 1983; Otto and Lewis 1974; Piatek 1985; Smith 1948; Wallis, et al. 2014; Waters 2005, 2009; White 2002). Much work has also been done attempting to explain the processes of temporal changes and the geographic and cultural expansion of this pottery (Saunders 1992a, 2000b, 2001, 2009, 2012; Worth 2009a, 2012), and the presence of this pottery in downtown St. Augustine has also been used to examine the processes and dynamics of intermarriage and cohabitation amongst Spaniards, Native Americans, and Africans (Deagan 1973, 1974, 1983; Voss 2008b).

In this chapter I work with a sample of ceramics recovered from the Mission Santa Catalina pueblo. Rather than working from a framework in which I classify this pottery into either morphological or temporal types (e.g., Thomas 2008a:294), here I examine variation in individual ceramic attributes using the communities of practice framework I outlined in chapter 3—exploring micro-scale patterns of social relationships within the Santa Catalina community. I begin by reviewing more traditional approaches to ceramic variation, rooted in various understandings of stylistic variation. I follow this with a review of the broad contours of the mission-era ceramic sequence from the North Georgia coast, and conclude by describing the ceramic variation that I have discovered between each of the five mission neighborhoods discussed in chapters 4 and 5.

APPROACHES TO CERAMIC ANALYSIS: STYLE AND TECHNOLOGY

The most expansive body of literature discussing artifactual variation and related material meaning is the archaeological writing on “style.” “Style is pervasive in human society, no matter how we may define it. And style is involved in all archaeological analysis, whether it is covertly or overtly discussed” (Conkey and Hastorf 1990:1). While style was originally, and often, interpreted to be the residual variation that remains once functional and technical material constraints have been fulfilled—that is, “style as by-product,” over the last thirty years, with much contentious debate, researchers have complicated this tripartite division, observing that “style has function” and “technology has style” (Hegmon 1998:264-265; Lechtman 1977; Wobst 1977). While noting the variety of perspectives on this topic within archaeology, Hegmon (1992:517-518) identifies two commonalities that seem to have achieved consensus: “First, style is a way of doing something, and second, style involves a choice amongst various alternatives.” But, beyond this very general agreement, diverse understandings of style have proliferated. For example, Shanks and Tilley (1992:138) identified seven different approaches for understanding stylistic variation: 1) normative theory; 2) stylistic drift; 3) regional adaptation and form; 4) social interaction hypotheses; 5) motor habit variation; 6) information exchange; and 7) isochrestic variation.

In the normative, or culture-historical approach, artifacts were examined for their ability to serve as temporal markers (see Conkey and Hastorf 1990:3). “Dating the site or the sites was deemed to be an end in itself and so stylistic variation became relegated as the means to establish the passage of time rather than something which could provide information about past societies” (Shanks and Tilley 1992:138). As such, much archaeological analysis was concerned with the establishment of archaeological “types”—unquestioned markers of space and time (e.g., Ford 1954a, 1954b; Spaulding 1953, 1954; Wylie 2002). Explanations for stylistic change were little explored.

With the advent of processual archaeology, style was relegated, to some extent, to the realm of epiphenomena—it was that aspect of variability that was left over after function and technology were explained. As Stark (1998:4) writes:

One of the enduring legacies of the New Archaeology lay in its division of material culture variability into discrete realms of technology, function, and style. Technology was defined as raw materials and production steps, while function became associated with utilitarian or instrumental purposes (following Sackett 1990). As noted previously, style was viewed as a kind of residual quality, whose primary function was emblematic, selectively neutral, or even epiphenomenal.

Because of this division, change and variation in material style was explicitly considered to be a passive phenomenon—creating a diametrical opposition between style and function (e.g., Dunnell 1978; Jelinek 1976; Shanks and Tilley 1992:139-140). Such passive explanations for

stylistic variation (e.g., drift) were often affiliated with selectionist Darwinian approaches (see Collard and Shennan 2008; Dunnell 1992; Stark, Bowser, and Horne 2008).

The social interaction explanation for stylistic similarity rests on the assumption that increased interaction leads to greater stylistic similarity. This position, commonly associated with the ceramic sociologists (e.g., Arnold 1984; Deetz 1965; Frankel 1978; Hill 1970; Longacre 1970; Plog 1978), is dismissed by Shanks and Tilley (1992:140-141) as untenable and unsupported by much ethnoarchaeological research. They argue that there are many examples in which stylistic variation occurs between groups with frequent and close interaction *and* many situations where similar artifact styles and types cross multiple social boundaries (e.g., Bowser 2000; Bowser and Patton 2008; Gosselain 1998; Hodder 1982; MacEachern 1998). However, while a simplistic reliance on *interaction* as the causal factor for stylistic similarity is problematic, when *learning* is emphasized as the interactive mechanism, “the production and perpetuation of style” may be better understood (Hegmon 1992:521).

Shanks and Tilley (1992:141) identify motor habit variation as another way in which archaeologists have dealt with stylistic variation (e.g., Hill 1977, 1978; Hill and Gunn 1977), specifically considering motor habit variation *between individuals* as an important, but minor, portion of observed differences—arguing that “this variation is subconscious... [and] cannot be taught or transmitted.” More recent studies of learning and motor skills suggest otherwise (e.g., Carr and Maslowski 1995; 1999, 2001; Minar and Crown 2001; Sassaman and Rudolphi 2001). For example, Minar (2001:393-394, emphasis mine) notes that, “According to some learning theorists, *the initial steps of learning motor skills involve imitation* (Ryan, Blakeslee, and Furst 1986). In the case of spinning, it is not the appearance of the teacher's product but rather *the teacher's actions that are observed, imitated, and eventually learned*. This is a very different process from the observation and imitation of design or style, where the learning may be focused on the teacher's product.” This is important for two reasons: first, because motor habits can be transmitted and learned, such variation may reflect a social group of some type and not merely individual performance, and second, this suggests that a theoretical perspective that combines social interaction (learning) and motor habits might have significant utility for explaining some types of stylistic variation.

Style as communication, or information exchange, is most closely associated with the work of Wobst (1977) and Wiessner (1983, 1985) (see also Braun and Plog 1982; Hantman and Plog 1982). The importance of this perspective is that it broke down the style/function dichotomy, emphasizing that style can have a function—specifically to convey information about social boundaries. But, as Wobst (1999) later clarified, he does not conceive of style as merely reflecting ethnicity or social affiliation, and more recent ethnoarchaeological studies, such as Bowser 2000—who identifies private domestic spaces and women's political factions as the (unexpected) location and content of ceramic style, have contested earlier formulated expectations for the types and locations of messages (i.e., ethnicity, publicly) that might be

actively communicated (Stern 1989). Weissner (1983:257-258) has divided the information exchange approach to style into two distinct types: *emblemic*, that is “formal variation in material culture that has a distinct referent and transmits a clear message to a defined target population (Wobst 1977) about conscious affiliation or identity,” and *assertive*, or the “formal variation in material culture which is personally based and which carries information supporting individual identity.” Many of her examples of assertive style are “consumption,” rather than production practices.

Isochrestic variation, meaning “equivalent in use” is a conception of passive style that was promoted by Sackett (1985; also 1977, 1982, 1986, 1990), which he opposes to an active iconological style. In his view style includes any and all material attributes, “the only requisites are that it constitutes one of a range of equally viable options that were potentially available to the artisan and that its choice was dictated by the craft tradition specific to the social group within which he or she has been, and presumably continues to be, enculturated” (Sackett 1985:157). This perspective breaks down the distinction/dualism between style and function (“style is function writ small” (Sackett 1990:34).

Sackett (1990:37) also makes an important point about style and social boundaries, suggesting that “The choices involved in isochrestic behavior create the raw material of style, that style which informs upon ethnicity is an etic perception of the observer, and that style which mediates ethnicity is an emic phenomenon involving the operation of symbolic behavior upon the products of isochrestic choice” But, as highlighted by Carr and Maslowski (1995), all examples of isochrestic variation do not fall neatly into these two categories. They identify the direction of cordage twist, a learned and conservative behavior, as an “isochrestic formal variation,” but, because it is a habitual and unconsciously patterned behavior that is not (easily) observable it neither actively signals a social identity nor is it available as a product for emic mediation. Isochrestic variation can fall into a middle realm of material variation that corresponds to boundaries that are neither recognized emicly nor eticly (at least conventionally).

This diversity of understandings of what style is, and how it may be used, however, are not an indication of theoretical weakness. Conkey and Hastorf (1990:3) argue that “the use of style must remain flexible *and* problematical. It will also remain ambiguous and underdetermined.” So despite the fact that we are faced with numerous categories of stylistic analysis, including unitary models that stress, for example, social interaction (e.g., Deetz 1965; Frankel 1978; Hill 1970; Longacre 1970; Plog 1978) or information-exchange (Wobst 1977), and multivariate systems that include active versus passive style, emblemic versus assertive (Weissner 1983), isochrestic versus iconographic (Sackett 1982, 1985, 1990) versus symbolic (Plog 1990, 1995), or panache versus protocol (Macdonald 1990), these categories should not be considered to be mutually exclusive, but rather interpreted as being demonstrative of the pluralistic nature of stylistic meaning making (see discussion in Conkey 1990:6). Similarly, Plog (1995:370-374) argues:

Although these categories imply discrete types of behavior, they are perhaps better viewed as different segments or extremes of several dimensions of cultural behavior. The categories contrast behavior that is unconscious and habitual behavior that is conscious and purposive. They contrast multivocal and univocal symbols... each aspect may account for different components of stylistic variation on material from a given area. Rather than being mutually exclusive explanations, they are complementary... I suggest that these approaches have serious weaknesses if they are regarded as the *only* worthwhile approaches to analyzing style. If we accept the multidimensional and processual nature of style, we also must recognize that different aspects of stylistic variation may be components of different types of behavior, whether isochrestic, symbolic, or iconographic. Analyses that focus on only one aspect of stylistic variation therefore are likely to miss a wealth of information while spuriously grouping aspects of that variation that are independent. We therefore need to measure more aspects of stylistic variation, not fewer.

TECHNOLOGICAL STYLES AND TECHNICAL SYSTEMS

Along with style, technology is the other axis along which ceramic variation has traditionally been examined. Techniques, or technology, can be defined as “the meaningful engagement of social actors with their material conditions of existence; and... technology not only is the tangible techniques of object-making, but also makes tangible fundamental metaphors of daily social interaction” (Dobres and Hoffman 1994:215; see also Killick 2004). That is, technology encompasses the suite of choices made regarding tools, raw materials, behaviors, and actions that create material culture; two comparable, but theoretically distinct, approaches engage with technology in this way—the French *techniques et culture* school and the Americanist technological style approach advocated by Heather Lechtman (for extensive comparisons of these two schools see Dietler and Herbich 1998; Dobres and Hoffman 1994; Roddick 2009; Stark 1998). This focus on choices and alternatives have led some to note similarities between Sackett’s (1982, 1985, 1990) notion of isochrestic variation (“equivalent in use”) and these two technological approaches that consider the full variety of raw materials, methods, and techniques that can create functionally equivalent objects (Roddick 2009:57; Stark 1998:6). But, despite this seeming affinity between technological style and isochrestic variation, there is a profound difference: isochrestic variation refers only to form. Specifically discussing this distinction, Lemonnier (1986:148), one of the leading proponents of the *techniques et culture* school, argues that in Sackett’s (1982) “work, the scope attributed to style is the widest possible, [and] at least in appearance style includes the functionally equivalent means to reach the same end, a definition so broad that we could imagine style to exist in any variation of material culture. Yet in spite of this broad definition, Sackett treats only the *form* of the *same* type of artifact in practice.”

The broader system, advocated by both the French school, and by Lechtman, suggests that technology includes much more than objects and form, rather there is a “social totality of technological practice” (Roddick 2009:58). That is, the performative act of creation, through the making of choices amongst possible alternatives is as meaningful and important as the object itself. Lechtman’s (1977, 1984, 1993) “technological style” has often been compared to the *techniques et culture* school (e.g., Dietler and Herbich 1998; Dobres and Hoffman 1994; Hegmon 1998; Roddick 2009; Stark 1998). In her approach she suggests that style *is* technology, but it is not merely the hardware, tools and materials of production that are important, but rather the entire system of activities of production is the analytic unit.

For the French school, this idea derives from Marcel Mauss’ (1935 [1973]) notion of “techniques of the body,” or those bodily actions and behaviors that are distinctively created and repeated through education and imitation. This understanding that ways of doing and the importance of gestures and movements are not secondary to form and object helped influence Leroi-Gourhan (1993) to develop the concept of *chaîne opératoire* or operational sequence. Most strongly advocated by Lemonnier (e.g., Lemonnier 1986; 1992, 1993a, 1993b; Lemonnier and Pfaffenberger 1989), an operational sequence includes the entire range of gestures, motions, knowledge, behaviors, and choices (including of tools and raw materials) that are involved in both artifact production and material actions in the social world (see also Cresswell 1990; Dobres 1999, 2000, 2009; Edmonds 1990; Martín-Torres 2002; Pfaffenberger 1998; Schlanger 1990, 1994). Because many early examples and applications of *chaîne opératoire* were focused on lithic technology, some have argued that *chaîne opératoire* and lithic reduction sequences are the same thing (see Andrefsky 2009; Shott 2003), but key differences include the argument that *chaîne opératoire* is not limited to specific material forms (i.e., lithics) and includes not just sequences of actions, but also the cognitive, mental, psychological, and phenomenological aspects of technological production and social action (e.g., Andrefsky 2009; Dobres 2009; Roux 1990). In particular, based on arguments linking technology to practice and agency theory, Marcia-Anne Dobres (1995, 1999, 2000, 2009, 2010; Dobres and Hoffman 1994) has been a strong advocate for the potential of the analysis of operational sequences to yield insight into the social dimensions of material manufacture, or, in her terms, *chaîne opératoire* “provides an empirical entry point for researching how meaning-making, agency, and personhood unfolded during artifact production and use” (Dobres 2009).

As elaborated in chapter three, the approach I adopt for my analysis is grounded in situated learning theory (Lave and Wenger 1991). In this approach, rather than starting from a position in which the style of archaeological ceramics are thought to reflect social identities, by shifting the analysis to processes of learning and social reproduction objects are actively implicated in the production, maintenance, and transformation of social boundaries. By beginning with things, learning, and practice, social identities are not conceptualized as static categories but are instead intimately related with historical patterns of associations of production

and consumption. Such an approach, however, is not merely based on *interaction*. Rather, it is an approach that explicitly foregrounds the social actor; it provides a way to “shift from talking about sherds to talking about potters” (Joyce 2012c:150). Further, integrating the concept of the community of practice with multiple approaches to style— particularly those approaches grounded in motor-habit variation and technological style—provides a method of approaching the multiple ways in which things operate in relation to social boundaries. This approach explicitly takes material culture variation to be the discursive and nondiscursive product of co-participating communities of learners, and variation of each attribute—both design and technological—are understood to be the result of social processes of co-participation in ceramic production.

Using this approach, in the rest of this chapter I examine the attributes of ceramics recovered from the Mission Santa Catalina pueblo, comparing individual stylistic and technological attributes between the five neighborhoods defined in chapters four and five: 9Li210, the Pueblo North, the Pueblo East, Wamassee Head, and Fallen Tree. While previous ceramic studies at Mission Santa Catalina have shown that the pottery from each of these sectors and the central mission quadrangle is *typologically* indistinguishable (Brewer 1985; May 2008; Napolitano and Semon 2008; Saunders 1992a, 2000b, 2009; Semon 2011; Thomas 2008b, 2009a), here I consider small-scale variation in order to identify ceramic micro-styles within the Santa Catalina Pueblo. Micro-styles are defined by Herbich and Dietler (2008:231) as the distinctive combinations, or characteristic permutations, of technical, formal, and decorative features, and such patterning is the material outcome of communities of practice—in this case communities of potters engaged in learning and the co-participation of pottery production. The question guiding this research is, do distinct potting communities of practice exist within the different neighborhoods at Mission Santa Catalina? And, if they do—or do not—what does this suggest about social relationships amongst the Guale communities that aggregated at Mission Santa Catalina?

CERAMICS OF THE NORTH GEORGIA COAST

Due to the extensive WPA archaeological work the ceramic chronology for the Georgia coast is one of the most robust of the entire South Appalachian region (Caldwell and McCann 1941; Caldwell 1971; Caldwell and Waring 1939a, 1939b, 1939c; DePratter 1979, 1991). For St. Catherines Island in particular, the ceramic chronology is complemented by an extraordinary assemblage of radiocarbon dates (Thomas 2008b, 2009a). Table 6.1 presents the generally accepted archaeological phase/period sequence for St. Catherines Island, while table 6.2 identifies the ceramic types associated with the Late Mississippian (post-A.D. 1300) period.

Table 6.1. Archaeological Period and Phase Sequence for St. Catherines Island (after Thomas 2008b:423, table 15.3)

Period	Phase	Temper	Date
Altamaha	Altamaha	Grit	A.D. 1580-1700+
Irene	Irene II / Pine Harbor	Grit	A.D. 1450-1580
	Irene I		A.D. 1300-1450
St. Catherines	St. Catherines	Fine clay / grog	A.D. 800-1300
Wilmington	Wilmington	Coarse clay / grog	A.D. 350-800
	Walthour (Deptford III)		
Deptford	Deptford II	Sand and grit	350 B.C. - A.D. 350
	Deptford I		
Refuge	Refuge III	Sand and grit	1000 - 350 B.C.
	Refuge II		
	Refuge I		
St. Simons	St. Simons II	Fiber	3000-1000 B.C.
	St. Simons I		

Table 6.2. Late Prehistoric to Early Historic Ceramic Sequence for the North Georgia Coast (after DePratter 2009:35, table 1.1; Thomas 2008b:405, table 15.1)

Period	Phase	Ceramic Type	Date
Altamaha	Altamaha	Altamaha Line Block	A.D. 1580-1700+
		Altamaha Cross Simple Stamped	
		Altamaha Simple Stamped	
		Altamaha Check Stamped	
		Altamaha/Mission Red Filmed	
		Irene Incised	

		Irene Burnished Plain	
		Irene Plain	
Irene	Irene II / Pine Harbor	Irene Incised	A.D. 1450-1580
		Irene Complicated Stamped	
		Irene Burnished Plain	
	Irene I	Irene Plain	A.D. 1300-1450
		Irene Complicated Stamped	
		Irene Burnished Plain	
		Irene Plain	

IRENE POTTERY

Irene ceramics were named by Joseph Caldwell based on his work at the Late Mississippian Irene Mound Site at the mouth of the Savannah River (Caldwell and McCann 1941; Caldwell and Waring 1939a, 1939b). The early Irene (Irene I; A.D. 1300-1450) wares consist of Irene Plain, Irene Burnished Plain, and Irene Complicated Stamped pottery.²⁷ Complicated Stamped pottery was constructed using wooden paddles carved with variations of the filfot cross design. Individual sherds of this type are generally identified by the combination of quartz grit tempering, burnished interiors, and narrow, curvilinear, lands and grooves²⁸ comprising the stamp designs (figure 6.1). Around A.D. 1450—at roughly the same time that the Irene Site and the entire lower Savannah River appears to have been abandoned (Anderson 1994b; Anderson, Hally, and Rudolph 1986)—incised wares (individually decorated with a pointed stylus) began to be manufactured. The presence of incising is generally understood to mark the beginning of the Irene II phase (A.D. 1450-1580) (DePratter 2009), though Braley (1990; Braley, O'Steen, and Quitmyer 1986) suggests incising begins earlier and defines an intermediary Pipemaker's Creek Phase between Irene I and Pine Harbor. Incised wares persist throughout the mission-era, though designs tend to become more elaborate and often include intricate punctations (figure 6.2).

²⁷ Other decorations (e.g., check stamping) have also been documented in small quantities (DePratter 2009:21).

²⁸ Lands and grooves are the raised and recessed ridges produced from paddle stamping. The raised lands on the potsherd correspond to the actual carved groove on the wooden paddle.



Figure 6.1. Irene Complicated Stamped sherd (28.0/3617.003) from Fallen Tree.



Figure 6.2. Irene Incised sherd (28.0/0995.002) from Wamassee Head.

Rim forms during the Irene period are also highly distinctive, with applied nodes and applique rim strips common. Rim strips appear to increase in quantity through the Irene period, becoming increasingly embellished with segmentation and cane/reed punctation, while applied nodes decrease in quantity (Pearson 1984, fig. 6 and 7). Additionally, percentages of plain pottery (both burnished and unburnished) increase from the Irene I to the Irene II periods (Saunders 2000b).

ALTAMAHA POTTERY

Virtually all researchers accept that Altamaha series wares are genealogically related to the earlier Irene pottery (DePratter 2009; Saunders 1992a, 2000b, 2004, 2009), though sometime during the late 16th century several major changes occurred in coastal pottery.²⁹ At this time curvilinear complicated stamping virtually disappeared, being replaced with a rectilinear “Line Block” stamping, often including a central, circular design element (figure 6.3). Saunders (2000a, 2001, 2012) has identified this design motif as a simplified version of the filfot cross, associating both complicated stamping and line block stamping with the four-field “world symbol” common to Southeastern native iconography. The lands and grooves in the stamping also become thicker during the Altamaha period, overstacking becomes more common, and rim forms changed. Applied nodes and applique rim strips disappear, and other than plain rims that persist throughout the sequence, the typical rim is now folded (figure 6.4). Rim folds are often decorated with punctations; these are most commonly cane/reed punctations, though other types (e.g., triangle, fingernail) exist and are thought to increase in diversity over time (Saunders 2000b). The depth of the rim fold—like other Lamar ceramics with folded rims—are also thought to increase over time (Williams and Shapiro 1990).



Figure 6.3. Altamaha Line Block sherd (28.0/3603.015) from Fallen Tree.

²⁹ Other interpretations and chronologies to the pottery of the Georgia coast also exist, but have not been widely accepted (Crook 1978a, 1984a, 1984b, 1986; Martinez 1975; Wallace 1975).



Figure 6.4. Cane/Reed Punctate folded rim on an Altamaha Line Block/Cross Simple Stamped sherd (28.1/1936.011) from the Pueblo East.

Other changes between the Irene and Altamaha periods include the introduction of red filming, primarily associated with new vessel forms, particularly brimmed plates and shallow bowls. Another new vessel form during the Altamaha period is the so-called “Bell Pot,” thought to be modeled on the shape of an inverted mission bell (figure 6.5). Such colono-ware forms, and red-filming, are a hallmark of Spanish mission pottery (Cordell 2002, 2013; Melcher 2011; Rolland and Ashley 2000).



Figure 6.5. Altamaha Line Block “Bell Pot” (28.0/0258) from Wamassee Head.

The attributes of Altamaha series pottery were first identified and described by Joseph Caldwell in his University of Chicago Master’s thesis (Caldwell 1943). Working at the Fort King George Site in Darien, GA, which has been identified as the likely location of Mission Santo Domingo de Talaje (Worth 1995:194), Caldwell (1943:37-44) defined five distinct ceramic types from these excavations comprising a single complex that he called King George, including the following types: King George Malleated, King George Check Stamped, King George Incised, King George Plain, and King George Red Filmed.

Since that time a number of different researchers have used numerous names to refer to essentially the same pottery (DePratter 2009). The term Altamaha—used here and by most researchers on the Georgia coast—was first introduced by Sheila Caldwell in the 1950’s, also working at Fort King George (Caldwell 1953, 1954, n.d.), though a recent and posthumously published “final” version of her report from these excavations indicate that she ultimately intended to replace “Altamaha” for some types with “Guale” (Caldwell 2014). Larson, while also working on the Georgia coast, referred to the same ceramic materials as Sutherland Bluff (Larson 1978), while Hale Smith (1948), working in Florida, defined them as the San Marcos ceramic series. Despite the plethora of names, recently a consensus has emerged that all of these ceramic series describe virtually the same material, whether it’s called Altamaha or Sutherland Bluff on the Georgia coast or San Marcos in Florida (Deagan and Thomas 2009; Saunders 2000b).

MATERIALS

Ceramic samples were selected for analysis from each of the five neighborhoods defined in chapter 4 and described in chapter 5. Table 6.3 lists the specific proveniences from which the materials analyzed were recovered. In general, samples were selected from discrete and well bounded midden contexts (e.g., Midden II-D at Wamasse Head, Midden III-A at the Pueblo East) in order to control sample sizes, as well as due to accessibility and contextual difficulties due to working with legacy museum collections. Additionally, where possible, I selected samples that either had never been analyzed and/or reported in print. However, regardless of context, in the rest of this chapter all samples are collapsed to the “neighborhood” level as the basic analytic unit.

Table 6.3. Contexts of Ceramics Analyzed from Mission Santa Catalina

Neighborhood	Unit	Area	Excavation Date	Context
Fallen Tree	IA1	1 sq. meter	1980	Fallen Tree, non-midden
	IA2	1 sq. meter	1980	Fallen Tree, non-midden
	IB1	1 sq. meter	1980	Fallen Tree, non-midden
	IB2	1 sq. meter	1980	Fallen Tree, non-midden

	IB3	1 sq. meter	1980	Fallen Tree, non-midden
	IC1	1 sq. meter	1980	Fallen Tree, non-midden
	IC2	1 sq. meter	1980	Fallen Tree, non-midden
	ID1	1 sq. meter	1980	Adjacent to May (2008) Block A
	ID2	1 sq. meter	1980	Midden I-B
	IE1	1 sq. meter	1980	Midden I-B
	IE2	1 sq. meter	1980	Fallen Tree Midden
	IF1	1 sq. meter	1980	Midden I-B
	IF2	1 sq. meter	1980	Midden I-B
	IG2	1 sq. meter	1980	Midden I-B
	IH1	1 sq. meter	1980	Midden I-C
Wamassee Head	Caldwell Area D	100 sq. feet	1970	Midden II-D
	208D	1 sq. meter	1978	Midden II-D
Pueblo East	III(G)A	1 sq. meter	1980	Midden III-A
	N134 W56	4 sq. meters	1983	Midden III-A
Pueblo North	TP 1	1 sq. meter	2005	Midden XXI-B
	TP 2	1 sq. meter	2005	Midden XX-B
	TP 3	1 sq. meter	2005	Midden XXI-A
	TP 4	1 sq. meter	2005	Midden XXI-A
	TP 5	1 sq. meter	2005	Midden XXI-A
	TP 6	1 sq. meter	2005	Midden XXI-A
	TP 7	1 sq. meter	2005	Midden XXI-B
	TP 8	1 sq. meter	2005	Midden XXI-A
9Li210	TP I	1 sq. meter	1978	Midden 9Li210-A
	TP II	1 sq. meter	1978	Midden 9Li210-B
	TP III	1 sq. meter	1978	Midden 9Li210-C
	TP IV	1 sq. meter	1978	Midden 9Li210-D

	TP V	1 sq. meter	1978	Midden 9Li210-D
	TP VI	1 sq. meter	1978	Midden 9Li210-E

METHODS

In this section I describe the ceramic attributes of the Irene and Altamaha ceramics analyzed in this study. These include those that have generally been considered “technological,” as well as “stylistic (c.f., Hegmon 1998). All analysis was conducted at the level of the individual sherd. Due to the breakage patterns of the sherds, no attempt was made to calculate minimum number of vessels. All data were tabulated by both count and weight, yielding essentially identical results. For simplicity all analyses presented below are based only on sherd count.

FABRIC ANALYSIS

The fabric analysis consisted of analyzing two major components: temper (aplastic inclusions) and firing. The temper analysis was designed to detect subtle differences in the recipes used to process clays for ceramic manufacture, as well as to detect variation due to the exploitation of different “grit” resources. As Saunders (2000b:74-75) has noted, the larger quartz inclusions generally used to temper Irene and Altamaha sherds are patchily distributed, and variation in size, angularity, and abundance reflects differences in both procurement and production practices of communities of potters. Indeed, Roddick (2015) has elegantly discussed the social implications of the circulation and procurement of the geologic materials involved in ceramic production, and the ways in which the “raw” materials of ceramic production are embedded into broader social practices.³⁰

TEMPER TYPE: Categorization of temper, or aplastic inclusions, was determined visually, under low-powered magnification to determine generalized (primary and secondary) categories of inclusions (e.g., grit, sand, clay, fiber). Changes in temper type long been known to be temporally sensitive on the Georgia coast (Caldwell 1971; Caldwell and Waring 1939a, 1939b; DePratter 1979, 1991). With the exception of an extreme minority of earlier ceramic types, virtually the entire assemblage studied here had either grit or sand as its primary inclusion.

³⁰ While I do not engage with the sourcing of the actual clay used in the manufacture of these ceramics, such studies have been extremely productive for understanding Southeastern pottery production and consumption—both in mission contexts (e.g., Cordell and Deagan 2013; Wallis, et al. 2014) and further in the past (e.g., Wallis, et al. 2010). Additionally, the paste analysis conducted here (in the interest of generating large, representative sample sizes) is more qualitative than quantitative and additional petrographic analysis to confirm and strengthen these results is an important next step (e.g., Cordell and Deagan 2013).

TEMPER SIZE AND ABUNDANCE: Semi-quantitative estimates of temper grain size and percent inclusion were tabulated using the Wentworth scale (categorized from fine to granule) (Shepard 1956:118) and estimated from Orton et al.'s (1993:238, fig. A.4) percentage inclusion estimation chart. Only sherds categorized as having "grit" inclusions were included in this portion of the analysis. Sherds characterized as "sand tempered" generally had inclusions too fine to consistently measure.

TEMPER SHAPE: The shape of aplastic inclusions (sphericity and angularity) was determined using Powers' scale of roundness (Orton, Tyers, and Vince 1993:239, fig. A.5), with inclusions being classified as either high or low sphericity and angularity ranging from 1 (very angular) to 6 (well rounded).

FIRING: All sherds were also analyzed for firing condition with both core configuration (firing profile) and basic paste colors recorded (e.g., black, gray, tan, orange). Because "core effects are indicators of the atmosphere and temperature of firing" patterned variation is assumed to relate to differing firing practices between communities of potters (Rye 1981:115). The documented configuration and colors were subsequently converted to oxidizing (O) and reducing (R) categories, with orange, red, and tan pastes interpreted as indicating an oxidizing atmosphere and gray and black pastes interpreted as indicating firing in a reducing atmosphere (as well as carbon retention) (Orton, Tyers, and Vince 1993:134, fig. 11.1; Rye 1981:116, fig. 104; Sunseri 2009:166-167). Percent carbon retention was also estimated based on the percentage of the ceramic cross section that was either black or dark gray in color. Figure 6.6 shows an example of a firing core profile coded as ORO, having light tan-brown interior and exteriors and a dark grey, reduced, interior. Figure 6.7 shows an example of a sherd identified as having a "complex" firing profile, indicating a complicated sequence of firing and cooling in both oxidizing and reducing conditions (Rye 1981:118).



Figure 6.6. Example of ceramic (28.0/3614.001) from Fallen Tree coded ORO (oxidized – reduced – oxidized), after Rye(1981).



Figure 6.7. Example of ceramic (28.0/0260) from Wamassee Head having a “complex” core, after Rye(1981).

DECORATIVE ATTRIBUTES

Decorative attributes were recorded that reflect both intentional design decisions, as well as unconscious habitual practices.

SURFACE DECORATION AND FINISHING: General decorative categories recorded included plain, stamped, incised, and punctated sherds.³¹ For plain sherds exterior finishing characteristics were recorded (e.g., burnishing, brushing, scraping, red filming), while interior finishing characteristics were recorded for all sherds.

The most intensive analysis consisted of recording attributes associated with paddle stamping. Major categories of stamping included complicated stamping (i.e., any ceramic with a curvilinear element), check stamping, simple stamping (i.e., parallel lines), cross simple stamping, and line block stamping. These latter two categories have caused some confusion in the literature and can be difficult to distinguish. For example, when Williams and Thompson (1999:8-9) compiled the original version of the Guide to Georgia Indian Pottery types they described the Altamaha Line Block and Altamaha Cross Simple Stamp varieties, writing: “By 1969 it was clear to Caldwell that the design was made by successive application of a simple stamped paddle. He used this term [Altamaha Cross Simple Stamped] at that time for the type, and this actually makes more sense than the Line Block name, although the former is quite common in the literature now,” suggesting that Line Block “actually is a series of cross simple stamps.”³²

Such conflation of these designs is not uncommon. As Saunders (2001:92, note 14) has observed, “many researchers have assumed this four-field design was the dominant motif and assigned all Altamaha pottery to this category without close inspection.” Similarly, citing Chester DePratter, Guerrero and Thomas (2008:391) note that “rectilinear stamping is properly termed “line block stamped”, but much of the material is actually cross simple stamped; separating the two techniques is time-consuming and imprecise. Perhaps, because a very similar effect is created by both techniques, it is not important to separate them at all. Problems such as this one must await further, more detailed ceramic studies of the ceramics at Mission Santa Catalina and elsewhere” (see also DePratter 2009).

Part of the problem leading to this confusion can be traced to the actual practices of the potters applying the stamp to the ceramic wares. Indeed, while in some cases the specific design motif of the stamped pottery is clearly visible, in many cases sherds are considerably overstamped, resulting in ambiguous identifications. In my analysis, somewhat similarly to Saunders’s (2000b:152) approach, all ceramics were analyzed to reflect both discernable design motif as well as the presence of overstamping. In addition to the distinct line blocked, simple stamped, and cross simple stamped, sherds were also identified as “Line Block/Cross Simple Stamp” and “Cross Simple Stamp/Line Block.” The order reflects the dominant motif evident, and hence a rough estimate of the “degree” of overstamping occurring. For example, the ceramic

³¹ While specific incising and punctations attributes were recorded, due to the small number of sherds and the high degree of variability no detailed analysis of this decoration category is presented.

³² This has been corrected and clarified in the updated, online, version of the guide (Williams and Thompson 2005).

depicted in figure 6.4 was coded as “Line Blocked (with circular element) / Cross Simple Stamped.”

Braley (1990) has suggested that cross simple stamping (and over stamping in general) was primarily a late 17th century phenomenon, noting its presence in late St. Augustine contexts (Otto and Lewis 1974) and absence at the comparatively early Harris Neck site (Braley, O'Steen, and Quitmyer 1986). However, Saunders (2000b:152), working from a much larger sample, noted no increase in over stamping between the ca. 1605-1680 assemblage from Mission Santa Catalina and the ca. 1683-1702 assemblage from the Amelia Island iteration of Mission Santa Catalina. Indeed, she actually observed a slight decrease in the amount of over stamping present.

In addition to motif and degree of over stamping, land and groove measurements were recorded (with digital calipers) for every sherd possible. While land and groove measurements have been shown to increase from the Irene to the Altamaha period (Saunders 2000b), the analysis here was designed to examine the spatial variation of this attribute, as well as hopefully help assess contemporaneity between the ceramic assemblages examined from each neighborhood.

RIM ATTRIBUTES

Much like the design attributes recorded, rim attributes were selected to reflect both conscious design elements as well as more habitual, embodied production practices. Decorative attributes recorded included rim form (i.e., plain, folded, applique rim strip) and rim elaboration (e.g., punctuation, incising).³³ Other attributes recorded included depth of the rim fold and lip form (e.g., flattened, rounded). The former is also thought to increase through time (Braley 1990:100). The final rim attribute recorded and presented here consists of an analysis of the directionality of cane-reed punctations on rim sherds. Most cane punctations overlap in their application, allowing for identification of whether they are being applied in a right-to-left or left-to-right fashion (see figure cane). While this attribute could relate to handedness, as Minar (1999, 2001) has shown for directionality of cordage twist such directionality in craft production is more clearly associated with the process of learning the craft. For pottery punctuation this would likely be associated with way specific communities of potters learn to hold and manipulate the pot and stylus as the decorative element is applied.

RESULTS

In this section I present the results of this analysis, by describing and comparing the results from each attribute included in the study between mission “neighborhoods.” Table 6.4

³³ Rim profile was recorded when possible, but the sample size was so small these data are not presented here.

presents a basic tabulation of all ceramics analyzed in this study (n = 2,909).³⁴ For simplicity all period diagnostic sherds have been lumped together by ceramic series, followed by sherds only able to be identified to the level of temper or decoration type. As is clear from the table, the assemblage is overwhelmingly dominated by Altamaha period ceramics,³⁵ while non-diagnostic sherds overwhelmingly fall into the generic “grit stamped” and “unidentifiable grit” categories and almost certainly consist of material dating to the mission-era. While small quantities of earlier ceramic types are present, in the remainder of this analysis all pre-Irene period diagnostic ceramics are excluded from the analysis and discussion. Additionally, all ceramics with clay or fiber as the predominant aplastic inclusion are excluded from further discussions. This is because all diagnostic Irene and Altamaha ceramics analyzed only contained clay or fiber as secondary inclusions, with only grit and sand occurring as the major temper category.

In the discussion below chi-square tests were used to evaluate the significance of the variation in ceramic attributes amongst the mission neighborhoods. All variation discussed below—except where explicitly noted—was significant at $p < .05$.

Table 6.4. Ceramics from the Mission Santa Catalina Pueblo. Counts and percentages of the different types are presented for each of the five neighborhoods.

Count	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree		Total
Altamaha Series	97	34.89%	342	40.09%	287	80.85%	134	59.56%	388	32.39%	1248
Mission Red Filmed	1	0.36%	5	0.59%	8	2.25%	0	0.00%	27	2.25%	41
Irene/Altamaha Series	58	20.86%	81	9.50%	21	5.92%	25	11.11%	167	13.94%	352
Irene Series	4	1.44%	4	0.47%	3	0.85%	1	0.44%	75	6.26%	87
Savannah Series	1	0.36%	8	0.94%	1	0.28%	0	0.00%	16	1.34%	26
St. Catherines Series	11	3.96%	0	0.00%	1	0.28%	0	0.00%	3	0.25%	15
Wilmington Series	15	5.40%	1	0.12%	0	0.00%	3	1.33%	5	0.42%	24
Refuge-Deptford Series	6	2.16%	29	3.40%	6	1.69%	20	8.89%	46	3.84%	107
Clay and Grit	0	0.00%	2	0.23%	0	0.00%	0	0.00%	0	0.00%	2

³⁴ This excludes small sherds that have neither identifiable aplastic inclusions nor identifiable surface decoration. Including unidentifiable small sherds, the sample examined for this study is n=3,896.

³⁵ The category Irene/Altamaha Series includes all Irene Plain, Irene Burnished Plain, and Irene Incised sherds—types that occur in both the Irene and Altamaha Periods.

Decorated											
Clay and Grit Plain	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
Clay and Grit Stamped	0	0.00%	3	0.35%	2	0.56%	0	0.00%	0	0.00%	5
Clay and Sand Plain	4	1.44%	2	0.23%	0	0.00%	0	0.00%	0	0.00%	6
Clay Incised and Punctated	1	0.36%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1
Clay Plain	11	3.96%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	11
Clay Stamped	1	0.36%	0	0.00%	0	0.00%	0	0.00%	2	0.17%	3
Grit and Clay Plain	4	1.44%	0	0.00%	0	0.00%	0	0.00%	2	0.17%	6
Grit and Clay Simple Stamped	1	0.36%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1
Grit and Clay Stamped	1	0.36%	0	0.00%	0	0.00%	1	0.44%	1	0.08%	3
Grit and Sand and Clay Stamped	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Grit and Sand Decorated	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
Grit and Sand Plain	0	0.00%	3	0.35%	0	0.00%	0	0.00%	3	0.25%	6
Grit and Sand Stamped	0	0.00%	15	1.76%	0	0.00%	0	0.00%	3	0.25%	18
Grit Check Stamped	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Grit Decorated	0	0.00%	16	1.88%	2	0.56%	0	0.00%	6	0.50%	24
Grit Plain	1	0.36%	0	0.00%	0	0.00%	0	0.00%	20	1.67%	21
Grit Punctated	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
Grit Stamped	26	9.35%	155	18.17%	6	1.69%	16	7.11%	299	24.96%	502
Grit Stamped and	0	0.00%	0	0.00%	0	0.00%	1	0.44%	2	0.17%	3

Incised											
Grit Stamped and Incised and Punctated	0	0.00%	0	0.00%	0	0.00%	5	2.22%	0	0.00%	5
Sand and Clay Decorated	0	0.00%	0	0.00%	0	0.00%	1	0.44%	0	0.00%	1
Sand and Clay Plain	2	0.72%	0	0.00%	0	0.00%	0	0.00%	2	0.17%	4
Sand and Clay Stamped	0	0.00%	0	0.00%	2	0.56%	0	0.00%	1	0.08%	3
Sand and Fiber Plain	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Sand and Grit and Clay Stamped	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Sand and Grit Decorated	0	0.00%	0	0.00%	0	0.00%	1	0.44%	0	0.00%	1
Sand and Grit Plain	5	1.80%	2	0.23%	0	0.00%	0	0.00%	1	0.08%	8
Sand and Grit Stamped	0	0.00%	0	0.00%	1	0.28%	1	0.44%	24	2.00%	26
Sand Burnished Plain	0	0.00%	0	0.00%	1	0.28%	0	0.00%	0	0.00%	1
Sand Check Stamped	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Sand Decorated	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Sand Incised and Punctated	0	0.00%	0	0.00%	0	0.00%	1	0.44%	0	0.00%	1
Sand Plain	7	2.52%	13	1.52%	0	0.00%	1	0.44%	7	0.58%	28
Sand Punctated	0	0.00%	0	0.00%	1	0.28%	0	0.00%	0	0.00%	1
Sand Stamped	0	0.00%	1	0.12%	2	0.56%	2	0.89%	6	0.50%	11
UID Clay	5	1.80%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	5
UID Clay and Grit	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1

UID Clay and Sand	0	0.00%	2	0.23%	0	0.00%	0	0.00%	1	0.08%	3
UID Fiber	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
UID Grit	14	5.04%	128	15.01%	8	2.25%	7	3.11%	75	6.26%	232
UID Grit and Clay	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
UID Grit and Fiber	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
UID Grit and Sand	0	0.00%	26	3.05%	0	0.00%	0	0.00%	1	0.08%	27
UID Plain	0	0.00%	1	0.12%	0	0.00%	0	0.00%	0	0.00%	1
UID Sand	2	0.72%	6	0.70%	2	0.56%	2	0.89%	3	0.25%	15
UID Sand and Clay	0	0.00%	0	0.00%	1	0.28%	1	0.44%	2	0.17%	4
UID Sand and Grit	0	0.00%	2	0.23%	0	0.00%	2	0.89%	2	0.17%	6
UID Stamped	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.08%	1
Total	278	100.00%	853	100.00%	355	100.00%	225	100.00%	1198	100.00%	2909

FABRIC

TEMPER: Tables 6.5-6.9 present the results of the analysis of aplastic inclusions within the mission pueblo pottery. Not surprisingly grit temper dominates all contexts (table 6.5). Sand tempering, however, is found in more than 20% of the sample from the Pueblo East, and also occurs in high proportions at Wamassee Head ($p < .0001$). Fine to medium grit is also more common in the Pueblo East than in any other context, and quartz inclusions in the granule category are significantly less common in the Pueblo North (table 6.6). Additionally, the Pueblo East, in contrast to the other neighborhoods, is characterized by having significantly more abundant inclusions, highlighted by 22.6% of the assemblage having inclusions in the 20% range (table 6.7). Most ceramics in each of the other neighborhoods was found to have inclusions primarily in the 5-10% range.

Temper shape—measures of sphericity and angularity for the grit inclusions—were also found to vary significantly between pueblo neighborhoods. More angular inclusions were found in the Pueblo North and Fallen Tree (table 6.8). The two northernmost neighborhoods (9Li210 and the Pueblo North) were also characterized by having a significantly greater proportion of

highly spherical “grit” inclusions, contrasting with the large percentage of low sphericity inclusions found in the more southern neighborhoods (Pueblo East, Wamassee Head, Fallen Tree) (table 6.9). When I began this analysis I suspected that sphericity would likely be related to the location from which “grit” inclusions were obtained. In that the northernmost and southernmost neighborhoods cluster with each other, proximity to particular grit sources, and localized exploitation practices could explain this patterning.

Table 6.5. Temper Type

Temper	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
Grit	183	83.18%	630	85.37%	246	72.14%	153	78.46%	954	89.08%
Grit and sand	5	2.27%	43	5.83%	16	4.69%	10	5.13%	27	2.52%
Grit and clay	18	8.18%	20	2.71%	5	1.47%	4	2.05%	19	1.77%
Grit, sand, and clay	0	0.00%	0	0.00%	1	0.29%	0	0.00%	2	0.19%
Grit and shell	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.09%
Sand	5	2.27%	31	4.20%	26	7.62%	11	5.64%	28	2.61%
Sand and grit	8	3.64%	12	1.63%	40	11.73%	15	7.69%	32	2.99%
Sand and clay	1	0.45%	2	0.27%	7	2.05%	2	1.03%	5	0.47%
Sand and fiber	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.09%
Sand, grit, and clay	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	0.19%
Total	220	100.00%	738	100.00%	341	100.00%	195	100.00%	1071	100.00%

Table 6.6. “Grit” Temper Size Category

Temper Size	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
Fine	0	0.00%	0	0.00%	15	4.92%	4	2.20%	4	0.40%
Medium	0	0.00%	2	0.29%	4	1.31%	1	0.55%	4	0.40%
Coarse	54	26.47%	231	33.53%	61	20.00%	35	19.23%	170	16.95%
Very Coarse	69	33.82%	361	52.39%	123	40.33%	79	43.41%	464	46.26%
Granule	81	39.71%	95	13.79%	102	33.44%	63	34.62%	361	35.99%

Total	204	100.00%	689	100.00%	305	100.00%	182	100.00%	1003	100.00%
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Table 6.7. Percent Aplastic Inclusions

Percent Inclusion	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	0	0	0.00%	1	0.15%	0	0.00%	0	0.00%	4
0-5	10	4.95%	0	0.00%	0	0.00%	4	2.35%	0	0.00%
5	139	68.81%	396	57.81%	115	39.93%	131	77.06%	633	63.11%
5-10	14	6.93%	0	0.00%	10	3.47%	3	1.76%	1	0.10%
10	26	12.87%	238	34.74%	85	29.51%	28	16.47%	322	32.10%
10-15	3	1.49%	0	0.00%	2	0.69%	1	0.59%	0	0.00%
15	3	1.49%	0	0.00%	4	1.39%	2	1.18%	0	0.00%
15-20	0	0.00%	0	0.00%	0	0.00%	1	0.59%	0	0.00%
20	3	1.49%	50	7.30%	65	22.57%	0	0.00%	43	4.29%
25	1	0.50%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
30	3	1.49%	0	0.00%	5	1.74%	0	0.00%	0	0.00%
40	0	0.00%	0	0.00%	2	0.69%	0	0.00%	0	0.00%
Total	202	100.00%	685	100.00%	288	100.00%	170	100.00%	1003	100.00%

Table 6.8. Grit Temper Shape

Temper Shape	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Very Angular	0	0.00%	9	1.34%	0	0.00%	0	0.00%	1
Angular	0	0.00%	86	12.84%	0	0.00%	0	0.00%	131	15.06%
Sub-Angular	2	1.08%	107	15.97%	22	8.03%	11	6.79%	242	27.82%
Sub-Rounded	58	31.35%	255	38.06%	131	47.81%	81	50.00%	296	34.02%

Rounded	125	67.57%	202	30.15%	118	43.07%	70	43.21%	194	22.30%
Well Rounded	0	0.00%	11	1.64%	3	1.09%	0	0.00%	6	0.69%
Total	185	100.00%	670	100.00%	274	100.00%	162	100.00%	870	100.00%

Table 6.9. Grit Temper Sphericity

Sphericity	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
High	112	55.72%	395	58.78%	68	23.94%	60	35.93%	135	14.26%
Low	89	44.28%	277	41.22%	216	76.06%	107	64.07%	812	85.74%
Total	201	100.00%	672	100.00%	284	100.00%	167	100.00%	947	100.00%

FIRING: Tables 6.10 and 6.11 present the results of the firing core analysis. Like the inclusion analysis, distinct and significant variation was found between the different pueblo neighborhoods. Both 9Li210 and the Pueblo East are characterized by having larger proportions of complex firing cores and more carbon retention, while the ceramics at Fallen Tree have the greatest proportion of well oxidized ceramics with the least carbon retention. This corresponds with a greater proportion of the Fallen Tree ceramics having tan or buff paste colors, while other neighborhoods tended to have larger percentages of grey colored sherds.

Table 6.10. Core Configuration

Core Configuration	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
Complex Core	22	10.00%	11	1.53%	32	9.38%	8	4.17%	13	1.22%
O	55	25.00%	149	20.78%	87	25.51%	37	19.27%	506	47.51%
OR	6	2.73%	28	3.91%	15	4.40%	15	7.81%	20	1.88%
ORO	53	24.09%	118	16.46%	83	24.34%	27	14.06%	136	12.77%
R	5	2.27%	173	24.13%	51	14.96%	27	14.06%	129	12.11%
RO	71	32.27%	214	29.85%	65	19.06%	70	36.46%	229	21.50%
ROR	8	3.64%	24	3.35%	8	2.35%	8	4.17%	32	3.00%
Total	220	100.00%	717	100.00%	341	100.00%	192	100.00%	1065	100.00%

Table 6.11. Percent Carbon Retention

Percent Carbon Retention	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
0	40	54.79%	572	89.10%	109	55.05%	121	79.61%	926	90.43%
10	1	1.37%	0	0.00%	1	0.51%	1	0.66%	8	0.78%
20	5	6.85%	10	1.56%	5	2.53%	4	2.63%	14	1.37%
25	0	0.00%	1	0.16%	0	0.00%	0	0.00%	0	0.00%
30	2	2.74%	4	0.62%	5	2.53%	1	0.66%	1	0.10%
40	4	5.48%	1	0.16%	20	10.10%	3	1.97%	4	0.39%
50	11	15.07%	12	1.87%	8	4.04%	3	1.97%	15	1.46%
60	3	4.11%	5	0.78%	11	5.56%	2	1.32%	5	0.49%
70	3	4.11%	1	0.16%	1	0.51%	0	0.00%	4	0.39%
75	0	0.00%	4	0.62%	0	0.00%	1	0.66%	1	0.10%
80	3	4.11%	20	3.12%	35	17.68%	10	6.58%	17	1.66%
90	1	1.37%	12	1.87%	2	1.01%	4	2.63%	26	2.54%
95	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	0.20%
99	0	0.00%	0	0.00%	0	0.00%	2	1.32%	0	0.00%
100	0	0.00%	0	0.00%	1	0.51%	0	0.00%	1	0.10%
Total	73	100.00%	642	100.00%	198	100.00%	152	100.00%	1024	100.00%

DECORATION

Tables 6.12 and 6.13 provide the results of the decoration analysis of the Santa Catalina pueblo pottery. As expected stamped pottery is the most common decoration in all contexts, and, with the exception of 9Li210, the percentage of stamped wares ranges from about 73% to 85% in all contexts. 9Li210, however, is a distinct outlier, having only 58.5% stamped pottery as well as having a significantly greater proportion of plain wares. Such a high percentage of plain pottery is

unusual in most Irene and Altamaha contexts that have been reported, with several notable exceptions.

In Saunders's (2000b) analysis of the Irene period Meeting House Field Site, she identified two clusters of midden deposits having distinct ceramic assemblages, with one of the distinctions being differing proportions of plain pottery. Her early cluster (pre A.D. 1450) was found to have never more than 20% plain pottery, while the post ca. 1450 cluster had 30-40% plain pottery (Saunders 2000b:70). She was also surprised to note that this high proportion did *not* continue into the any of the Santa Catalina or Santa Maria mission-era contexts she examined, with all having very low percentages of plain pottery, similar to the early Meeting House Field cluster.

At the same time, Saunders did observe similarly high percentages of plain ware at the Pine Harbor site, in two contexts she characterized respectively as protohistoric and mission-era (Saunders 2004), while Braley et al. (1986) also found high percentages of plain ceramics at Harris Neck. I would also note, that DePratter (2009:40, table 1.4) found a similarly high percentage of plain wares (36.47% Irene Plain and Burnished Plain) ceramics in the late 16th century 38BI162N collection at Charlesfort/Santa Elena Site, and similar patterns have been found in 16th century St. Augustine contexts (Deagan 1978b). The implications of these similarities are discussed below.

Incised ceramics were relatively rare in all contexts (and completely absent from 9Li210), though slightly, and significantly, higher percentages were found at both Fallen Tree and Wamassee Head. Red filming was also found in very low percentages, with highest percentage occurring at the Pueblo East and Fallen Tree.

Table 6.12. Ceramic Decoration Category

Decoration Category	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Stamped	121	58.45%	493	77.27%	282	85.20%	139	73.16%	758	72.95%
Plain	76	36.71%	71	11.13%	12	3.63%	5	2.63%	140	13.47%
Incised	0	0.00%	15	2.35%	6	1.81%	11	5.79%	51	4.91%
Incised and Punctated	0	0.00%	10	1.57%	4	1.21%	11	5.79%	10	0.96%
Punctated	4	1.93%	21	3.29%	7	2.11%	5	2.63%	34	3.27%
Red Filmed	1	0.48%	5	0.78%	8	2.42%	0	0.00%	27	2.60%
Stamped and Incised	0	0.00%	1	0.16%	4	1.21%	4	2.11%	3	0.29%

Stamped, Incised, and Punctated	0	0.00%	0	0.00%	1	0.30%	6	3.16%	0	0.00%
Stamped and Punctated	5	2.42%	5	0.78%	5	1.51%	7	3.68%	8	0.77%
Stamped and scratched	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	0.10%
UID Decorated	0	0.00%	17	2.66%	2	0.60%	2	1.05%	7	0.67%
Total	207	100.00%	638	100.00%	331	100.00%	190	100.00%	1039	100.00%

In terms of stamping, a similar pattern occurred, with 9Li210 once again emerging as distinctly anomalous compared to the other neighborhoods. Very clear, well executed, line block stamping was found in significantly greater proportions at 9Li210, while all other contexts were dominated by cross simple stamped pottery, as well as some of the more ambiguous over stamped sherds. As discussed above, this relative absence of over stamping has also been observed at Harris Neck, perhaps the location of Tolomato that was abandoned sometime between the 1597 revolt and the 1620's (Saunders 2000b:245, note 4).

The other significant difference in stamping between the various neighborhoods is that Irene complicated stamped pottery was only found at Fallen Tree in any significant quantity, with only a handful of complicated stamped sherds found in any other context. This evidence, along with the recent discovery of the Late Mississippian/Protohistoric Fallen Tree Mortuary Complex, suggests that Fallen Tree was likely the residential location of the Guale community first encountered by the French and Spanish in the 1560's.

Table 6.14 reports the results of the land and groove width comparison between the different Pueblo neighborhoods. Variation in land and groove width was not found to significantly vary between contexts, ranging from a mean of 2.2 and 1.7/1.8 at 9Li210 and Fallen tree to 2.4 and 1.9 at the Pueblo East. Despite the lack of statistical significance, however, as I discuss below, I suspect this subtle difference likely reflects some temporal differences between the different neighborhood occupations.

Table 6.13. Stamping Type

Stamping	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Line Block	39	44.32%	50	18.38%	67	30.45%	19	17.59%	107

Cross Simple Stamp	29	32.95%	135	49.63%	90	40.91%	49	45.37%	146	40.78%
Simple Stamp	8	9.09%	49	18.01%	34	15.45%	5	4.63%	13	3.63%
Line Block/Cross Simple Stamp	7	7.95%	24	8.82%	19	8.64%	11	10.19%	16	4.47%
Irene Complicated Stamp	4	4.55%	2	0.74%	3	1.36%	1	0.93%	60	16.76%
Cross Simple Stamped/Line Block	1	1.14%	11	4.04%	6	2.73%	17	15.74%	0	0.00%
Check Stamp	0	0.00%	1	0.37%	1	0.45%	3	2.78%	16	4.47%
Corn Cob Impressed	0	0.00%	0	0.00%	0	0.00%	3	2.78%	0	0.00%
Total	88	100.00%	272	100.00%	220	100.00%	108	100.00%	358	100.00%

Table 6.14. Land and Groove Measurements

Neighborhood	Sample Size	Land Mean	Std. Dev.	Land Min.	Land Max.	Groove Mean	Std. Dev.	Groove Min.	Groove Max.
9Li210	99/99	2.2	0.5	1.1	4.1	1.7	0.5	0.5	3.1
Pueblo North	300/300	2.3	0.5	1.2	4.3	1.8	0.5	0.8	4.3
Pueblo East	230/229	2.4	0.5	1.2	4.6	1.9	0.5	0.7	4
Wamassee Head	105/104	2.3	0.6	1.1	3.9	1.9	0.5	0.8	3.4
Fallen Tree	404/404	2.2	0.6	0.7	4.5	1.8	0.6	0.5	4.8
Total	1138/1136	2.3	0.6	0.7	4.6	1.8	0.5	0.5	4.8

RIM ANALYSIS

Tables 6.15-6.20 present the results of the rim analysis conducted for this study. As has been found in similar studies, mission-era rims are dominated by folded and plain forms.³⁶ Indeed, only three applique rim strips—such as are common on Irene period wares—were identified in this study: two from Fallen Tree and one from 9Li210. With the exception of 9Li210, 70-80% of lip forms from all neighborhoods were flattened, with rounded lips comprising 20-30% of the sample. 9Li210 is distinct amongst the neighborhoods, with 45% of the lips rounded.

Folded rim depths ranged from a mean of 13 mm at Fallen Tree to a mean of 18.5 mm at the Pueblo North. The very low average depth at Fallen Tree is somewhat skewed by several rims with extremely shallow folds. Cane/reed punctation comprises the most common folded rim elaboration, with other types of punctation present in small numbers, though small sample sizes preclude much definitive interpretation. For plain rims, though working with a small sample size, considerable diversity exists in incising and punctation in all neighborhoods except for 9Li210. This northernmost neighborhood—with the exception of two brimmed colonoware forms—completely lacked any decorative elaboration on any of the plain rims.

The final rim attribute reported here is a summary of punctation direction. As can be seen in figure 6.4, the direction of punctation, in this case left-to-right, is often discernable when examining the sequence of overlap between punctations. Table 6.20 reports the results of this analysis. While the sample size is small, and not statistically significant ($p < .4$), I think it noteworthy that 9Li210 again emerges as distinctive, with all punctated sherds having a left-to-right pattern, while all other neighborhoods have a more balanced distribution between right-to-left and left-to-right punctation.

Table 6.15. Ceramic Rim Form

Rim Form	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage	Count	Percentage
Folded	8	40.00%	13	23.64%	12	35.29%	13	56.52%	21	29.58%
Plain	8	40.00%	35	63.64%	19	55.88%	10	43.48%	37	52.11%
Applique rim strip	0	0.00%	0	0.00%	0	0.00%	0	0.00%	2	2.82%
Applique rim strip, segmented	1	5.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
UID	3	15.00%	7	12.73%	3	8.82%	0	0.00%	11	15.49%
Total	20	100.00%	55	100.00%	34	100.00%	23	100.00%	71	100.00%

³⁶ While no vessel form analysis was conducted as part of this study, in general folded rims are generally found on globular jars and plain rims are found on carinated bowls.

Table 6.16. Rim Lip Form

Lip Form	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
	Flattened	10	50.00%	41	74.55%	24	70.59%	16	69.57%	57
Rounded	9	45.00%	12	21.82%	8	23.53%	7	30.43%	13	18.31%
UID	1	5.00%	2	3.64%	2	5.88%	0	0.00%	1	1.41%
Total	20	100.00%	55	100.00%	34	100.00%	23	100.00%	71	100.00%

Table 6.17. Folded Rim Width

Neighborhood	Folded Rim Width (mm)	Standard Deviation	Minimum	Maximum	N
9Li210	17.7	1.4	16.6	20.3	7
Pueblo North	18.5	2.8	12.9	23.9	10
Pueblo East	16.3	4.8	3.8	23.8	12
Wamassee Head	15.4	2.4	12.2	20.1	13
Fallen Tree	13	7.5	1.8	26.5	16

Table 6.18. Folded Rim Elaboration

Folded Rim Elaboration	9Li210		Pueblo North		Pueblo East		Wamassee		Fallen Tree	
	Cane/Reed Punctate	7	87.50%	10	76.92%	8	66.67%	8	61.54%	12
Incised	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	5.00%
Incised and Punctated, pointed stylus	0	0.00%	0	0.00%	1	8.33%	0	0.00%	0	0.00%
None	0	0.00%	0	0.00%	0	0.00%	1	7.69%	4	20.00%
Punctated, crescent (finger nail)	0	0.00%	1	7.69%	0	0.00%	1	7.69%	0	0.00%
Punctated,	0	0.00%	0	0.00%	0	0.00%	1	7.69%	1	5.00%

diamond										
Punctated, square stylus	0	0.00%	1	7.69%	0	0.00%	0	0.00%	1	5.00%
Punctated, pointed stylus	1	12.50%	0	0.00%	0	0.00%	2	15.38%	0	0.00%
Punctated, triangle/diamond	0	0.00%	1	7.69%	3	25.00%	0	0.00%	1	5.00%
Total	8	100.00%	13	100.00%	12	100.00%	13	100.00%	20	100.00%

Table 6.19. Plain Rim Elaboration

Plain Rim Elaboration	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
Brimmed	2	25.00%	0	0.00%	2	10.53%	0	0.00%	0	0.00%
Cane/Reed Punctate	0	0.00%	4	11.43%	0	0.00%	0	0.00%	9	24.32%
Incised	0	0.00%	1	2.86%	2	10.53%	2	20.00%	8	21.62%
Incised and Punctated, diamond	0	0.00%	0	0.00%	0	0.00%	2	20.00%	0	0.00%
Incised and Punctated, round	0	0.00%	2	5.71%	0	0.00%	1	10.00%	1	2.70%
Incised and Punctated, square	0	0.00%	2	5.71%	0	0.00%	1	10.00%	2	5.41%
Incised and Punctated, stylus	0	0.00%	1	2.86%	3	15.79%	2	20.00%	2	5.41%
Incised and Punctated, triangle	0	0.00%	1	2.86%	1	5.26%	0	0.00%	0	0.00%
Incised, thickened	0	0.00%	0	0.00%	1	5.26%	0	0.00%	1	2.70%
Node	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.70%
Node, incised, punctated (stylus)	0	0.00%	0	0.00%	0	0.00%	1	10.00%	0	0.00%
Punctated, square stylus	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.70%
Punctated, pointed stylus	0	0.00%	2	5.71%	1	5.26%	0	0.00%	0	0.00%

Punctated, triangle	0	0.00%	0	0.00%	0	0.00%	1	10.00%	1	2.70%
Punctated, UID	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.70%
Thickened	0	0.00%	3	8.57%	0	0.00%	0	0.00%	0	0.00%
None	6	75.00%	19	54.29%	9	47.37%	0	0.00%	9	24.32%
UID	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.70%
Total	8	100.00%	35	100.00%	19	100.00%	10	100.00%	37	100.00%

Table 6.20. Cane/Reed Punctuation Direction

Punctuation Direction	9Li210		Pueblo North		Pueblo East		Wamassee Head		Fallen Tree	
Left-to-Right	6	100.00%	6	60.00%	4	66.67%	3	50.00%	11	68.75%
Right-to-Left	0	0.00%	4	40.00%	2	33.33%	3	50.00%	5	31.25%
Total	6	100.00%	10	100.00%	6	100.00%	6	100.00%	16	100.00%

DISCUSSION

The study described above was designed to identify micro-stylistic variation between pottery assemblages recovered from distinct neighborhoods within the Mission Santa Catalina Pueblo. With that goal in mind, in this discussion I merely highlight the observed diversity and discuss some of the likely social context that could explain the observed variation. Though this analysis could also be used to explore the specific practices of mission-era pottery production and consumption in more detail, because my interest and purpose here is using the pottery to explore social relationships, I defer that discussion to a future time. This analysis revealed considerable micro-diversity in potting practices between neighborhoods at Mission Santa Catalina. Below I summarize and discuss the salient characteristics of each neighborhood.

THE 9LI210 NEIGHBORHOOD

The northernmost neighborhood studied—9Li210—consistently emerged as a distinctive potting community. This neighborhood was characterized by an unusually high proportion of plain pottery, and a correspondingly low percentage of stamped wares—in ratios similar to 16th century Santa Elena (DePratter 2009), 16th century St. Augustine (Deagan 1978b), and several mainland Guale sites such as Harris Neck (Braley 1990; Braley, O'Steen, and Quitmyer 1986) and Pine Harbor (Saunders 2004). Additionally, much of the stamping is clearly executed line

blocking, with comparatively less evidence of overstepping, also differing from other contexts at Mission Santa Catalina and more similar to the pottery assemblage from Harris Neck (Braley, O'Steen, and Quitmyer 1986). The 9Li210 pottery assemblage is also distinguished by having a larger percentage of pottery with complex firing cores and more carbon retention, a high percentage of rounded lip forms, and few rim elaborations other than cane/reed punctations. The application of the punctations is also distinguished by a uniformity in left-to-right directionality compared to other neighborhoods. These data, along with the *very* slight tendency towards finer lands and grooves hint at a comparatively early occupation date for this neighborhood. At the same time, however, the almost complete absence of Irene Complicated Stamped pottery (particularly compared to the Fallen Tree neighborhood) is solid evidence for an entirely post-1580 occupation.

My suspicion is that this occupation represents one of two possibilities. First, I think that there is a possibility that this neighborhood could represent a post A.D. 1580 and pre A.D. 1605 occupation at Mission Santa Catalina, explaining the lack of Irene complicated stamped pottery and the abundance of well executed line blocked and plain pottery. Secondly, the similarities in pottery assemblages to both Pine Harbor and Harris Neck suggest that 9Li210 could represent early, undocumented aggregation from the mainland to St. Catherines—what Stojanowski (2005b) has referred to as stage 1 congregación. Additional survey and excavation are needed to determine which (perhaps both) hypothesis is correct.

THE FALLEN TREE NEIGHBORHOOD

In comparison to 9Li210, the pottery from Fallen Tree (the southern-most neighborhood) is characterized by the significant presence of Irene Complicated Stamped sherds, check stamped sherds, well oxidized ceramics with little carbon retention, and generally shallow rimfolds. These data—combined with other archaeological materials from the neighborhood (May 2008; Napolitano 2014)—highlight both the early occupation of Fallen Tree, as well as the sustained occupation until the abandonment of Mission Santa Catalina in 1680. Joseph Caldwell (1972) also observed differences in the pottery during his excavations into the Fallen Tree midden compared with his work to the north of the freshwater creek (see chapter 5), identifying a type he called Fallen Tree Complicated Stamped. It is unclear what criteria he used to distinguish this from either Irene Complicated Stamped or Altamaha Line Block or cross simple stamped.

THE PUEBLO EAST NEIGHBORHOOD

The pottery from the Pueblo East is also distinctive, highlighted by finer and more abundant temper inclusions, evidence for more complicated ceramic firing regimes, and a hint towards broader lands and grooves. These distinctive firing practices are also comparable to what was seen at 9Li210, indicating similar production practices between the two neighborhoods. Assuming my second interpretation above is correct (i.e., 9Li210 represents an early episode of

aggregation from the mainland), then perhaps the Pueblo East neighborhoods can be associated with the later mainland aggregation of Mission San Diego to Mission Santa Catalina.

THE PUEBLO NORTH NEIGHBORHOOD

Unlike the three previously discussed neighborhoods, the ceramic assemblage from the Pueblo North is less obviously distinctive. Perhaps the most noteworthy attributes are the relative paucity of grit temper in the granule category, a higher percentage of angular inclusions (like Fallen Tree), a greater abundance of simple stamping and plain rims, and a high percentage of sherds with reduced interiors. The assemblage also includes a distinctly lower proportion of well executed line block stamped sherds. This combination of attributes, however, is not easily interpreted.

THE WAMASSEE HEAD NEIGHBORHOOD

Like the Pueblo North, the Wamassee Head ceramic assemblage is also not particularly distinctive, in comparison with the other neighborhoods. It has a relatively low percentage of line block stamped pottery and more ceramics with reduced interiors—like the Pueblo North. It is, however, also characterized by a relative abundance of incised wares, and a higher percentage of sand tempering.

SUMMARY

This examination of attribute level differences paints a complex picture of ceramic production and consumption within the different neighborhoods at Mission Santa Catalina de Guale. Some interpretations are fairly obvious. For example, the abundance of Irene Complicated Stamped pottery at Fallen Tree certainly indicates that this neighborhood was the only sector occupied during the mid- to late-16th century. At the same time, the highly distinctive assemblage found at 9Li210—showing little similarity to Fallen Tree, but also likely first occupied as early as the late-16th century—suggests either a locally distinct ceramic community of practice or an undocumented, early episode of population aggregation to the mission. Beyond these “easy” interpretations, examining the distribution of specific ceramic attributes across the mission landscape, suggests a complex picture of connections between the different mission neighborhoods, as well as loci of more distinctive and unique suites of practices. Some of the connections—such as the similarity in ceramic firing practices between the Pueblo East and 9Li210 suggest shared technological practices. Other patterns, such as greater proportions of more spherical grit inclusions in the northern neighborhoods (9Li210 and the Pueblo North) compared to the southern neighborhoods, where the grit inclusions typically have a low sphericity, suggests that communities of potters were differentially exploiting sources of ceramic raw materials. While in the next chapter I turn to the glass bead assemblage from Mission Santa Catalina, identifying glass bead communities of consumption within the mission cemetery and

subsequently linking those communities to specific mission neighborhoods, I return to this discussion of ceramic practices in the final chapter of the dissertation. At that point I weave together this image of diverse, but interconnected, ceramic practices, with other evidence (i.e., bead consumption, architecture, and settlement layout) to discuss the broader social relationships within the aggregated Mission Santa Catalina community.

Chapter 7. Glass Beads and Social Networks at Mission Santa Catalina

Glass beads have long been acknowledged as important objects involved in the mediation of colonial relationships in the Americas. Indeed, beginning with Columbus's first landing beads were widely distributed both as gifts and as trade items (Brill and Hoffman 1987; Deagan 1987; Kelly 1992). They are commonly recovered on colonial archaeological sites and are widely regarded as sensitive temporal markers (e.g., Bradley 1983; Fitzgerald 1983, 1990; Kent 1983, 1984; Kenyon and Fitzgerald 1986; Little 2008, 2010; Marcoux 2012b; Rumrill 1991; Sempowski and Saunders 2001; Smith 1983, 1987). At Mission Santa Catalina de Guale almost 70,000 beads—primarily manufactured from glass—have been recovered from various contexts across the site, including an extraordinarily large assemblage distributed amongst the 431 individuals found buried within the mission cemetery. Recently, in collaboration with Lorann S.A. Pendleton and the late Peter Francis, I examined and reported on the beads from Mission Santa Catalina—focusing on the global sources for this extensive bead collection (Blair, Pendleton, and Francis 2009). In addition to locally made beads of stone and shell, glass beads from Venice, the Netherlands, Spain, France, Bohemia, and China were recovered, as well as carnelian beads from India and amber beads from the Baltic (see Appendix A for images of the bead types recovered from Mission Santa Catalina).

In this chapter I return to this bead collection, utilizing it to address one very specific question: how can the bead assemblage be used to explore the nature of social relationships at Mission Santa Catalina, and what does the circulation and distribution of glass beads reveal about the social structure of this aggregated Spanish Mission? To address this I begin by revisiting several of the topics I discuss in chapter three: the object itinerary, communities of practice, and social network analysis. Following this discussion I trace a hypothesized model of an object itinerary for some of the beads circulating into Mission Santa Catalina, through multiple, overlapping communities of practice. Once the beads arrive at Mission Santa Catalina, I explore their ongoing itineraries, and the social connections they both reify and represent, by utilizing formal social network analysis (SNA). The network visualizations I develop allow me to explore the relationships between individuals and groups that are evident in the mission cemetery, as well as enabling me to link specific groups of people to places on the mission landscape, allowing the patterns evident in the circulation of glass beads to be connected with other domains of material practice.

BUILDING A SOCIAL NETWORK MODEL OF A MISSION CEMETERY: OBJECT ITINERARIES, COMMUNITIES OF PRACTICE, AND SOCIAL NETWORK ANALYSIS

While the ultimate goal in this chapter is to explore the social relationships evident though the consumption of glass beads at Mission Santa Catalina, the local linkages and internal circulations of these objects can only be explored by embracing a larger perspective and following

these objects from manufacture to deposition. To do this I embrace the concept of the object itinerary and use the material traces of bead manufacture to explore local consumption at Mission Santa Catalina (Blair 2015; Hahn and Weiss 2013; Joyce 2012a, 2012b, 2015; Joyce and Gillespie 2015).

As opposed to the object biography (e.g., Gosden and Marshall 1999; Kopytoff 1986), which metaphorically affirms an object's birth and death—a strictly linear progression of a life history—the object itinerary emphasizes the motion and interaction, and fragmentation and accumulation, of objects moving through space and time. The object itinerary, by focusing attention on “things as historicized traces of practices” (Joyce 2012b, 2015), highlights the social relationships and spatiality that link people, objects, and places through history.

Here I envision the object itinerary to resemble the meshwork described by Ingold (2007, 2009), where lines representing the paths of people and objects form tangled knots (as opposed to static nodes) that represent the complex and messy interactions of people and things. For the bead itineraries I trace, the tangled knots of interaction are the specific places of manufacture (e.g., Venice and Murano), distribution (e.g., Seville, Mexico City, Havana, St. Augustine), and consumption (e.g., Mission Santa Catalina).

Each of these tangled knots of the meshwork can be conceptualized and explored through the concept of the community of practice (Lave and Wenger 1991; Wenger 1998), understood as the locus of social learning and the entanglement of people, places, and social action. Furthermore, the knots in the meshwork are constituted through multiple, overlapping communities of practice. For glass beads, some of these—such as in Venice—are explicitly constituted through communities of production, while others—such as Mission Santa Catalina—are the result of bead consumption communities.

To explore the bead consumption communities at Mission Santa Catalina I utilize the methods of social network analysis. These methods [not to be confused with the metaphorical distinctions between meshworks and networks that are drawn by Ingold (2007, 2009) and Knappett (2011a, 2011b)] provide a way to formally explore the structure and relationship of the individuals and beads interacting in overlapping communities of consumption at Mission Santa Catalina.

MISSION SANTA CATALINA DE GUALE AND THE BEAD ITINERARY

In this section I consider the circulation of glass trade beads into the Americas, examining the movements, communities and networks that form along the specific places in which beads “rest” along their complicated itineraries. This includes examining processes of raw material procurement, manufacture (of the glass and the beads), distribution, consumption, and

disposal.³⁷ I suggest that more detailed attention to the chemical composition and morphological characteristics of individual beads and large bead assemblages will enable researchers to illuminate the motion and interaction of these objects with the places and people along their itineraries—rather than merely highlighting points along a route. First I discuss in detail the itineraries of beads from the glass manufacturing centers of Europe to the missions of Spanish Florida, sketching the outline of a model centered on Venetian drawn bead production. While the beads excavated at Mission Santa Catalina came from a number of different manufacturing locales (see figure 7.1), I focus on Venice because the majority of the beads recovered at Mission Santa Catalina were likely manufactured in Venice or by Venetian expatriates elsewhere in Europe (Blair, Pendleton, and Francis 2009). The general principles of the model, however, also apply to other manufacturing locales, though often at different production scales (Blair in press).

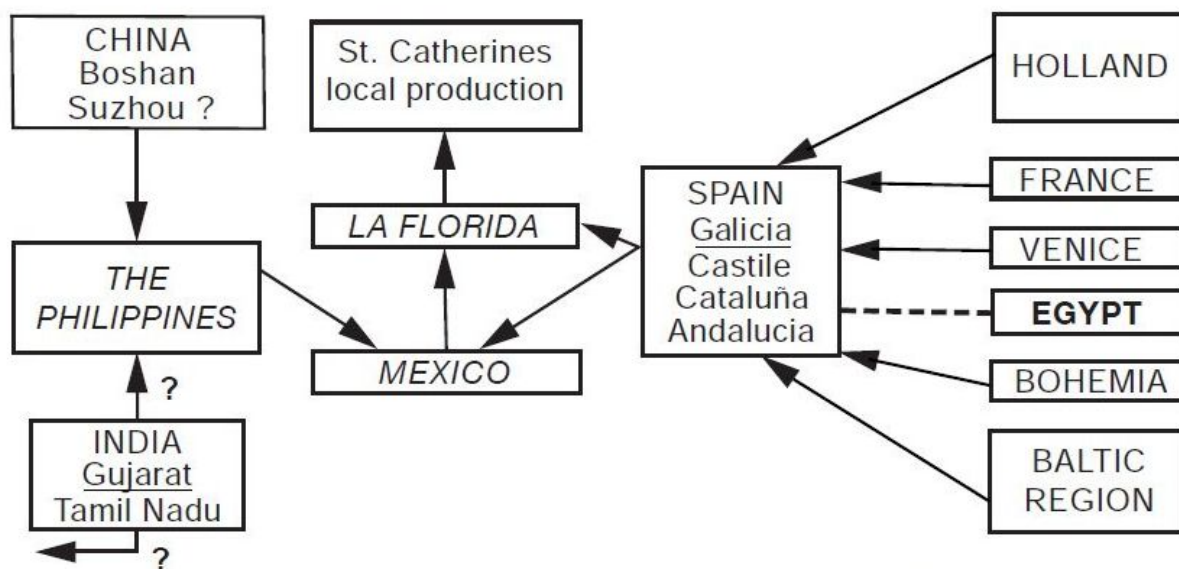


Figure 7.1. Schematic diagram depicting the bead trade to Mission Santa Catalina de Guale. Places that are underlined furnished beads made from materials other than glass. Places in italics are transshipment locales; they did not furnish beads (i.e., the Philippines and Mexico). Egypt (boldface) and the dotted line to Andalucia indicate a transfer of beadmaking technique rather than a shipment of beads. Drawing based on fig. 5.1, Blair, Pendleton, and Francis (2009: fig. 5.1), reproduced by permission of the American Museum of Natural History, Division of Anthropology.

THE MANUFACTURE OF GLASS: THE WORK OF THE ARTE DE VERIERE

³⁷ Excavation, analysis, and curation—the afterlives of these objects—are also essential components of the object itinerary, but are of less relevance for my purposes here (see Blair 2015).

The glass for manufacturing Venetian beads was formed by members of the *Arte de Veriere*, the glass making guild in Murano. The first step was to obtain and manufacture, or transform, the “raw” materials of glass making; Murano had to import all of these. Leaving aside the necessity of obtaining wood for the fires, clay for the crucibles, and materials for furnace construction (Jacoby 1993; McCray 1997), the manufacture of glass requires several critical ingredients: silica, a fluxing agent, and colorants, decolorants, and opacifiers (McCray 1999b). In Murano the primary source of silica for glass making during the 16th and 17th centuries was not sand, but rather quartz cobbles (*cogoli*) primarily obtained from the Ticino River near Milan, as well as the Adige River near Verona. The cobbles were crushed, ground, and sieved until they became a fine powder (Neri 2003 [1612]). Chemical analyses by McCray (1996:351, table 8.1; 1999b:197, n. 13) have shown that these cobbles were almost pure silica, lacking in almost any impurities such as iron. Local Mediterranean beach sands may have also been used in limited quantities by some glasshouses (Jacoby 1993).

The second essential material needed for glass making is a fluxing agent, used to reduce the melting temperature of the silica. In Murano during the 16th and 17th centuries this was a soda flux, imported from the Levant and composed of plant ashes made from the burning of *salsola kali* and *salsola soda* plants. Once the ash arrived in Murano (usually as ballast on ships transporting other, lighter goods) it was purified (see Neri 2003 [1612]), resulting in a flux higher in soda and lower in calcium, magnesium, and aluminum than the raw ashes (McCray 1996:358, table 8.2; 1999b:116-117, table 5.1). Both of these processes—the powdering and sieving of cobbles and the production and purification of soda involved ultimately leave elemental traces in the final glass product—as either the presence or absence of specific impurities. After the silica and flux were prepared these materials were mixed into a batch and heated in a low temperature fritting furnace. The solid frit could then be broken apart and stored for use at a later time.

To then turn the frit into glass, an individual known as the *conciatore*, would mix it with cullet (broken scrap glass used to aid in melting the batch) and place the crucible into the primary furnace, stirring and adding colorants, decolorants, and opacifiers as he saw fit. While specific, detailed, glass recipe books exist from the 16th and 17th centuries, (e.g., Moretti, Salerno, and Ferroni 2004; Moretti and Toninato 2001; Neri 2003 [1612], 2004 [1612], 2007 [1612]; Toninato and Moretti 1992; Watts and Moretti 2011; Zecchin 1986), the actual making of the glass was a process primarily guided by experience and expertise. As McCray (1999b:156) has argued, “there were many aspects of the craft which was not recorded succinctly in words and which were instead passed on through the apprentice system, trial and error, and shop practice. Glass making was primarily an empirically centered skill gained... from experience” (see also McCray 1999a). This sentiment is regularly repeated in many of the extant recipe books, with the authors stressing that the books serve as a record of their practices, rather than instruction manuals to be followed (Neri 2003 [1612], 2004 [1612], 2007 [1612]; Zecchin 1986).

This description of glassmaking, what McCray (1999a) calls a “network of skill,” is a community of practice, “an integral part of generative social practice in the lived-in world” that bridges cognitive and embodied action (Lave and Wenger 1991:35, 52). Because there is patterning to the physical traces left in the glass by these intersecting communities of practice—those producing the “raw” materials and those forming the glass itself, chemical analysis can reveal both broad regional differences in glass making traditions as well as variations within regions determined by the specific choices made by individual glassmakers and glass houses.

THE MANUFACTURE OF 17TH CENTURY DRAWN BEADS

Once the glass was formed, the next step in the process was for the glass maker to transform the raw glass into a form that could be turned into beads. In Venice the two primary bead manufacturing techniques—winding and drawing—required solid and hollow glass canes respectively. For hollow canes, a gather of glass is heated, an opening is formed, and then two workers—walking in opposite directions—stretch the glass into a long, hollow tube. This is allowed to cool, and then the canes are broken into meter lengths (see descriptions in Anonymous 1835; Carroll 2004; Francis 1988; Karklins and Adams 1990; Karklins and Jordan 1990). These lengths were then transferred to bead makers for finishing, often outside of the glass factories and in Venice rather than Murano (Trivellato 1998).

Once the glass tubes were transferred to bead making factories or the homes of individual bead makers the manufacturing process consisted of cutting the glass cane into short segments, which were then (usually) rounded, possibly decorated, and polished, sorted, and strung (Karklins and Adams 1990); variations in each of these stages can be observed through careful analysis of individual beads and bead assemblages. Indeed, there are different ways of doing each of these steps—and patterns in how each technological process was completed reveal much about the network or place within which each task was completed.

The first step, cutting the glass canes into small segments, is depicted in a 17th century painting of a Dutch bead factory³⁸ by Jacob van Loo (figure 7.2, see also discussion in Karklins 1993:fig. 1). The individual on the left is shown cutting/chopping glass canes into short bead lengths. This process can leave characteristic imperfections on the beads—specifically angles on one or both ends of the cut tube (Francis 2002:25-26). Though Francis (2009a:62) has argued that such variation is “completely random,” I would suggest that such variation is likely directly related to how the individual cutting the canes habitually holds and manipulates the glass cane and the cutting implement, and that these will be patterned and shared by a particular bead making “community of practice”—where apprentice bead makers learn from a master the proper way to hold and cut glass tubes (see Minar 2001 for a particularly good example linking a

³⁸ The individuals depicted in this painting almost certainly include expatriate Venetian beadmakers producing beads using the techniques of the *Paternostri* beadmaking guild.

community of practice with habitual bodily motion). Indeed, with the right sample size and context, detailed morphometric analysis of this type of variation—combined with chemical analysis—might even be able to distinguish virtually identical beads comprised of glass made in one glass factory but formed into beads in different workshops.



Figure 7.2. A Glass and Coral Factory, 1629-1670, Jacob van Loo (Dutch, 1614-1670). Painting on display at the Statens Museum for Kunst, National Gallery of Denmark, image in the public domain (<http://www.smk.dk/en/explore-the-art/search-smk/#/detail/KMSsp291>).

Once the glass beads were cut into lengths, the short segments were most often rounded into finished beads.³⁹ How this was done was determined by the rules of the bead-making guild to which the master bead maker belonged. The first glass bead making guild in Venice was the *Arte dei Margareteri*, which was organized in 1308 and primarily manufactured furnace wound beads. In 1486 a second branch of the guild was established and together they were officially known as the *Arte dei Paternostri e Margareteri*, though by 1604 the two branches were more or less separate, governed by separate laws and councils and possessing separate banks (Francis

³⁹ Some beads (called bugles) were left unrounded, while others—particularly during the 16th century—were finished by faceting rather than heat rounding.

1988, 2009a, 2009c; Karklins 1993). Francis (1979; 1988:13) has convincingly argued that the initial organization of the *Paternostri* guild was due to the invention of drawn bead making, with the *Margareteri* branch of the guild producing smaller, plainer, drawn beads after this time and the *Paternostri* branch manufacturing larger, fancier drawn beads to be used as *Paternosters* for rosaries. This explanation seems likely in that shortly after this change a new lamp-working bead making guild was created—the *Arte dei Perlei e Suppialume*—replacing the *Margareteri* as the makers of wound beads. This guild was first recognized in 1528, but not organized as a distinct guild until 1647 (Francis 1988; Gasparetto 1958; Trivellato 1998, 2006).

The split between the two drawn bead-making guilds in 1604 is likely due to the invention of a new bead finishing technique employed by the *Paternostri*. At this time the bead makers of the *Margareteri* guild finished beads by the *a ferrazza* method—heat rounding small beads in a copper pan. In contrast, from at least the early 17th century, the *Paternostri* guild began finishing beads *a speo* (by the spit) (Gasparetto 1958; Karklins 1993; Neri 2004 [1612]). In this method the cut glass segments were threaded onto a multi-pronged spit and then rotated within a furnace until rounded. Examples of such spits can be seen threaded with finished beads and unfinished glass segments in the van Loo painting (figure 7.2, see also Karklins 1993:fig. 1).

What is interesting and significant about this method, however, is that the *a speo* process very often leaves characteristic imperfections on the beads—often in the form of small tails, fused beads, and other irregularities (Karklins 1993). These imperfections allow beads made by the *Paternostri* guild to be readily identified, while beads manufactured *a ferrazza* by the *Margareteri* guild are generally smaller and lack the diagnostic deformities characteristic of the *a speo* method. All of the beads recovered from Mission Santa Catalina were classified, in part, based on the manufacturing guild that produced them (Blair, Pendleton, and Francis 2009). Additionally Neri (2004 [1612]:27) notes that glass makers altered their recipes depending on whether they are manufacturing larger (*a speo* finished) or smaller (*a ferrazza* finished) beads—indicating that both chemical and morphological bead characteristics can be utilized to distinguish the products of the two bead manufacturing guilds.

Karklins (1993) has identified a number of different varieties of these *a speo* imperfections. Perhaps more careful bead analysis—paying attention to detailed characteristics of these imperfections—would enable us to identify communities of bead makers that hold and manipulate the spit in characteristic patterned ways. In the Mission Santa Catalina assemblage, this type of analysis, combined with elemental characterization of glasses and historical documentation for the emigration of bead makers from the *Paternostri* guild, lead Francis (2009b) to hypothesize that a large number of beads found at the site were made by expatriate Venetian bead making member of the *Paternostri* guild working in France.

After the beads were rounded—either by the *a ferrazza* or *a speo* methods—they were next sorted by size, polished, and strung into uniform, single-type strands by female bead stringers (Karklins and Adams 1990; Ninni and Segatti 1991; Trivellato 1998).⁴⁰ This specific order of operations has important implications, because presumably glass canes would be delivered to the bead factories in batches from individual glass houses. The bead makers would then process the canes into beads utilizing the finishing technique of their respective guilds, and the bead stringers would then string beads from a common glass batch and finishing technique into lengths for distribution and sale. The chemical and morphological characteristics of those beads composing a “finished” bead strand would therefore collectively index only a single bead factory and (probably) a single glass factory.

THE DISTRIBUTION OF BEADS

Beads made their way into the Americas along a number of different itineraries. While there has been much discussion of goods entering *La Florida* through unsanctioned channels, as foreign corsairs traded illicitly with the inhabitants from the region (e.g., Bushnell 1981; Deagan 1987; Ross 1923, 1924; Skowronek 1992), many of the beads also arrived through the officially permitted avenues. For Venetian beads, “sales were controlled by the same guilds which produced them” and the women responsible for stringing the beads were also likely those responsible for selling the beads to the Venetian shopkeepers who subsequently sold them to other merchants (Trivellato 1998:64-65). The beads then travelled by ship to Seville, where, most often, Genoese merchants and middlemen (Pike 1966) were involved in procuring them, registering them in Seville with the *Casa de la Contratación de las Indias*, and sending them to the Americas as part of the Spanish *Carrera de Indias*, the official Spanish convoy of trade goods (Deagan 2002; Kelly 1992; Torre Revello 1943).

During the 17th century, however, these convoys rarely stopped in St. Augustine, or elsewhere in the Caribbean, making it difficult for the residents of Florida to obtain European goods. Besides the aforementioned illicit trade occurring in the region, the primary route for beads (and other goods) into Spanish Florida was through the *situado*, or subsidy. Most often these goods were delivered elsewhere, rather than being delivered to St. Augustine. To retrieve the goods the governor of Florida would appoint a “situador” who was responsible for collecting the *situado*. As described by Bushnell (1981:71-74), this individual would give bond and receive his instructions and power of attorney from the governor before being issued a boat and crew. The *situador* would then travel by boat to San Juan de Ulúa and then by road to Mexico City. After collecting the *situado* he would return with the goods to St. Augustine, possibly by way of

⁴⁰ In addition to being transported as strands, beads were sometimes shipped loose in boxes or barrels (e.g., Bruseth and Turner 2005:87).

Havana (providing an opportunity to obtain other European goods and Asian items, including beads, brought by Galleons involved in the Manila trade). Once back in St. Augustine the goods were later distributed from the official warehouse.

Once the beads had arrived in Florida and the official St. Augustine warehouse how did they end up in the hands of the native people at Mission Santa Catalina? At Mission Santa Catalina, and other mission sites, beads moved from the hands of Europeans into native possession in a number of ways (Blair 2009c; Hally and Smith 2010; Smith 1992). These included giving beads as gifts. Beads were an essential component of what have been referred to as “gift kits” (Brain 1975), and they were usually amongst the gifts given to native leaders when they “rendered obedience” to the Spanish crown (Hall 2009; Worth 1998a). Beads also served as official payment for the native labor draft in St. Augustine and as payment for surplus maize sold by the missions to St. Augustine (Bushnell 1994; Worth 1999). Beads were also included in the goods provided to ransom Fray Ávila in the aftermath of the 1597 Guale revolt (Francis and Kole 2011). In each of these situations beads were primarily transferred from Europeans to the native elites and were subsequently redistributed to their followers (Worth 1998a, 2002). Spanish soldiers were also occasionally issued trade goods as payment, which they then exchanged with natives for food and other items (Bushnell 1981:105-106).

During the mid-17th century, however, gift giving as the primary distributional mechanism declined and there was a simultaneous increase in transactional commerce between St. Augustine and the missions. This increased trade resulted in greater access of non-elite natives to glass beads and other European goods (Hall 2009), while at the same time the types of beads being exchanged were significantly less ornate than those earlier in the century. For example, Smith (1987) has observed that there are fewer compound, complex, or composite beads found in contexts post-dating 1630. This change in types of beads in circulation has been attributed to both changes in native preferences and transitions in European manufacturing practices, though Francis (2009c:68) suggests that the most likely explanation is that simpler, cheaper, beads were used later in the mission period in an effort to reduce colonial expenses.⁴¹

Once the beads arrived in mission communities, our understanding of how they were distributed and consumed is considerably murkier prior to their interment in the mission cemetery. Few of the beads were components of rosaries, and there is little evidence that they were used in embroidery or beadwork. Both documentary and mortuary data suggest that the beads were commonly worn as necklaces, wristlets, and anklets (Blair 2009c; de San Miguel 2001), though we lack more specific understandings of what meanings beads and beaded objects held in these roles. Discussing the circulation of beads and cowries in Yorubaland and the Benin

⁴¹ Supporting this hypothesis are contemporary (ca. 1630-1640) notes in glass recipe books suggesting alternative ingredients that can be used to manufacture beads more cheaply (Zecchin 1986).

Kingdom, Ogundiran (2002:435) notes that “control over the production, importation, and distribution of beads was the major means of maintaining ideological control over subjects and potential rivals” and that possession of beads indicated political status, wealth, and power. It is quite likely beads played similar roles within the Guale mission communities of Georgia (see Hall 2009). Indeed, as discussed in chapter one, the ability to access, control, and distribute such goods was likely a proximate cause of the 1597 Guale revolt (Blair and Thomas 2014; Francis and Kole 2011; Thomas 2010b).

Operating from this assumption, caciques and other elites would receive these strands of beads, which would then subsequently be redistributed to allies, relatives, etc. (Worth 1998). As they were distributed, the beads would subsequently be disarticulated and recombined into distinctively patterned strands, worn in specific ways, and ultimately deposited in mortuary contexts. This patterning, refined by identifying beads that index glass- and bead-making communities of practice, reflect communities of consumption at Mission Santa Catalina, as well as specific exchange events. The structure of these bead communities of consumption is examined below through the use of formal social network analysis.

IDENTIFYING GLASSMAKING AND BEADMAKING COMMUNITIES OF PRACTICE

The preceding discussion about the process for the production and distribution of glass beads highlights two important points. First, the precise series of steps employed in the manufacture of beads resulted in highly regular elemental and morphological patterning. Despite assertions to the contrary and arguments that the color and shape of beads was haphazard and that the recipes used in their manufacture were poorly standardized (e.g., Noël Hume 2001:54), the chemical and morphological patterning of glass beads recovered on archaeological sites can be identified and linked to distinct European glassmaking and beadmaking communities of practice (Blair 2015, in press; Blair, Pendleton, and Francis 2009). Secondly, by tracing the beads’ object itineraries from manufacture to distribution, patterns of bead consumption and episodes of exchange can be identified and used to model social relationships amongst the individuals and communities distributing and consuming beads. In this section I describe the methods and results used to identify the products of distinct glass-making and bead-making communities of practice evident in the bead assemblage recovered at Mission Santa Catalina. For glassmaking these include the examination of 16th and 17th century glass recipe books, conducting compositional analyses of beads from Mission Santa Catalina, and making comparisons with other glass composition archaeometric studies. For the morphological identification of bead-making communities of practice I rely on analyses already conducted and reported in Blair et al. (2009).

EVIDENCE FROM THE RECIPE BOOKS

One of the most important sources available for helping to interpret the evidence obtained via glass compositional analysis is published glass recipe books. As discussed above, and

emphasized by McCray (1999a, 1999b), glassmaking was primarily a skill that was learned and perfected through practice and experience. This was primarily due to two factors: first, glassmaking and beadmaking during the 16th and 17th centuries was controlled by manufacturing guilds, operating within an apprenticeship system. Second, the guild system was incredibly secretive and trade secrets were vigorously protected. While individual glass houses maintained internal recipe books, with few exceptions (e.g., Neri 1612; Neri 1662 [1612]) these were not published for public consumption.⁴² Many of these books; however, have been preserved and subsequently published—providing important insights into glassmaking practices, recipes, and ingredients and how they changed over time.

Three recipe books in particular provide important evidence of glassmaking practices during the 16th and the 17th centuries (Moretti and Hreglich 2005, 2013; Toninato and Moretti 1992). The chronologically earliest of these is an anonymous Venetian manuscript, initially transcribed by Moretti and Toninato (2001) and recently published and annotated in English (Watts and Moretti 2011), that was likely assembled between 1536 and 1567 and might be a copy of somewhat earlier recipes. The next is the aforementioned Neri volume, initially published in 1612 (Neri 1612). The final volume is the Darduin recipe book (Zecchin 1986). This volume contains several sets of recipes primarily compiled by Giovanni Darduin, a Muranese glassmaker and a later, unknown individual. The first section of the volume contains 16th century recipes attributed to Giovanni's father, Nicolò Darduin (d. 1599), as well as Giovanni's own recipes that he continued to add to the volume until ca. 1654. Giovanni also transcribed and included an additional set of recipes from an anonymous 1523 document. The final portion of the manuscript, written in a different handwriting, was added by an unknown individual between 1693 and 1712 (Verità 1986).

These recipe books are particularly important for documenting changes in glass opacifiers and documenting different practices for producing opaque glass: including the use of tin dioxide, calcium antimonate, lead antimonate, lead arsenate, and bone ash. For my purposes, the temporal change in glass opacifiers is particularly relevant to this discussion. The primary

⁴² The importance of Antonio Neri's (1612) work for European glassmaking is widely acknowledged and is highlighted by the enormous number of editions and translations that have appeared over the last few centuries (see Boer and Engle 2010; Engle 2014; Grazzini 2012; Turner 1963). At the same time, this complex and extensive sequence of editions and translations—beginning with Christopher Merret's 1662 English translation (Neri 1662 [1612])—has actually resulted in an under-appreciation for the importance of Neri's writing for the history of beadmaking, due to the repeated mistranslation of specific bead making terminology. Dillon (1907:183, n.1), for example, notes that *canne di conterie* (beadmaking canes) was translated by Merret as “rails for counting houses.” This and similar errors were perpetuated in all subsequent editions based on Merret's translation, serving to delete any mention of glass beads from Neri's work (see discussions in Dillon 1907; Engle 2014; Francis 1988; Zecchin 1964) and leading many scholars to believe he had little to contribute to the topic (e.g., Turgeon 2001:66). Fortunately, Engle's recent three volume translation of Neri has corrected these mistranslations and omissions (Neri 2003 [1612], 2004 [1612], 2007 [1612]).

opacifier for Venetian glasses, from the 14th century until the early- to mid-17th century was tin dioxide, generally added to the glass mixture as calcined lead and tin. Three recipes in the Anonymous Venetian manuscript describe the manufacture of white glass using this process (Watts and Moretti 2011:22), and the technique is repeatedly mentioned by Neri (2003 [1612], 2004 [1612], 2007 [1612]) and included in the Darduin (1986) manuscript.

At some point during the 17th century, however, the use of a lead-tin opacifier ceased, and antimony based (calcium antimonate and lead antimonate) opacifiers began being used. For example, only one recipe in the 16th century Anonymous Venetian recipe book discusses opacification using calcium antimonate, and that recipe (XXXVI) is for an unusual silver mosaic glass (Watts and Moretti 2011:64). While calcium antimonate had been used as an opacifier in Roman times (Mass, Stone, and Wypyski 1996; Rooksby 1962; Turner and Rooksby 1959, 1963; Turner and Rooksby 1961), with few exceptions it does not appear at all in the early Venetian recipe books. Antonio Neri (2004 [1612]) only mentions its use for chalcedony glass and other specialized glasses, not as an opacifier. The Darduin manuscript provides the first mention (recipe CXLIV) of an opaque glass manufactured with lead antimonate in a recipe that dates to the mid-17th century. Commenting on this, Zecchin (1986:182, translation mine) states: “This and the following are the first two recipes that use antimony as opacifiers in the glass in place of the traditional calc of lead and tin. As also indicated in the recipe, this substitution was dictated, rather than to improve the quality of the product, for economic reasons, probably because of the high cost of tin at the time. Antimony was a new component for the Venetian glass, which he had not used at least until the beginning of the 17th century.” Other glass opacifiers include bone ash (Watts and Moretti 2011), indicated by a high phosphorus content, and lead arsenate, first noted in a recipe dating June 1, 1693 (Zecchin 1986). Neither of these opacifiers has been found in any beads recovered at Mission Santa Catalina.

This mid-17th century shift in glass opacifier recipe—noted in the recipe books—is also well supported by archaeological analyses of glass beads from sites in northeastern North American (Hancock, Aufreiter, and Kenyon 1997; Hancock, et al. 1999; Moreau, et al. 2002; Moreau, Hancock, and Moussette 2006; Sempowski, et al. 2000) and in the American Southeast (Blair 2009b, 2015, in press; Blanton and Blair 2015; Dalton-Carriger and Blair 2013, 2015).

METHODOLOGY: COMPOSITIONAL AND MORPHOLOGICAL ANALYSIS OF BEADS FROM MISSION SANTA CATALINA DE GUALE

In the next section of this chapter I discuss the compositional analysis of a sample of glass beads from Mission Santa Catalina. These analyses were initially designed to address questions regarding the origins of beads found at Mission Santa Catalina, as well as to test the potential for using bead compositions as a tool for relatively dating burial contexts. But, as discussed above, a precise understanding of the itineraries of these objects allows compositional patterning to also reveal micro-patterns of circulation and interaction.

METHODOLOGICAL CONSIDERATIONS: Numerous technologies have been successfully utilized to determine elemental composition of archaeological glasses. These include Instrumental Neutron Activation Analysis (INAA) (e.g., Bonneau, et al. 2012; Davison 1972; Glascock 2013; Hancock, Chafe, and Kenyon 1994; Hancock, et al. 1999; Kenyon, Hancock, and Aufreiter 1995; Kenyon, et al. 1995; Moreau, et al. 2011; Rahman, et al. 2008), Proton induced X-ray emission (PIXE) (e.g., Biron and Verità 2012; Gan, et al. 2009; Kuisma-Kursula 1999; Schiavon, et al. 2012; Šmit, et al. 2012; Zucchiatti, et al. 2007), Laser ablation-Inductively coupled plasma – Mass spectrometry (Arletti, et al. 2011; Cagno, et al. 2010; Carter 2011; Dussubieux, Robertshaw, and Glascock 2009; Gratuze 2013; James, Dahlin, and Carlson 2005; Robertshaw, et al. 2010; Robertshaw, et al. 2014; Wagner, et al. 2012; Walder 2013a, 2013b), and x-ray fluorescence spectrometry (XRF) (Hoffmann 1994; Liu, et al. 2013; Nakai and Shindo 2013; Nakai, et al. 2013; Polikreti, et al. 2011; Shugar and O'Connor 2008; Sokaras, et al. 2009; Veiga and Figueiredo 2002). The different techniques have various advantages and disadvantages, including relative cost, availability, destructiveness, sensitivity, and range of detectable elements (Bonneau, et al. 2014). For example, while INAA has been productively used and has excellent precision, accuracy, and sensitivity to many elements, several critical elements for interpreting glass chemistries cannot be determined by INAA. Such elements include lead, magnesium, phosphorus, and bismuth. For example, the largest and most important database on glass bead chemistries in North America was compiled using INAA (Hancock 2005, 2013). From these analyses numerous interpretations have been made about the chronology and sources of various glass recipes, but the absence of critical elements significantly hinders the utility of these analyses.

The use of XRF in archaeology has a long history and with the advent of portable instrumentation there has been a tremendous explosion in its use. Coincident with this development has been a series of critiques and arguments over the proper context for the use of XRF, appropriate analytical protocols, and the necessity and appropriate methods for elemental quantification (e.g., Conrey, et al. 2014; Frahm 2013a; Nazaroff and Shackley 2009; Shackley 2002, 2010a, 2010b; Shugar 2013; Shugar and Mass 2012; Speakman and Shackley 2013). Some of the central issues in this debate are most succinctly encapsulated by the recent discussion in the *Journal of Archaeological Science* between Frahm (2013a, 2013b; Frahm and Doonan 2013) and Speakman and Shackley (2013). Because this is an important and worthwhile discussion, and because it is directly relevant to the protocols and approaches I employ in my on work, below I briefly outline some of their key points and offer my own perspective on the matter.

In 2010 Steve Shackley (2010a) sketched an initial set of suggestions for the use of portable XRF in archaeology. His recommendations included using reference standards, evaluating surface geometry and artifact size, ensuring system reliability and stability, and, most importantly, he stressed the need for quantitative analysis, arguing that simple ratioing of elements is not sufficient.

Somewhat in response to these proposals, Frahm (2013a, 2013b; Frahm and Doonan 2013; Frahm, et al. 2014) evaluated the use of portable XRF entirely in terms of *validity* (Neff 1998), with analytical success measured in terms of whether a correct source attribution can be determined, regardless of whether or not an accurate and reliable compositional determination is made. Indeed, Frahm argued that the use of an “off-the-shelf” fundamental parameters calibration is acceptable if it can successfully return valid, but geochemically inaccurate, results—suggesting that the important questions being asked are archaeological, not geochemical, and therefore analytic accuracy is inessential.

In a response paper Speakman and Shackley (2013) forcefully rejected Frahm’s position, arguing that XRF results that lack validity and reliability are both unnecessary and insufficient. Furthermore, they suggest that analytic results that are “internally consistent” but fail to produce accurate geochemical data are unacceptable (see also Killick 2015:244). Frahm (2013a) responded that his interest is simply to answer archaeological, not geochemical, questions and therefore “internally consistent” methods that violate traditional XRF protocols are not the problematic “silo science” claimed by Speakman and Shackley.

My perspective on this debate centers on two key points, and I have sympathy for elements of both arguments. First, I believe the nature of this debate would be substantially different if the material in question were almost anything other than obsidian. Obsidian is one of the most widely analyzed archaeological materials and dozens of accepted international standards exist for calibrating instruments for analysis. As Speakman and Shackley (2013) point out, this includes portable XRF, and they cite the use of an empirical calibration developed for the Bruker Tracer system that incorporates approximately 40 well-analyzed obsidian standards (Glascock and Ferguson 2012). For obsidian, the homogeneity of the material and the widespread availability of standards facilitate the construction of robust empirical calibrations. But, other materials present substantially more difficult problems. For example, Hunt and Speakman (2015:638) note, “Unlike obsidian, for which it is relatively easy to determine a geologic/geographic source, provenance studies of ceramics are inherently challenging under the best of circumstances, using some of the more powerful analytical techniques” (see also Wallis and Kamenov 2013).

Artificial glasses, while lacking some of the homogeneity problems of ceramics, are another category of archaeological material that entails considerable analytic difficulties. These include an enormous range and quantity of possible constituent ingredients and the lack of good, readily available standards. These difficulties make it extremely difficult to achieve the “three critical aspects of a calibration” that were identified by Hunt and Speakman (2015:631): 1) the calibration must include all elements of interest, 2) the range of elemental concentrations of the standards must match the samples, and 3) the standards used must be of a similar matrix to the

samples. Because of this, some creativity and flexibility must be part of any procedure where XRF is used to analyze such “difficult” materials.

The second issue addressed by Speakman and Shackley (2013) and Frahm (2013a, 2013b; Frahm and Doonan 2013; Frahm, et al. 2014) is the concept of “internally consistent” analyses. Speakman and Shackley (2013) consider an “internally consistent” analysis to be “silliness” and a completely unacceptable approach. In terms of obsidian analysis, I agree completely. Considering the homogeneity of the material, the availability of numerous standards, and existing empirical calibrations there is absolutely no reason to publish obsidian concentrations that are neither reliable nor valid. However, for other material types—where standards are lacking or non-existent—variations of an “internally consistent” analysis can be productively employed in order to determine compositional groupings within an assemblage. In contrast to Frahm’s approach, however, I believe that “internally consistent” analyses must be based directly upon the elemental spectra and not based upon demonstrably false “quantified” data using fundamental parameters calibrations. While such data may successfully define compositional groups, incorrect quantification is just bad data. The alternative is to use what has come to be known as semi-quantitative analyses (e.g., Bow 2012). In this case statistical analyses of deconvoluted spectral data (using net area under the peak values generated by Gaussian curve fitting) can be used to “semi-quantitatively” define compositional groups. While such analyses are not generally comparable to external analyses, they can successfully be used to address archaeological questions, without placing incorrect and spurious compositional data into the archaeological literature.

To reiterate, Frahm (2013a) asked the question: “Is obsidian sourcing about geochemistry or archaeology?” While he is correct that in many cases the answer can and should be archaeology, that does not mean that demonstrably incorrect numbers should be reported—especially in the case of obsidian, where determining “correct” concentrations through the use of accepted standards and good calibrations is not terribly difficult. But, in the case of materials such as archaeological glasses, where “correct” elemental concentrations are almost impossible to generate (with XRF) due to the lack of reference materials,⁴³ there is an important role for “internally consistent” analyses (but not for the reporting of incorrect and demonstrably wrong elemental concentrations).

The question remains, however, why use XRF for archaeological glass if it is so difficult to obtain quantifiable data? My position is that the strengths of XRF, such as speed of analysis and relative inexpensiveness, allow larger samples to be analyzed than would be possible with other analytical techniques. Additionally, because the technique is completely non-destructive,

⁴³ While glass reference standards from both Corning and NIST exist and are often used, problems exist with both and they do not fulfill the requirements outlined by Hunt and Speakman (2015) for successful XRF calibration.

collections that might otherwise be off-limit, can be included in analysis projects—particularly when one is working with museum collections or objects subject to NAGPRA.

Given these concerns and cautions for using XRF for archaeological glasses, for my project I developed and implemented a multi-tiered analytical program. First, a large sample of glass beads was analyzed using XRF, spectral deconvolution was performed, and statistical analyses of semi-quantitative data were conducted and compositional groups were determined. Second, a small sample of beads from each elemental group defined by XRF was analyzed by LA-ICP-MS. These analyses were fully quantifiable—accurate, reliable, and valid. This second stage of analysis serves two purposes: first, it provides a quantitative representative sample of each compositional group, and second, the specimens analyzed by both LA-ICP-MS and XRF become *de facto* reference standards—composed of the same material matrix and including the full dynamic range of elements of interest—allowing the rest of the samples, only analyzed with XRF, to be empirically calibrated.

This tiered methodology differs from other approaches, such as what Greene (2013) has referred to as “Neutron Activation Analysis-Coupled-Portable X-Ray Fluorescence (NAAC-PXRF). For his method, compositional groups were first determined by NAA on a sample of objects, and then pXRF data generated using fundamental parameters calibration was projected into the previously defined categories, and statistical means (including culling of samples) was used to determine how to sort the XRF data into the categories determined by NAA. This is the exact opposite of my approach.

METHODOLOGICAL PARAMETERS

XRF: The elemental analysis of a sample of glass beads from Mission Santa Catalina was carried out using an evolving, multi-technique strategy. Initial sampling of white glass beads (n=783; AMNH types 15, 23, 38a, and 38b) was conducted using a Bruker Tracer III-v portable x-ray fluorescence spectrometer. Each bead was analyzed under vacuum for 180 seconds at 40 kV and 3 μ A using a 0.001" Cu, 0.001" Ti, 0.012" Al beam filter. This analysis yielded spectral data for the elements: K, Ca, Ti, Mn, Fe, Co, Ni, Cu, Zn, As, Sr, Rh, Sn, Sb, and Pb.

LA-ICP-MS: LA-ICP-MS analyses were conducted at the Field Museum of Natural History Elemental Analysis Facility (EAF) in Chicago, IL using a Varian quadrupole ICP-MS connected to a New Wave UP213 laser ablation system. Calibrations for quantitative analysis were obtained through reference to external standards including NIST 610, 612 and Corning B, C, and D (Brill 1999). Detailed descriptions of the LA-ICP-MS methods employed at the Field Museum EAF are reported in Dussubieux et al. (2009)

MATERIALS: Four primary bead types were included in this analysis. All beads selected were ubiquitous types of drawn manufacture, found in burial assemblages throughout the cemetery and in all other contexts across the mission settlement. The types included in this analysis are all composed of opaque white glass. Specimens for analysis were selected from every individual in the mission cemetery found with these bead types. For individuals with fewer than 50 beads of each type, all specimens present were analyzed. For individuals with more than 50 beads of each type a sub-sample of 50 was selected from the assemblage.

BEAD TYPES⁴⁴

AMNH Type 15 (n=33; Kidd and Kidd IIa14): Type 15 beads are of drawn manufacture and simple construction. They are opaque, white (4.5Y 9/1, 2.5PB 10/0) and ring shaped. These beads range from 2.60 mm to 3.50 mm in diameter and are less than 2.51 mm in length. This type is thought to have been primarily manufactured in Venice by members of the Margareteri guild and are often referred to as simple white seed beads (Francis 2009a).

AMNH Type 23 (n=180; Kidd and Kidd IIa13): Type 23 beads are of drawn manufacture and simple construction. They are opaque white (2.5 PB 10/0, 4.7Y 9/4, 4.5Y 9/1), and the type includes barrel, olive, oval, and spherical shaped specimens. The beads range in diameter between 3.51 mm and 7.99 mm and from 2.51 to 13.0 mm in length. Type 23 beads were manufactured by members of the Paternostri guild in Venice, and possibly also in France and the Netherlands (Francis 2009b, 2009c).

AMNH Type 38a (n=421; Kidd and Kidd IVa13): Type 38a is an opaque white (4.5Y 9/1, 2.5PB 10/0) glass bead with a transparent, colorless, core. In some specimens, the white glass is heavily eroded and has developed a light yellow (4.3Y 9/7) hue. The beads are highly unstable, and the opaque white layer in some cases erodes completely, leaving a separated core. The beads are ring and barrel shaped, ranging from less than 2.60 mm to 7.99 mm in diameter and from less than 2.51 mm to 4.50 mm in length. This bead type was erroneously combined with type 38b in Blair et al. (2009). Marvin Smith (n.d.) has suggested that this specific drawn, white, compound bead configuration post-dates 1630. This type is thought to have been manufactured by the Margareteri beadmaking guild in Venice (Francis 2009a).

AMNH Type 38b (n=149; Kidd and Kidd IVa11): Opaque White with Clear Core and Clear Coat: Type 38b is opaque white (4.5Y 9/1, 2.5PB 10/0) glass sandwiched between transparent colorless core and a thin exterior clear coat. The beads are ring and barrel shaped, ranging from less than 2.60 mm to 7.99 mm in diameter and from less than 2.51 mm to 4.50 mm in length. This type, erroneously combined with type 38a in Blair et al. (2009), has been suggested

⁴⁴ These type descriptions and type numbers are drawn from Pendleton et al. (2009).

to date to the period 1560-1630 (Smith n.d.). This type is thought to have been manufactured by the Margareteri beadmaking guild in Venice (Francis 2009a).

RESULTS OF ELEMENTAL ANALYSIS

Following XRF analysis the elemental spectra for each bead was deconvoluted using Artax 7 and net area under the peak values were calculated based on Gaussian curve fitting. These values were imported into JMP 11 for data analysis. Principle components analysis was conducted to determine the number of distinct compositional groups present, and elemental biplots were examined in order to interpret the results of the analysis (see Michelaki and Hancock 2011). Table 7.1 summarizes the elemental makeup of each compositional group and bead morphological type and provides a key to the elemental scatter plots. Figure 7.3, a principle components analysis biplot, shows that for the opaque white glass at least six distinct compositional groups (A-F) can be identified. Figures 7.4-7.9 presents a series of elemental biplots for the entire white glass bead assemblage, using the elements Ca, Fe, Mn, K, Pb Sb, Sn, Sr. Colors—representing compositional groups—and symbols—representing bead morphological types—are consistent across each compositional plot.

Table 7.1. White Bead Compositional Group Summary

AMNH Type	Kidd Type	Compositional Group	Opacifier	Elemental Summary	Key to Elemental Scatter Plots
Type 15	IIa14	C	Sb	Low Ca/K/Sr/Mn/Fe	Orange Circles
Type 23	IIa13	B	Sb	Low K/Ca, High Sr	Blue Triangles
Type 23	IIa13	E	Sn-Pb	Low K/Ca; Low Sr	Purple Triangles
Type 23	IIa13	F	Sn-(High) Pb	High K/Ca; Moderate Sr; High Mn/Fe	Green Triangles
Type 38a	IVa13	A	Sb	High K/Ca; High Sr; High Mn/Fe	Black Squares
Type 38a	IVa13	C	Sb	Low K/Ca; Low-Med Sr; Low Mn/Fe	Orange Squares
Type 38a	IVa13	D	Sn-Pb	Low K/Ca; Low Sr; Low Mn/Fe	Teal Squares
Type 38a	IVa13	B	Sb	Low K/Ca; High Sr; Low Mn/Fe	Blue Squares
Type 38b	IVa11	D	Sn	Low K/Ca; Low-Med Sr; Low Mn/Fe	Teal crosses

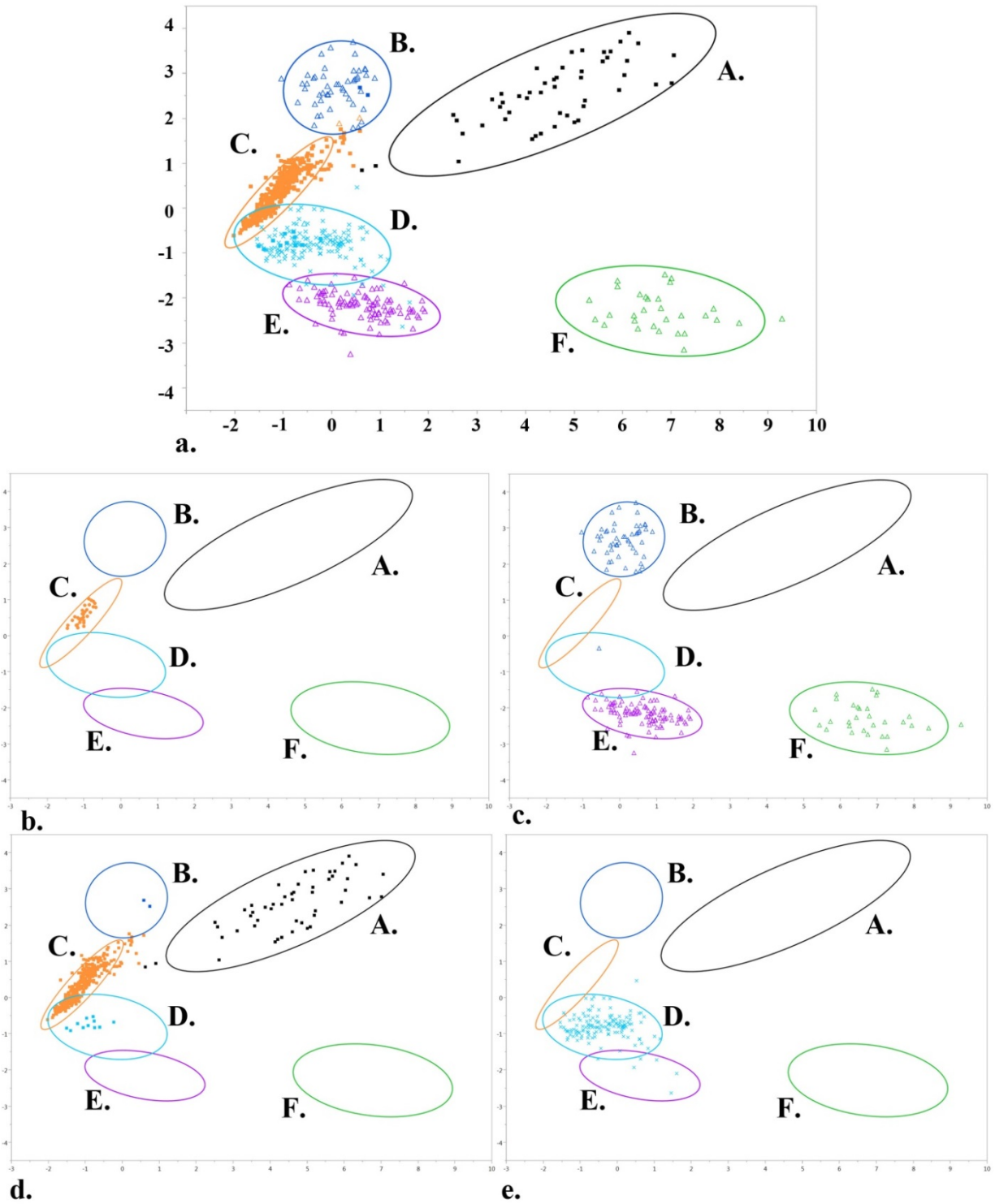


Figure 7.3. Principle components biplot of XRF results of white glass beads; a. all beads; b. Ila14 (AMNH Type 15) beads; c. Ila13 beads (AMNH Type 23 Beads); d. IVa13 beads (AMNH Type 38a); e. IVa11 beads (AMNH Type 38b).

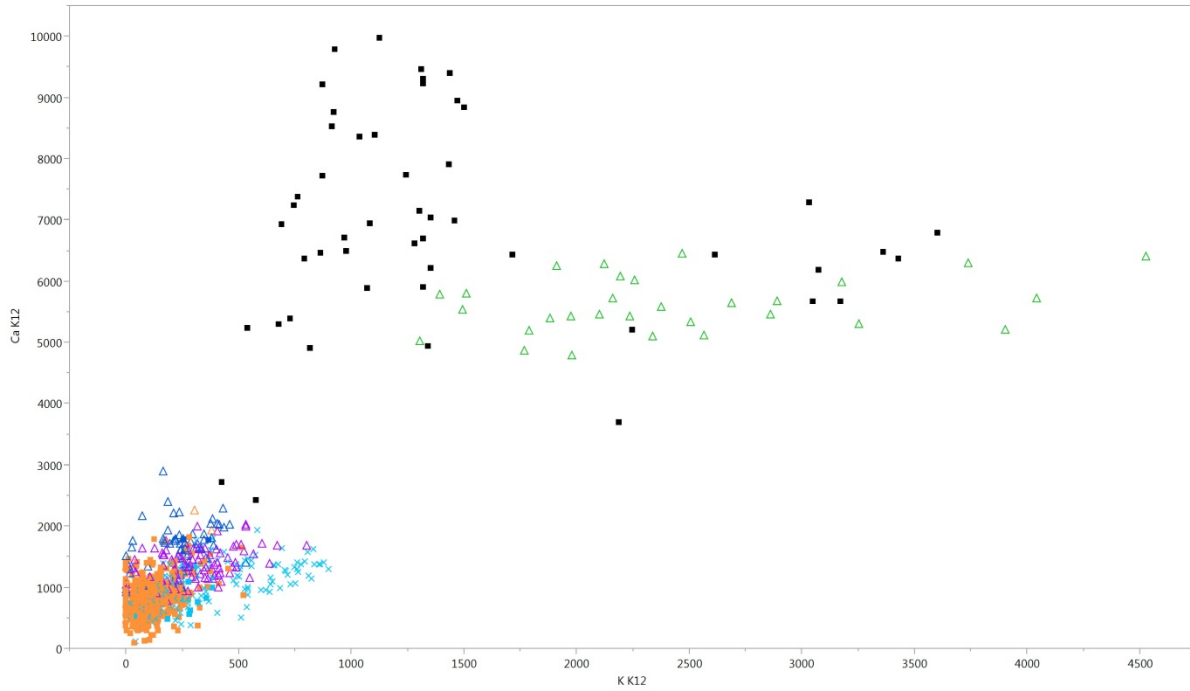


Figure 7.4. Elemental biplot of calcium (Ca) and potassium (K) content of white glass beads from Mission Santa Catalina.

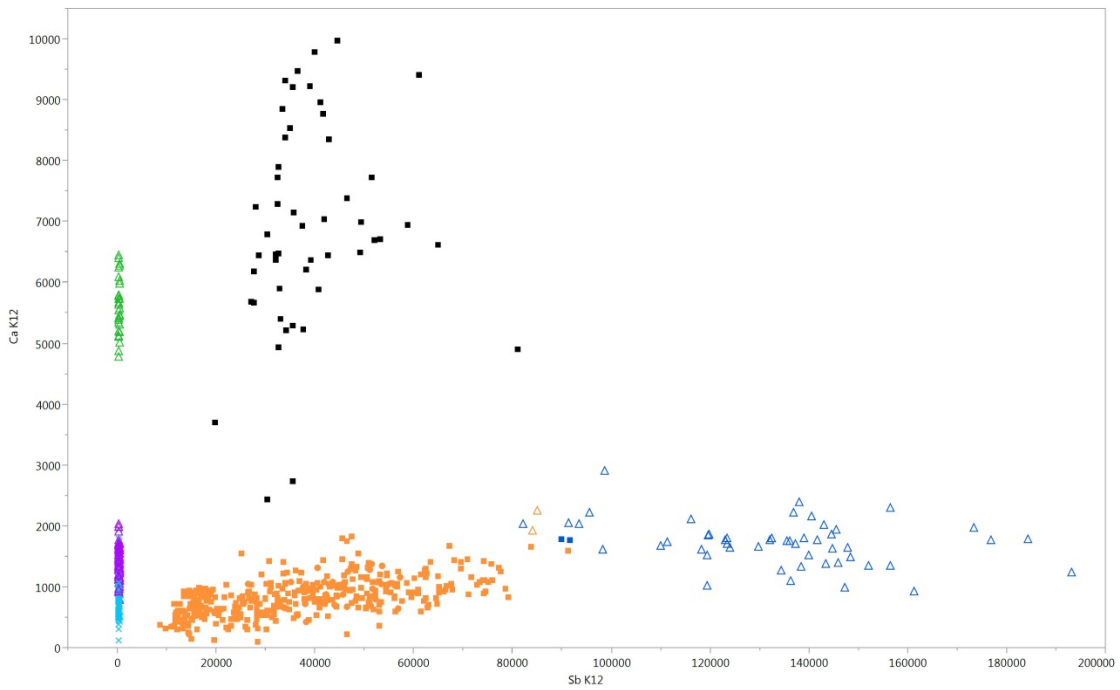


Figure 7.5. Elemental biplot of calcium (Ca) and antimony (Sb) content of white glass beads from Mission Santa Catalina.

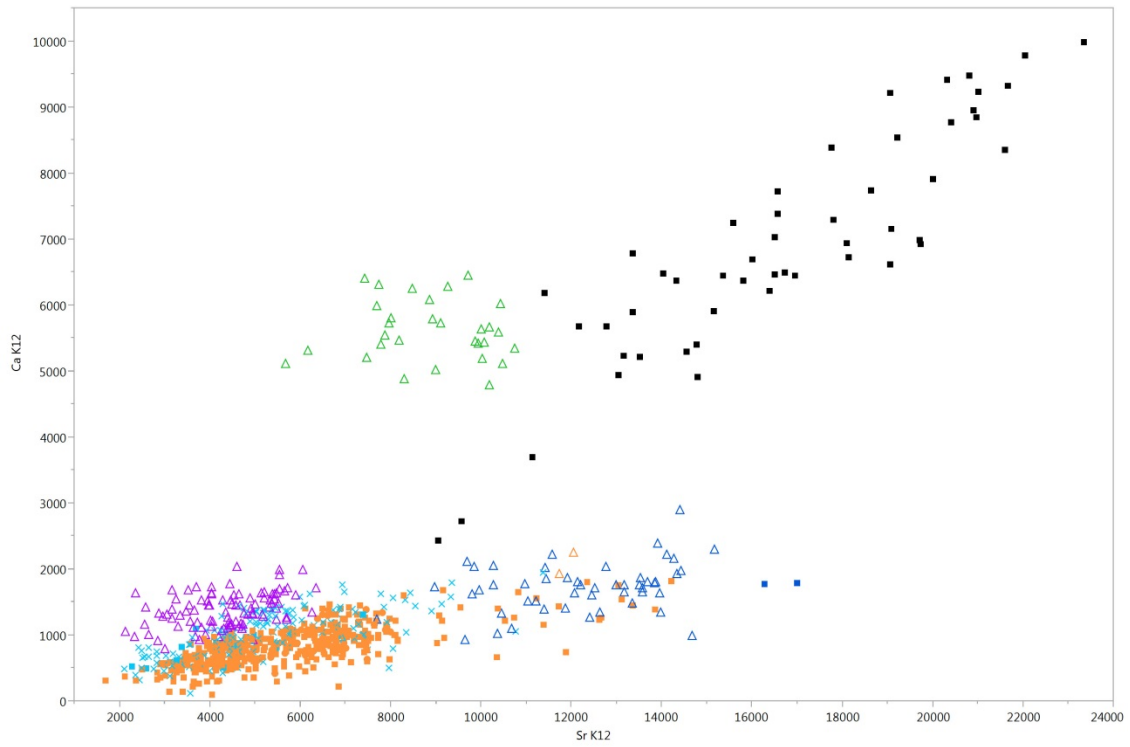


Figure 7.6. Elemental biplot of calcium (Ca) and strontium (Sr) content of white glass beads from Mission Santa Catalina.

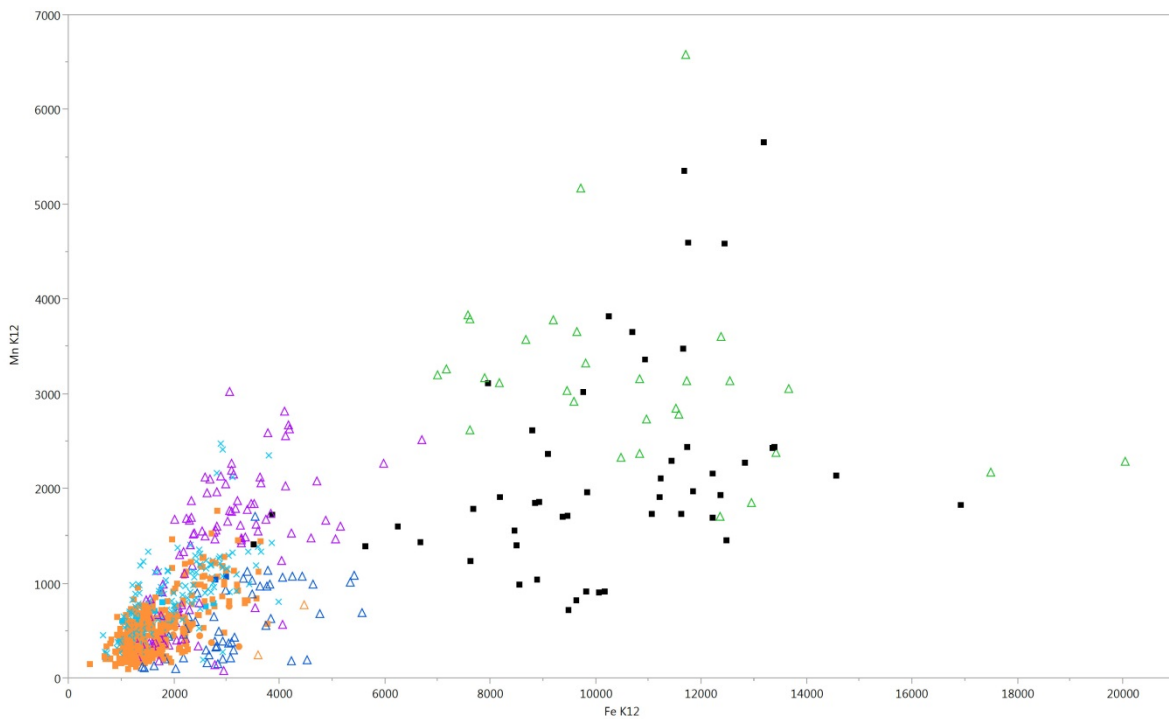


Figure 7.7. Elemental biplot of manganese (Mn) and iron (Fe) content of white glass beads from Mission Santa Catalina.



Figure 7.8. Elemental biplot of tin (Sn) and lead (Pb) content of white glass beads from Mission Santa Catalina.

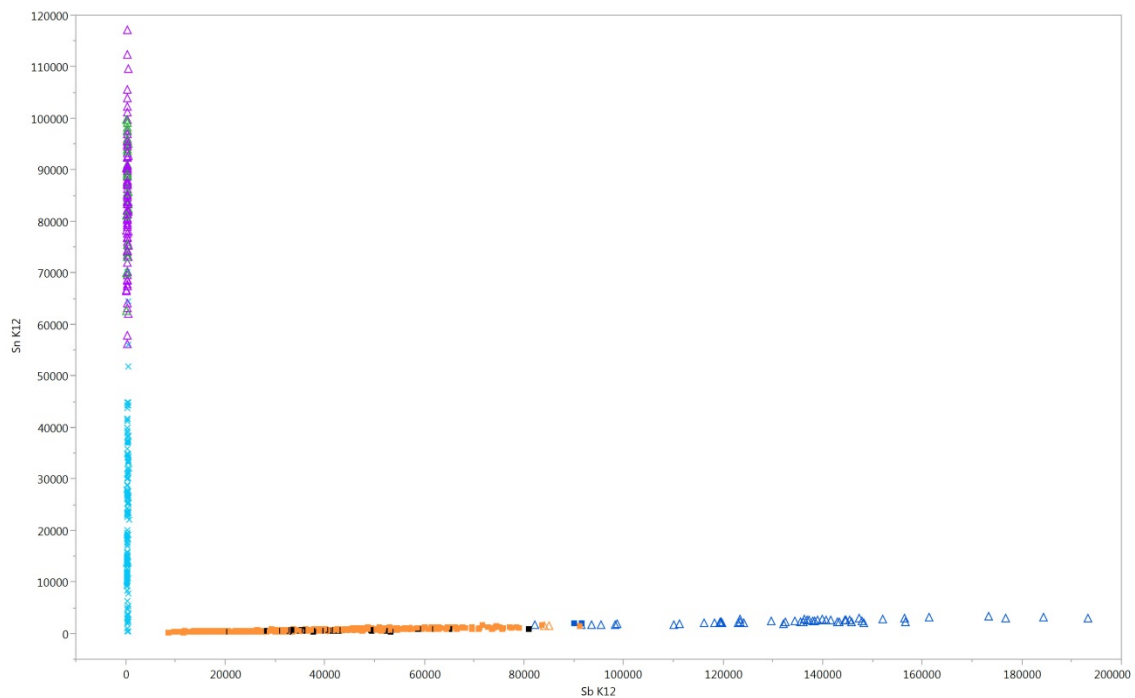


Figure 7.9. Elemental biplot of tin (Sn) and antimony (Sb) content of white glass beads from Mission Santa Catalina.

ELEMENTAL INTERPRETATION

COMPOSITIONAL GROUP A: This group consists entirely of type 38a (IVa13) beads found with Individual 394 in the mission cemetery (Blair 2009a). As seen in figure 7.4-7.9, this group was opacified with calcium-antimonate and contains elevated quantities of potassium, calcium, strontium, iron, and manganese. The elevated iron and manganese suggest that the intensive purification of raw materials described by Neri (2003 [1612], 2004 [1612], 2007 [1612]) were not carried out when this glass was manufactured and that manganese was added as a decolorant to remove the contaminating coloration produced by the excess iron. The greater quantity of calcium and potassium indicates the use of a mixed alkali flux; the LA-ICP-MS analysis (table 7.2, see below), indicates that neither the potassium nor calcium content is high enough for the glass to be classified as a Bohemian potash glass (Cílová and Woitsch 2011; Kenyon, et al. 1995). One potential source for this would be the use of small amounts of tartar salt (potassium bitartrate), obtained from the insides of wine barrels. Antonio Neri specifically suggests the use of this compound (in addition to the traditional soda flux) for producing opaque white common glass (2003 [1612]:27-28).

The elevated strontium is likely related to the source of calcium in the glass, because calcium and strontium function similarly geochemically (Freestone, Ponting, and Hughes 2002:264). Jackson (2005:773) suggests that the use of coastal sands as a silica source (containing marine shell bearing calcium and strontium) would likely be a source for elevated strontium. The combination of the use of coastal sands (rather than crushed quartz cobbles), the lack of purification of the raw ingredients, the intentional use of manganese as a decolorant, and antimony as an opacifier indicates a glass shop using less labor intensive production methods and cheaper raw materials in their manufacturing practices (Zecchin 1986).

COMPOSITIONAL GROUP B: This group primarily consists of type 23 (IIa13) beads (as well as two IVa13 beads) and is a calcium antimonate opacified glass with low potassium and calcium, high strontium, and low manganese and iron. This composition indicates a typical Venetian manufacturing process in which well purified raw ingredients are utilized. The elevated strontium is likely related to an intentional addition of organic calcium for glass stability or opacification, rather than residual calcium associated with primary glass ingredients (Blair 2015).

COMPOSITIONAL GROUP C: Group C includes all type 15 (IIa14) beads and a large number of type 38a (IVa13) beads. The group was opacified with calcium antimonate and has low calcium, potassium, iron, manganese, and strontium, indicating a typical Venetian manufacturing process.

COMPOSITIONAL GROUP D: Group D includes the type 38b (IVa11) beads, a small number of type 38a (IVa13) beads, and a single type 23 (IIa13) bead. This compositional group was opacified with lead-tin and has low calcium, strontium, manganese, iron, and potassium.

COMPOSITIONAL GROUP E: Group E primarily consists of type 38a (IVa13) beads opacified with lead-tin, and having low strontium, calcium, manganese, iron, and potassium.

COMPOSITIONAL GROUP F: Group F is a lead-tin opacified group, containing high lead, potassium, calcium, moderate strontium, and high iron and manganese and including only type 23 (IIa13). With the exception of the opacifier, the composition of this group is strikingly similar to Group A. One possibility is that these two groups are genealogically related, being produced using similar techniques in the same glass house, but demonstrating the temporal change in opacifiers that occurred during the 17th century (Blair in press; Sempowski, et al. 2000). All group F beads were found with Individual 318 in the mission cemetery (Blair 2009a, 2015).

RESULTS OF LA-ICP-MS ANALYSIS

Table 7.2 presents the results of the LA-ICP-MS analysis of a subsample of beads from each of the elemental groups determined by XRF. As discussed above, this analysis provides quantitative data for each of these groups, avoiding the problem of “silo science” critiqued by Speakman and Shackley (2013). These data largely confirm the patterning identified through XRF analysis.

Table 7.2. LA-ICP-MS Results for White beads from Mission Santa Catalina

Sample	Type	Context	XRF Group	SiO2%	Na2O%	MgO%	Al2O3%	P2O3%	Cl%	K2O%	CaO%	MnO%	Fe2O3%	CuO%	Sn O2%	Pb O2%	Ni ppm	Co ppm	Zn ppm	As ppm	Sr ppm	Sb ppm	Bi ppm
2812523.0001	IVa13	394	A	64.6	12.7	3.7	1.0	0.3	0.7	1.9	10.8	0.1	0.5	0.0	0.0	0.0	10.0	8.4	39.9	42.4	625.6	21374.3	4.7
2812523.0002	IVa13	394	A	65.2	9.5	3.4	1.0	0.2	0.5	7.6	9.5	0.1	0.4	0.0	0.0	0.1	4.9	5.7	19.2	16.9	470.3	13119.5	2.7
2812523.0003	IVa13	394	A	65.0	12.9	3.8	1.1	0.3	0.7	1.9	10.8	0.1	0.5	0.0	0.0	0.0	10.4	8.2	49.1	41.0	639.8	16361.5	4.7
2812523.0004	IVa13	394	A	64.5	12.8	3.8	1.0	0.3	0.7	1.9	11.4	0.2	0.5	0.0	0.0	0.0	9.8	9.1	34.0	39.3	653.3	16892.0	5.5
2812523.0005	IVa13	394	A	62.2	15.2	3.5	0.8	0.4	0.7	2.2	9.8	0.3	0.5	0.0	0.0	0.0	12.6	10.8	44.6	25.6	582.8	24771.7	3.0
Mean				64.3	12.6	3.6	1.0	0.3	0.7	3.1	10.5	0.2	0.5	0.0	0.0	0.0	9.5	8.4	37.3	33.0	594.3	18503.8	4.1
2731152	IIa13	Fallen Tree	B	63.4	12.8	4.1	0.8	0.3	0.5	2.1	11.4	0.1	0.4	0.0	0.0	0.1	44.4	15.3	41.1	50.4	631.6	23515.9	3.0
2818653.0110	IIa13	163	B	66.6	14.3	2.7	0.9	0.3	1.0	1.7	8.3	0.2	0.5	0.0	0.0	0.0	7.0	7.7	28.7	47.5	497.6	20292.8	3.8
2818653.0111	IIa13	163	B	63.8	12.5	3.2	2.1	0.3	0.7	4.4	9.4	0.2	0.6	0.0	0.0	0.0	5.9	9.5	44.9	44.9	458.9	16005.0	2.6
2818653.0112	IIa13	163	B	65.8	14.2	2.7	1.0	0.3	1.0	1.7	8.7	0.2	0.5	0.0	0.0	0.0	7.3	7.5	31.5	44.8	511.3	22175.5	3.6
2818653.0113	IIa13	163	B	64.7	14.5	2.7	1.0	0.3	1.1	1.7	8.7	0.2	0.5	0.0	0.0	0.0	6.9	7.6	30.7	46.6	510.4	26842.0	3.8
2818653.0114	IIa13	163	B	65.0	14.4	2.7	0.9	0.3	1.0	1.7	8.9	0.2	0.5	0.0	0.0	0.0	7.0	7.5	35.8	47.0	505.9	25783.1	3.6
Mean				64.9	13.8	3.0	1.1	0.3	0.9	2.2	9.2	0.2	0.5	0.0	0.0	0.0	13.1	9.2	35.5	46.9	519.3	22435.7	3.4
2812642.0004	IVa13	86	C	62.9	15.0	3.5	1.1	0.7	0.9	2.1	9.1	0.3	0.6	0.0	0.0	0.0	14.1	8.6	49.5	16.2	516.2	22309.7	3.5
2812642.0005	IVa13	86	C	64.1	15.4	3.4	1.0	0.6	0.9	2.0	8.2	0.3	0.5	0.0	0.0	0.0	15.4	10.7	61.3	26.1	538.9	20207.8	6.5
2812642.0006	IVa13	86	C	61.8	15.4	3.7	1.1	0.5	1.0	1.3	8.4	0.3	0.7	0.0	0.0	0.1	26.8	12.7	48.7	45.8	484.4	32508.1	3.1
2812642.0007	IVa13	86	C	61.5	14.9	3.9	1.2	0.6	1.1	1.3	8.7	0.4	0.7	0.0	0.0	0.1	31.8	15.5	48.6	63.5	472.9	32496.0	4.7
2812642.0008	IVa13	86	C	63.9	15.2	3.4	1.2	0.8	0.9	2.2	8.5	0.3	0.6	0.0	0.0	0.0	13.3	9.5	58.5	21.0	520.7	17624.0	4.9
2814006.0001	IIa14	102	C	60.5	16.0	3.4	1.3	0.4	0.7	2.1	10.1	0.3	0.8	0.0	0.0	0.2	16.2	9.9	63.6	42.8	527.3	25110.1	3.8
2814006.0002	IIa14	102	C	64.3	12.5	3.8	1.1	0.3	0.7	2.0	11.5	0.2	0.5	0.0	0.0	0.0	10.3	9.4	36.7	40.1	664.1	17635.4	5.8
2814006.0003	IIa14	102	C	60.7	16.2	3.3	1.4	0.4	0.7	2.0	9.4	0.4	0.7	0.0	0.0	0.2	15.1	9.6	55.0	45.9	522.0	26238.0	4.2
2814324.0070	IIa14	228	C	64.5	13.5	4.2	0.9	0.2	0.7	1.7	9.9	0.2	0.4	0.0	0.0	0.0	6.9	7.6	42.0	13.8	513.5	20910.6	1.4
Mean				62.7	14.9	3.6	1.2	0.5	0.9	1.9	9.3	0.3	0.6	0.0	0.0	0.1	16.7	10.4	51.5	35.0	528.9	23893.3	4.2

2814453.0001	IVa11	70	D	66.9	11.4	2.4	1.2	0.4	0.3	6.5	9.8	0.4	0.5	0.0	0.0	0.0	2.6	2.3	21.5	0.8	344.2	0.4	0.3
2814453.0002	IVa11	70	D	64.9	11.3	2.5	1.3	0.4	0.3	6.7	11.1	0.5	0.6	0.0	0.1	0.3	3.3	5.3	46.8	29.1	375.7	1.3	5.2
2814453.0003	IVa11	70	D	51.4	9.6	2.0	1.1	0.3	0.2	5.3	8.8	0.6	0.5	0.0	9.3	10.9	6.2	5.5	29.4	41.8	312.3	11.9	29.1
2814453.0004	IVa11	70	D	46.0	8.6	1.8	1.1	0.3	0.2	4.7	7.8	0.7	0.5	0.0	11.5	16.8	7.1	6.7	46.9	55.3	296.5	18.0	43.0
2814453.0005	IVa11	70	D	57.9	10.6	2.2	1.3	0.4	0.2	5.4	10.0	0.9	0.6	0.0	4.1	6.4	3.5	6.4	32.5	31.7	382.3	10.5	20.1
Mean				57.4	10.3	2.2	1.2	0.4	0.2	5.7	9.5	0.6	0.5	0.0	5.0	6.9	4.6	5.2	35.4	31.7	342.2	8.4	19.5
2806770.0012	Ila13	186	E	50.2	13.5	2.9	1.1	0.9	1.0	2.2	8.8	0.2	0.5	0.0	11.0	7.6	11.2	5.3	42.1	56.1	485.4	5.5	11.7
2806770.0013	Ila13	186	E	51.8	13.9	3.1	1.1	0.7	1.0	2.3	9.1	0.2	0.5	0.0	9.1	7.2	10.6	5.5	33.6	55.4	498.5	5.4	10.4
2806770.0014	Ila13	186	E	51.9	14.0	3.0	1.0	0.7	0.9	2.3	9.0	0.2	0.5	0.0	8.8	7.6	10.8	6.7	45.5	64.8	502.7	5.4	11.7
2832337.3901	Ila13	307	E	54.1	15.0	3.2	1.0	0.4	0.9	2.3	9.0	0.3	0.6	0.0	6.8	6.3	19.3	9.1	65.9	68.9	536.6	80.1	17.0
2832337.3902	Ila13	307	E	54.3	13.4	2.8	1.0	0.3	0.9	2.5	8.6	0.8	0.6	0.0	5.8	8.9	19.2	20.3	59.8	53.3	483.9	35.6	41.9
Mean				52.5	13.9	3.0	1.0	0.6	0.9	2.3	8.9	0.3	0.6	0.0	8.3	7.5	14.2	9.4	49.4	59.7	501.4	26.4	18.5
2809056.1980	Ila13	318	F	50.3	14.0	3.1	1.3	1.5	1.0	1.8	8.3	0.3	0.6	0.0	8.8	9.0	10.2	3.4	98.2	49.6	471.3	7.8	180.3
2809056.1981	Ila13	318	F	51.6	13.9	3.1	1.5	1.3	1.0	1.8	8.3	0.3	0.7	0.0	6.8	9.6	10.9	3.4	121.2	52.9	475.1	8.5	225.1
2809056.1982	Ila13	318	F	53.2	10.7	2.5	1.0	0.3	0.7	4.0	7.8	0.4	0.5	0.0	8.9	10.0	8.2	5.2	31.2	21.1	298.8	10.7	8.1
2809056.1983	Ila13	318	F	47.8	13.0	2.9	2.1	1.9	0.9	1.8	7.7	0.3	0.6	0.0	12.2	8.8	10.4	3.2	174.1	46.2	463.1	8.0	185.0
2809056.1984	Ila13	318	F	48.2	10.4	2.4	1.4	0.8	0.7	4.5	8.3	0.6	0.5	0.0	12.4	9.7	9.4	6.5	51.5	80.8	307.7	41.7	251.9
Mean				50.2	12.4	2.8	1.5	1.1	0.9	2.8	8.1	0.4	0.6	0.0	9.8	9.4	9.8	4.3	95.2	50.1	403.2	15.3	170.1

IMPLICATIONS OF THE COMPOSITIONAL DATA

To summarize these data, the white beads from Mission Santa Catalina clearly cluster into at least six distinct compositional groups. While this is structured by a number of different elements, I would note that there are two key drivers behind this distinct patterning. First, groups D, E, and F are each opacified with a mixture of lead-tin, an opacifier that was used until the mid-17th century (Sempowski et al. 2000). At that time it was replaced (likely for economic reasons) by a calcium-antimonate opacifier; groups A, B, and C were opacified using this formula. Secondly, the compositional differences that distinguish the similarly opacified groups are based on more fundamental differences in raw material sources (e.g., silica and soda) and manufacturing practices, representing distinct and coeval glass-making communities of practice. While additional analysis is needed to clarify this issue, it is possible and likely that some combination of groups A-C and D-F are genealogically connected, with some groups representing the temporally later products of a community of practice extended through time. This means that the compositional clusters depicted in figures 7.3-7.9 reflect the products of between three (if each early opacifier group is genealogically linked to a later group) and six (if none of the earlier and later groups are genealogically linked) glass-making communities of practice.

BEADMAKING COMMUNITIES OF PRACTICE

The entire bead assemblage from Mission Santa Catalina has been previously described and classified (Blair, Pendleton, and Francis 2009; Blair and May 2008). This classification and the identification of the specific beadmaking community practice (guild) for each bead type, in conjunction with the glassmaking communities of practice identified above, is utilized in the

following sections. To summarize, the beads analyzed in this study are the product of distinct bead manufacturing communities of practice, such as the Margareteri guild, the Paternostri guild, the Perlei e Suppialume guild, and other unnamed bead making communities of practice, and by understanding the itineraries these objects followed, the traces of glassmaking and beadmaking communities of practice can also be used as indices of later circulation and interaction.

BUILDING A SOCIAL NETWORK MODEL OF THE MISSION SANTA CATALINA DE GUALE CEMETERY

Social network analysis is increasingly emerging in archaeology as a powerful means of exploring past socio-material relationships and interactions across multiple scales (e.g., Borck, et al. 2015; Brughmans 2010, 2013; Collar, et al. 2015; Hill, et al. 2015; Knappett 2011a, 2013; Larson 2013; Mills, Clark, et al. 2013; Mills, et al. 2015; Mills, Roberts, et al. 2013; Pailles 2014; Sosna, et al. 2013). Derived from graph theory (Barnes and Harary 1983), social network analysis is a means of “detecting and interpreting patterns of relationships between subjects of research interest” (Brughmans 2010:277). However, unlike most other multivariate analytical techniques—such as cluster analysis or principal components analysis—that can be used to identify relationships, the complexity of networked relationships can be readily visualized, and the spatial dimension of these visualizations allow social relationships to be modeled across both social and physical space, while simultaneously allowing both the content and the structure of social relationships to be explored. They also can provide formal quantification of measures of centrality such as degree, closeness, betweenness, and eigenvector centrality. Put into archaeological terms, rather than just being able to explore the membership and existence of “groupness,” social network analysis allows us to explore the structure of groups, that is, how individuals, sites, and objects interact—identifying specific sources and conduits of resources and information (Brughmans 2013). Here I use formal social network analysis methods to explore the structure of bead communities of consumption at Mission Santa Catalina de Guale. Below, I construct two social network visualizations based on bead affiliations between individuals in the Mission Santa Catalina de Guale cemetery.

THE UNIMODAL NETWORK MODEL

The first network visualization I present is constructed following the methods similar to those employed by the Southwest Social Networks Project (Borck, et al. 2015; Mills, Clark, et al. 2013; Mills, et al. 2015; Mills, Roberts, et al. 2013; Peeples and Haas 2013). It is a single mode network where nodes consist of individuals buried with beads in the Santa Catalina mission cemetery. The edges, or connections between individuals, are based on a Brainerd-Robinson coefficient of similarity (Brainerd 1951; Robinson 1951) between bead assemblages found with each individual, rescaled to range from 0 (no similarity) to 1 (perfect similarity) and calculated in

R using the script developed by Peeples (2011). The coefficient of similarity in this network is used to both establish and weight connections between individuals (Peeples and Roberts 2013). The resulting similarity matrix was loaded into Gephi, an open source network visualization software (Bastian, Heymann, and Jacomy 2009) and a series of network visualizations were produced. Additionally, a modularity analysis—using the weighted values of node similarity—was conducted in order recognize community structure within the network (Newman 2006; Noack 2009), revealing what I interpret to be the multiple bead consumption communities present at Mission Santa Catalina.

Figures 7.10 and 7.11 show the location of the burials found in the Mission Santa Catalina cemetery. Figure 7.10 shows all individuals, while figure 7.11 identifies only those burials found with bead assemblages, identified by individual number.⁴⁵ Figure 7.12 shows the primary network visualization of the mission cemetery, with nodes color-coded by module (i.e., bead consumption community of practice), and sized based on betweenness centrality. That is, larger nodes are more central to the network than smaller nodes. The network is plotted on top of the plan view of the mission cemetery, though rotated so that north is oriented at the top of the page. Nodes are labeled by individual number.

⁴⁵ Some burials, rather than being identified by number (e.g., Individual 307) are denoted by letter (e.g., Burial B). The latter nomenclature is used for distinct burial contexts in which human remains were not recovered due to poor preservation.

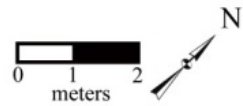
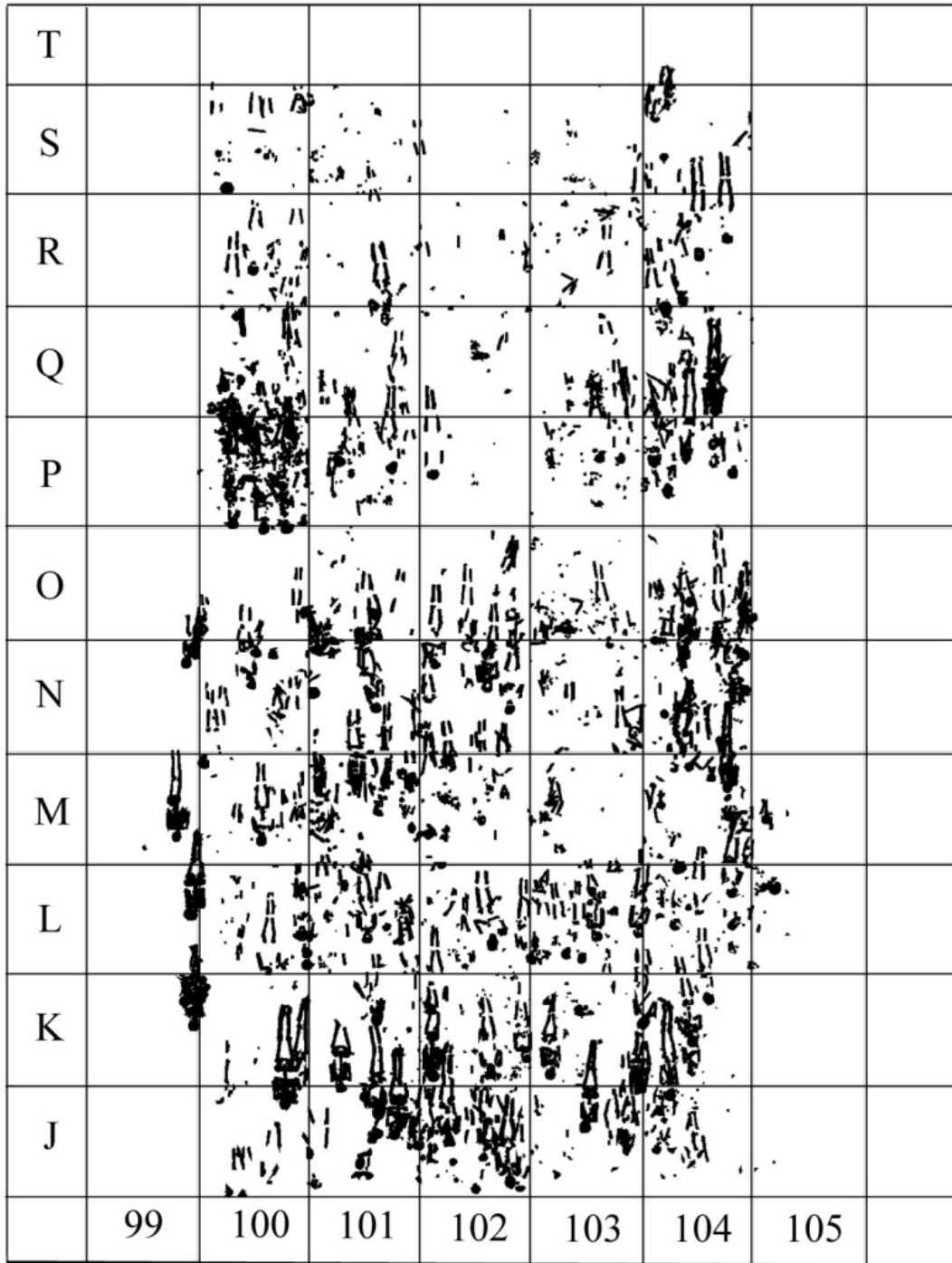


Figure 7.10. Map showing the location of human remains in the Mission Santa Catalina de Guale cemetery (Blair 2009:135, fig. 15.9), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

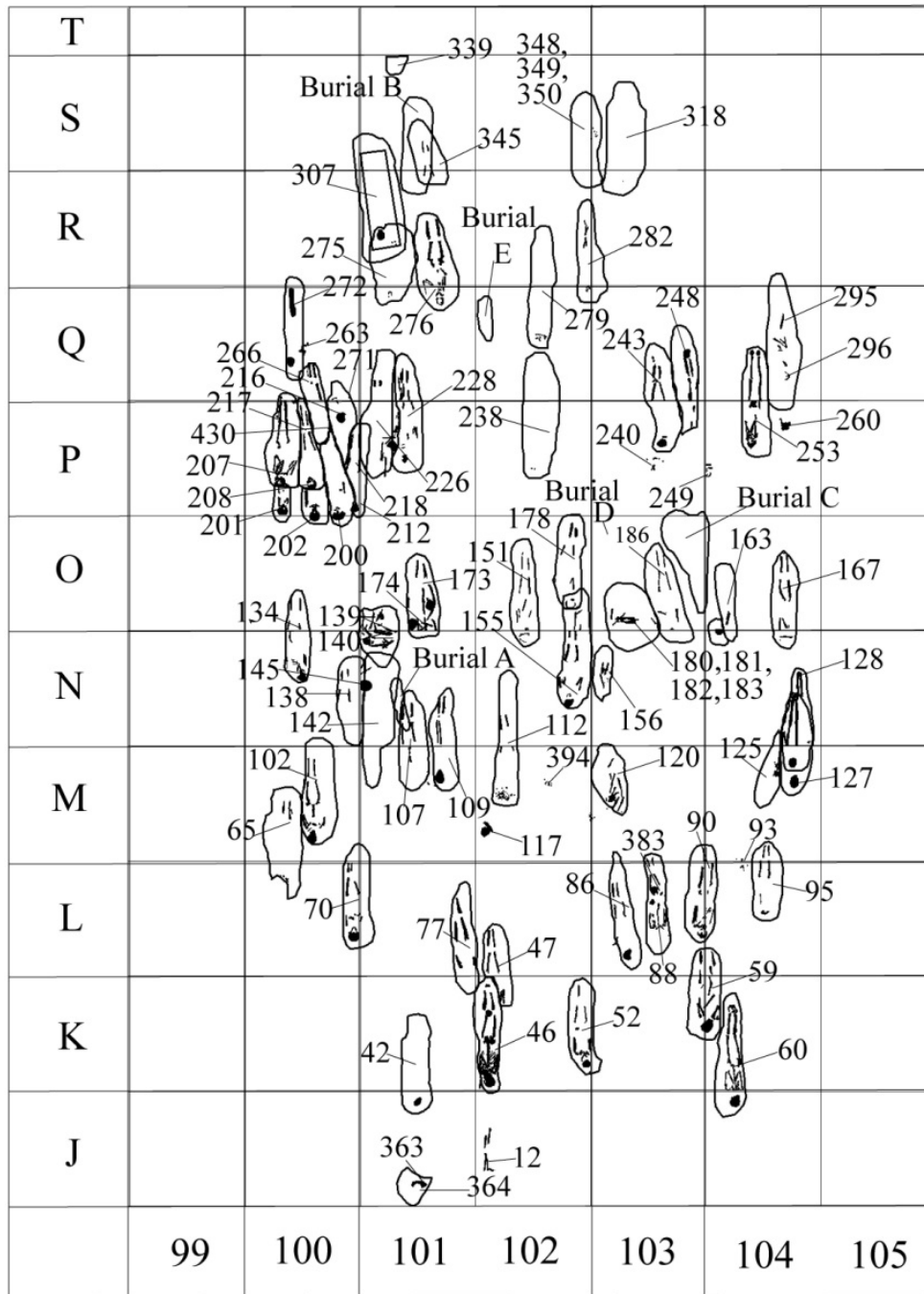


Figure 7.11. Map showing the location of human remains and burial pits found in association with beads at Mission Santa Catalina de Guale cemetery (Blair 2009:136, fig. 15.10), reproduced courtesy of the Division of Anthropology, American Museum of Natural History.

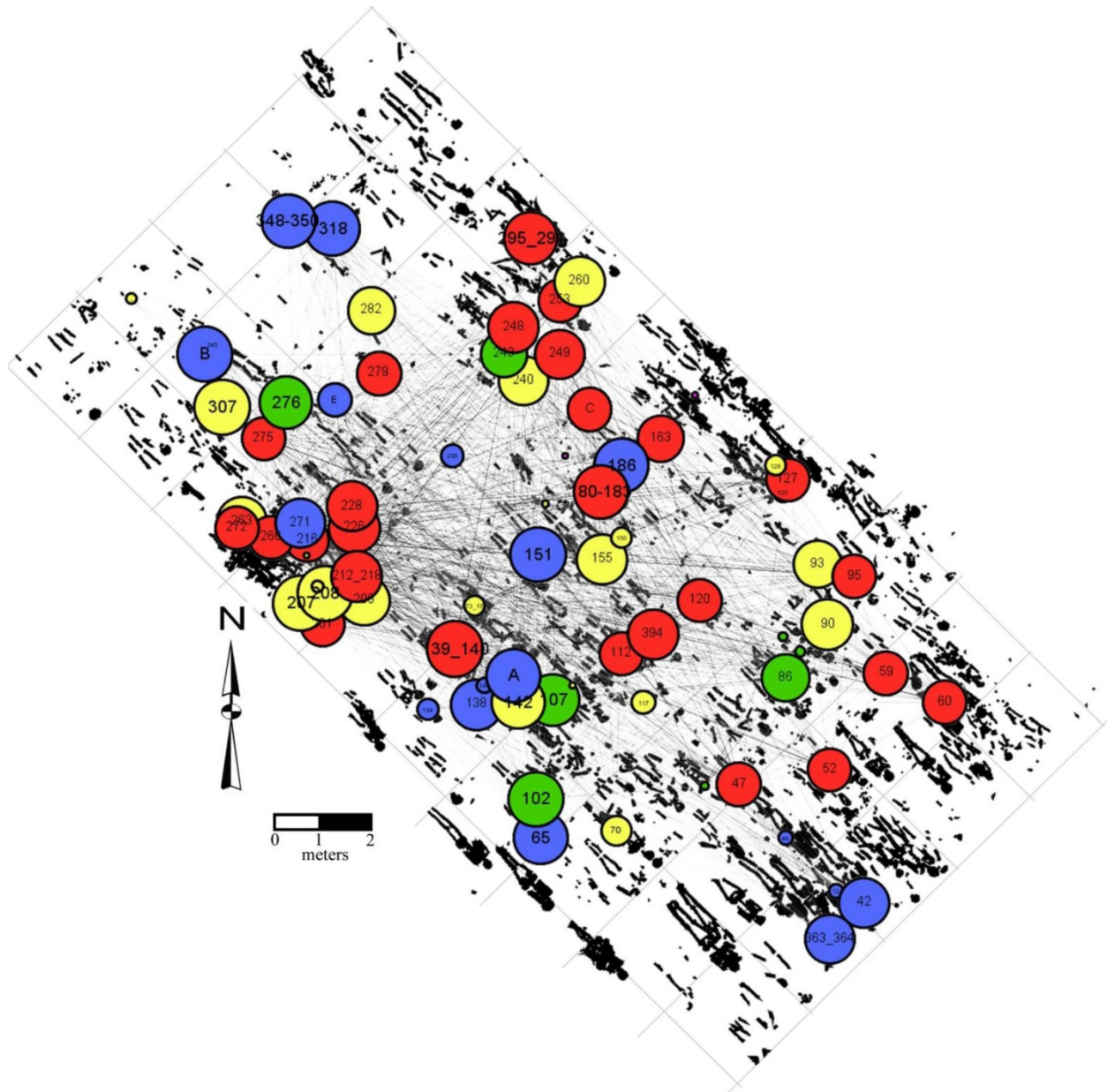


Figure 7.12. Social Network unimodal visualization of bead communities of consumption at Mission Santa Catalina plotted on top of the mission cemetery plan map. Node color represents community, as identified by modularity analysis, and node size is based on betweenness centrality of individuals to the network. Nodes are labeled by individual number.

The most obvious, and surprising, result of this analysis was the relative lack of correspondence between burial location and bead community of consumption. Recent biodistance analyses at several other mission cemeteries have shown that the location of burial is often highly related to family, and likely community, group (Stojanowski 2005c, 2013). Here it appears that the circulation and exchange of beads corresponds to some other type of social relationship.

Figure 7.13 presents the same data as figure 7.12 except that the layout of the network have been transformed to represent *social* space—where proximity of nodes represents social distance rather than physical proximity. This figure was generated using the Force-Atlas 2 layout algorithm developed for Gephi, designed to use weighted connections so that nodal proximity reflects community structure (Jacomy, et al. 2014; Newman 2004; Noack 2009). Here, distinct bead communities of consumption are clearly evident with the correspondence of both module colors and spatial proximity.

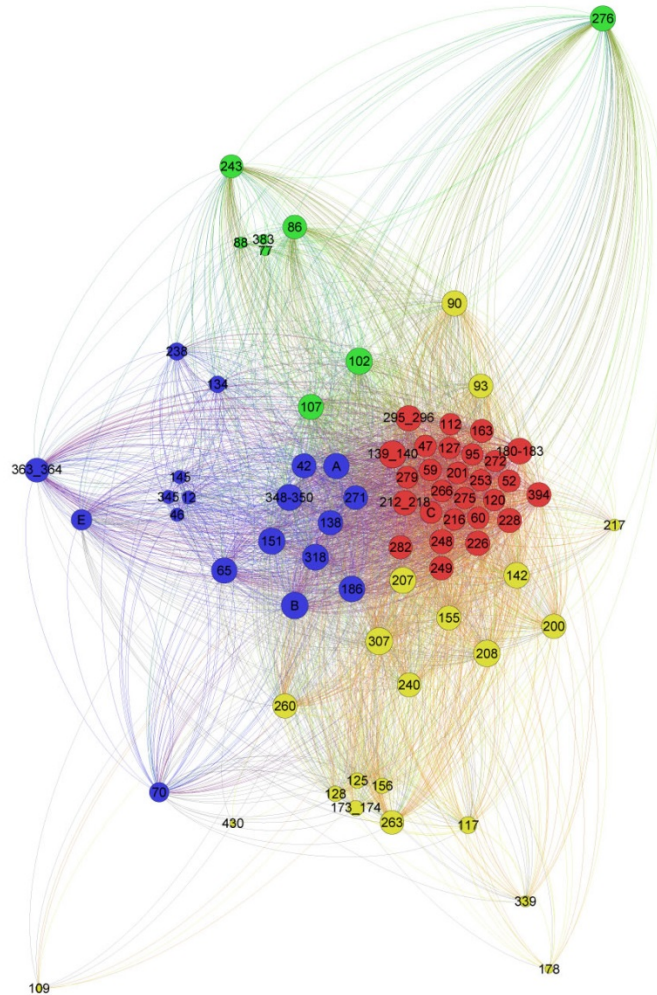


Figure 7.13. Social Network unimodal visualization of bead communities of consumption at Mission Santa Catalina. Node color is based on the results of a modularity analysis and node size is based on betweenness centrality. Nodes are labeled with burial number.

If each color-coded cluster represents a distinct community of practice—specifically a bead community of consumption—then the network as a whole represents what Wenger (1998:126-127) has referred to as a “constellation of practice.” These are interconnected configurations that are “too broad, too diverse, and too diffuse to be usefully treated as single communities of practice.” As Wenger (1998:103) has noted, “communities of practice cannot be

considered in isolation from the rest of the world, or understood independently of other practices.” In this formulation of interconnected communities forming a constellation of practice, Wenger (1998:105-110) identifies two types of entities that serve to facilitate interconnections between communities of practice: brokers and boundary objects.⁴⁶ In this network brokers are specific individuals and beads serve as boundary objects. In the next several sections I explore how network analysis can be used to reveal and identify individuals and objects with these roles as well as explore some specific relationships evident in the greater bead consumption constellation of practice at Mission Santa Catalina.

BROKERS , CORRESPONDENCE ANALYSIS, AND BEAD CONSUMPTION

The network presented in figure 7.13 utilized a combined modularity analysis and weighted topology in order to present a visualization of the multiple bead consumption communities interacting at Mission Santa Catalina. But, because network modularity is a somewhat unconventional and unfamiliar statistic, and because the number of modules identified is dependent on the resolution value selected for the analysis, I supplemented the community recognition procedures with a more conventional multivariable technique: correspondence analysis coupled with k-means cluster analysis. Using the same data matrix from which I calculated the Brainerd-Robinson coefficient of similarity, I conducted a correspondence analysis⁴⁷ on the individuals and beads within the mission cemetery using the PAST statistics package (Hammer 2015). The first two axes of variation were subsequently plotted in JMP 11 and a seven group k-means cluster solution was selected. Figure 7.14 shows the correspondence analysis plot of individuals in the cemetery, color coded by the results of the k-means cluster analysis. Figure 7.15 reproduces the network shown in figure 7.13, but the color-coding of individual nodes is based on the correspondence analysis clustering result, rather than the modularity metric.

While figures 7.13 and 7.15 largely replicate the same clustering patterns, the use of multiple methods to identify network clusters, and juxtaposing them visually (by color) and spatially, serves an important purpose—specifically, the tensions between the results of the methods highlight specific individuals who operate as brokers and facilitate connections between multiple communities of practice.

⁴⁶ The role of broker in a constellation of practice corresponds closely with how the term *brokerage* is used in network terms, where network brokers connect previously unconnected actors (Peeples and Haas 2013). In a more metaphorical network sense, the concept also resonates with the notion of mediators as used by Latour (2005:38-40).

⁴⁷ Correspondence analysis is a powerful multivariate technique that can reduce dimensional variability in untransformed data matrices containing raw artifact counts (Alberti 2013). While the technique is commonly used for seriation purposes (Peeples and Schachner 2012; Smith and Neiman 2007) and has been successfully used for these purposes with bead assemblages (Marcoux 2008, 2012a, 2012b; Siegmund 1995), here I use it simply for its ability to reduce dimensionality and visualize clustering.

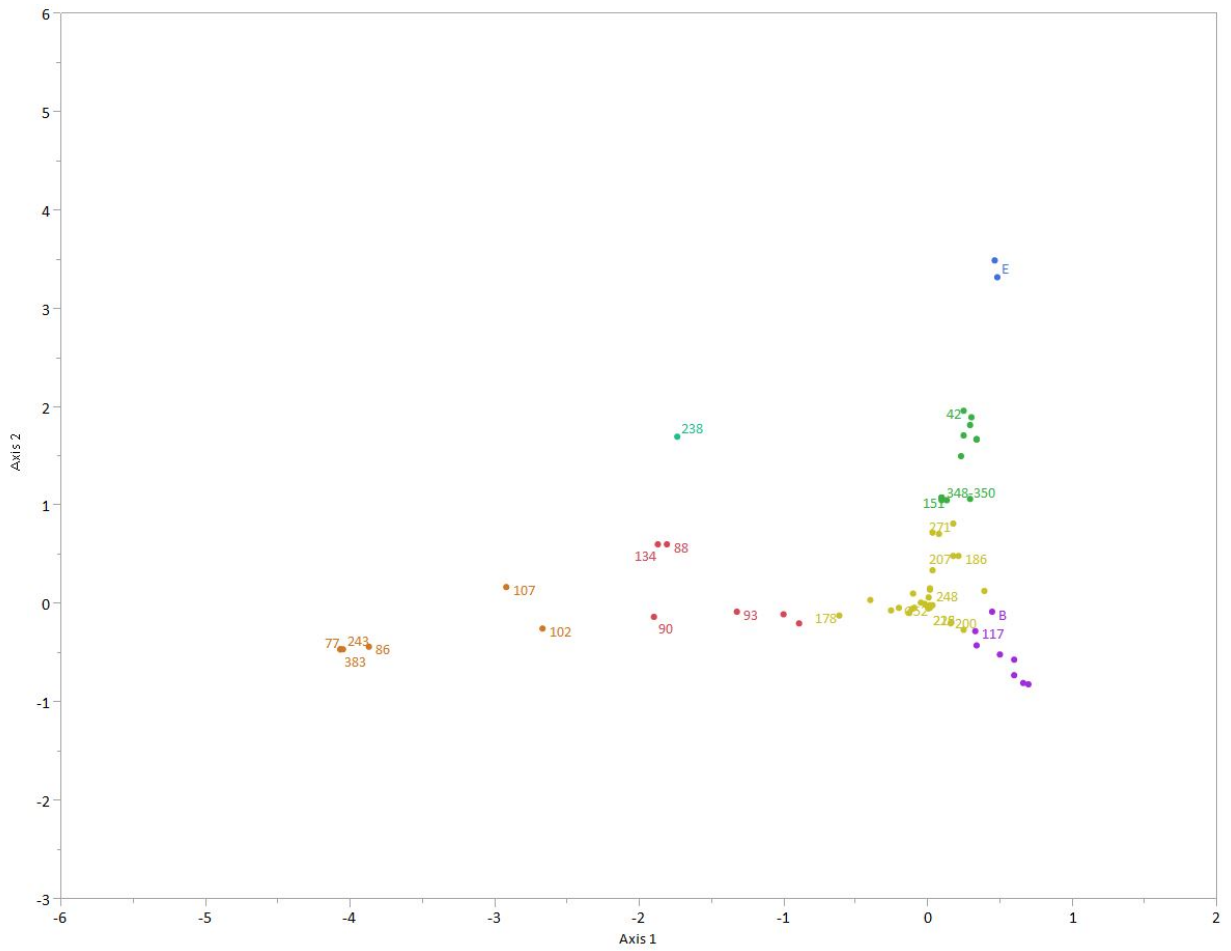


Figure 7.14. Correspondence analysis biplot of individuals with bead assemblages in the mission cemetery. Individuals are color-coded based on k-means cluster analysis solution (extreme outliers not included) and labeled by burial number.

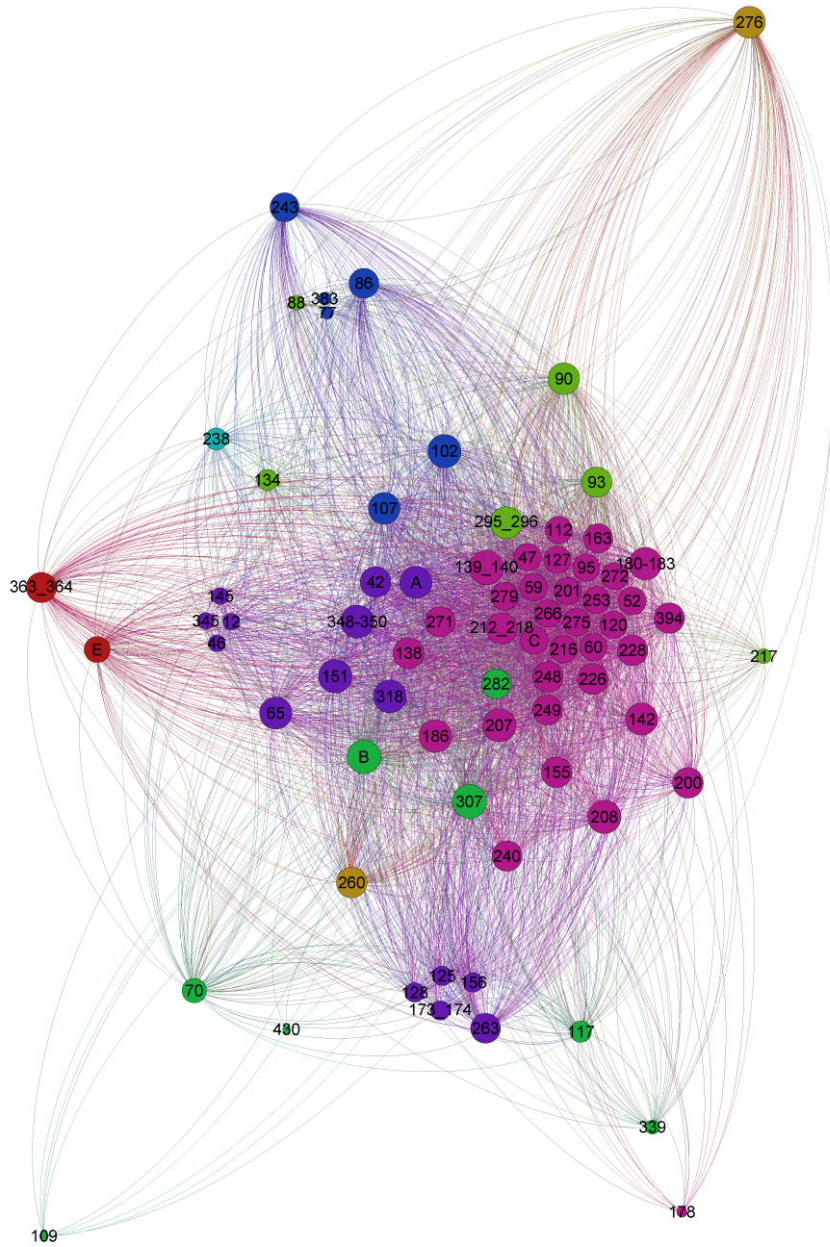


Figure 7.15. Unimodal social network visualization of bead communities of consumption at Mission Santa Catalina. Node color is based on groupings identified through the correspondence analysis clustering and node size is based on betweenness centrality. Nodes are labeled by burial number.

Figures 7.16-7.19 demonstrate the effectiveness of this juxtapositioning, and highlight several individuals (e.g., Individual 186, 282) who differentially cluster, exhibiting connections between different communities of consumption. For example, Individual 282 (figure 7.16) clusters with module one in the original unimodal model, while the correspondence analysis shows a difference between this individual and the rest of the group. In fact, based on the correspondence analysis, Individual 282 clusters with Individuals 307 and Burial B, amongst others (figure 7.15).⁴⁸ The same pattern is evident looking at Individuals 307 and Burial B. Indeed, examining figure 7.17, in addition to other micro-patterning, Burial B is distinguished from the rest of module two. And in figure 7.18, Individual 307 no longer clusters with module three once the burials are color coded based on the correspondence analysis.

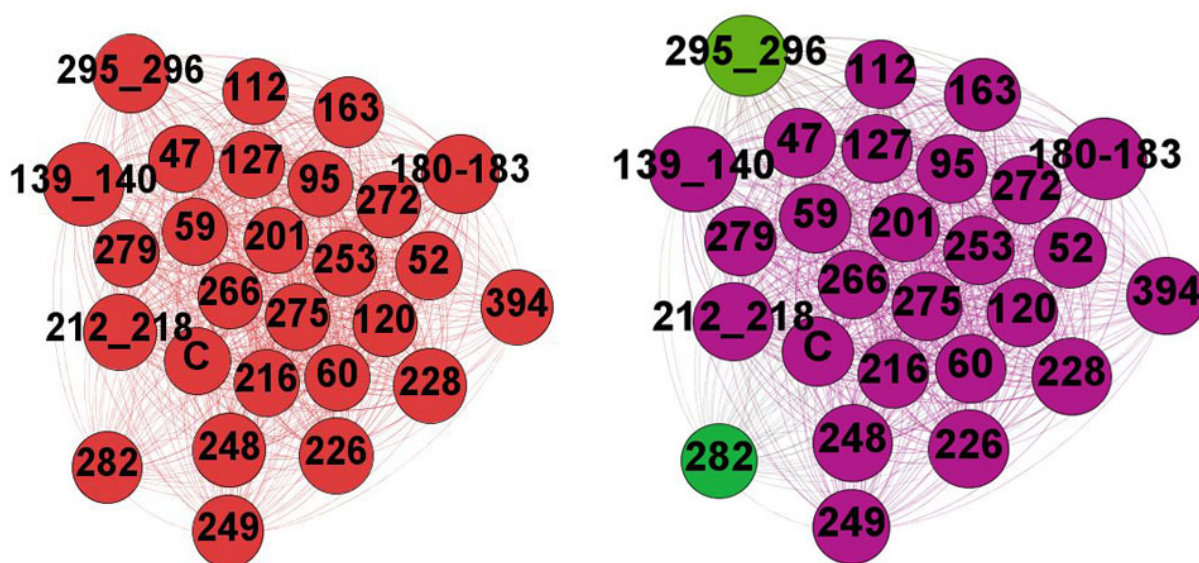


Figure 7.16. Bead community of consumption 1. Image on the left is module one, while the image on the right is module one color coded by the correspondence analysis results. Nodes are labeled by burial number.

The social implications of this patterning are intriguing. Elsewhere I have noted that on an intuitive level, a cursory examination of the bead assemblages found with Individuals 307, 282, and Burial B shows them to be strikingly similar in terms of content as well as with the internal patterning of the individual bead strands (Blair 2009a, 2015, in press). That is, these three individuals were found wearing virtually identical bead strands composed of unique bead types. Based on the bead assemblages, burial position near the church altar, as well as other status markers,⁴⁹ these individuals were clearly elites within the Mission Santa Catalina community (McEwan 2001; Thomas 1988a). But what the network visualization reveals, however, is that in

⁴⁸ This group of individuals cluster in the purple “spur” of the correspondence analysis plot (figure 7.14).

⁴⁹ For example, Individual 307 was the only burial interred in a coffin.

addition to connections to each other, these elites are each primarily connected to *different* bead communities of consumption.

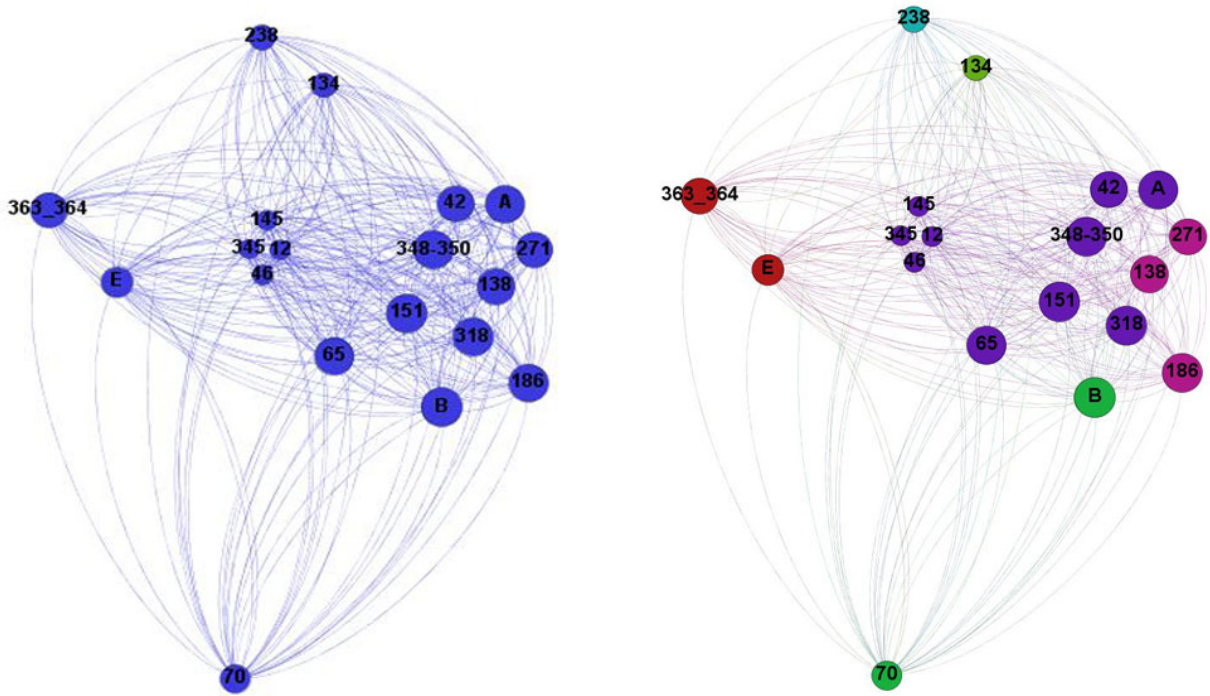


Figure 7.17. Bead community of consumption 2. Image on the left is module two, while the image on the right is module two color coded by the correspondence analysis results. Nodes are labeled by burial number.

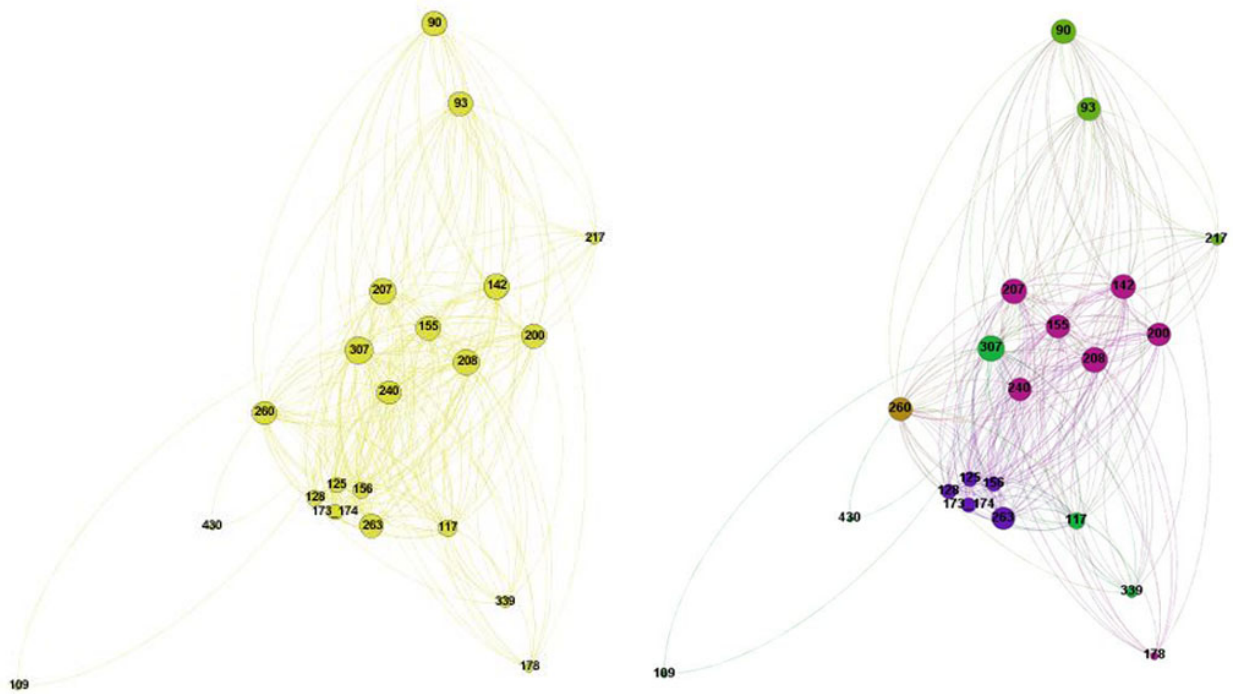


Figure 7.18. Bead community of consumption three. Image on the left is module three, while the image on the right is module three color coded by the correspondence analysis results. Nodes are labeled by burial number.

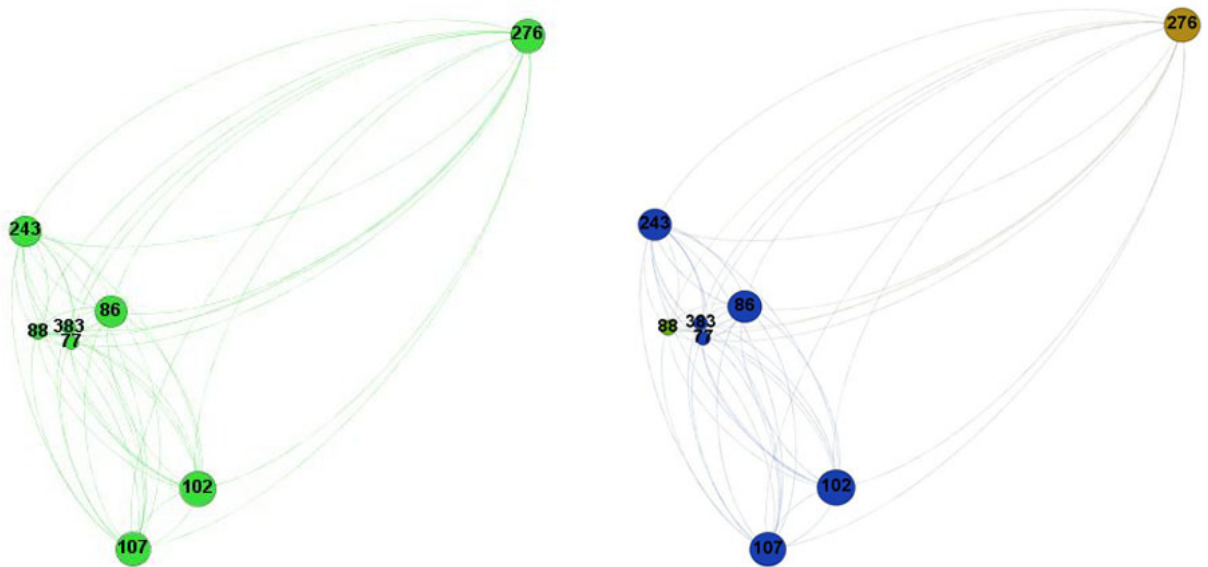


Figure 7.19. Bead community of consumption four. Image on the left is module four, while the image on the right is module four color coded by correspondence analysis results. Nodes are labeled by burial number.

THE BIMODAL NETWORK MODEL

The network visualization just presented is only one of many ways that the networked relationships amongst individuals found in the mission cemetery could be visualized. Here I want to present an additional, contrasting, model that proceeds from a fundamentally different understanding of the networked relationships. Borgatti and Halgin (2011) have pointed out that the types of social ties modeled in a social network generally consist of one of two types: state-type ties and event-type ties. While state-type ties consist of a similarity of condition between nodes, event-type ties that are based upon specific interactions or transactions between nodes. For the Mission Santa Catalina cemetery both types of social ties have relevance. The primary connection that I seek to model in this alternative network analysis (the bimodal network model) is event-based, where the connections between individuals are based on the exchange and distribution of glass beads. However, while I believe that the elemental and morphological similarities between beads strongly support event-type (exchange) connections, this is almost certainly not the only type of relationship that the data indicate. In some cases the colors, sizes, and types of beads that different individuals possessed in common reflect a similar understanding about *how* beads should be consumed and do not index a specific event of exchange. While this ambiguity is impossible to resolve (though additional compositional analyses will help), the unimodal network model just presented, due to its reliance on the calculated similarity index, only reflects state-type connections. To avoid this, and add ambiguity about the type of social ties being modeled back into the network, the second version of the network that I present here is bimodal—that is both beads and people are nodes in the visualization. While this does not preclude state-type ties between individuals, because specific bead types (with specific glass compositions) now directly link individuals, event-type (exchange-based) connections are now explicitly modeled in the visualization. Additionally, this form of constructing the network allows an active role for material objects in the networked relationships. While such an ontological position has been explicitly advocated in Actor-Network Theory (e.g., Latour 2005), the use of a bimodal network provides a formal means to analyze such relationships (Knappett 2011a).

Figure 7.20 presents the bipartite network visualization of the mission cemetery. An edge list consisting of individuals connected to beads, weighted by artifact counts, was loaded into Gephi, and a modularity analysis was conducted to recognize community structure (Newman 2006; Noack 2009). The topology of the bimodal network was structured using the OpenOrd layout algorithm, a force-directed algorithm that encourages graphical clustering (Martin, et al. 2011).

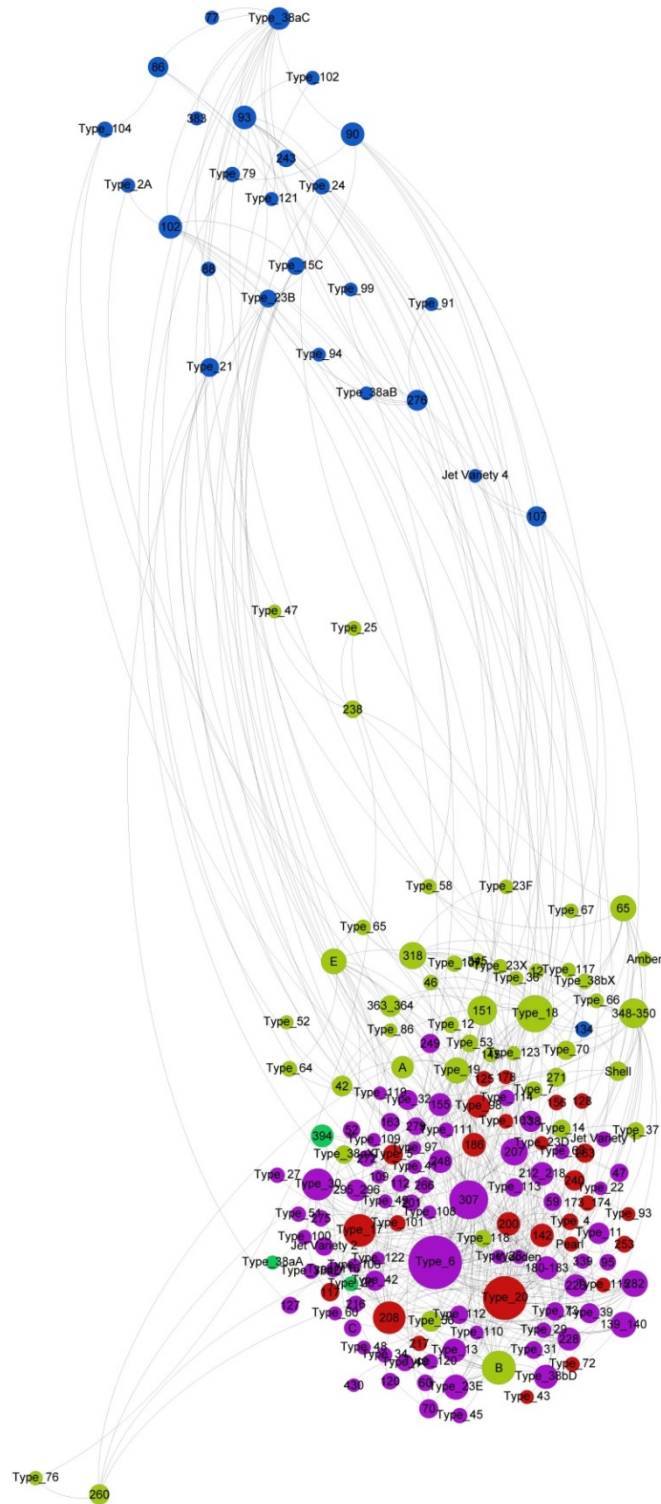


Figure 7.20. Bimodal social network visualization of beads and individuals within the Mission Santa Catalina cemetery. Nodes are color-coded based on the bimodal modularity analysis. Node size represents between centrality. Nodes are labeled by burial number and bead type numbers.

The network presented in figure 7.20 has some distinct similarities to the previous, unimodal version. First, four primary modules are again evident. Though the precise configuration is slightly different, module two from the unimodal model largely corresponds to the olive-green group and module four largely corresponds to the navy blue group. Modules one and three are complexly intertwined and reconfigured as the purple and red groups. Like the unimodal model, most of the network also tightly clusters spatially, indicating a generally large degree of social integration. However, the spatial patterning of the bimodal network also identifies bead consumption communities (modules two, olive green and four, navy blue) that are separated from the central network cluster. For example, the olive-green group is largely clustered separately, along the exterior, of the main group. Besides Burial B (discussed above, and well integrated into the central group), the characteristics of several other burials support the reality of this distinction.

For example, Individuals 348, 349, and 350 are three subadults (two 2-year-olds and one 3-year-old) interred in the same grave pit. In addition to beads these individuals were found buried with an engraved shell Carters Quarter style rattlesnake gorget, a majolica pitcher, and a *Busycon* sp. (whelk shell) dipper or cup. As I discuss in more detail elsewhere, this assemblage of objects strongly hints at external connections between Mission Santa Catalina and parts of East Tennessee and West Georgia (Blair 2009a:150-152; see also Blair 2015:91-92). At the same time, Individual 318, also found within this network cluster, is also distinguished by a highly unusual burial assemblage. As discussed above, all type 23 (IIa13) beads manufactured with compositional group F were found with Individual 318. Additionally, this burial included the only two hawk bells and the only Nueva Cadiz bead recovered at Mission Santa Catalina (Blair 2009a:149; 2015)—objects often associated with earlier entradas, rather than missions (Brain 1975; Little 2008; Smith 1992; Waselkov 2009). While impossible to confirm without additional bioarchaeological analyses, the implications here are that the individuals found in module two (olive-green in figure 7.20), because of the distinct spatial clustering in figure 7.20 and the hints toward external connection, likely consist of a community that aggregated to Mission Santa Catalina early in the mission-era.

Figure 7.21 also shows the bimodal network visualization of the mission cemetery, though in this version nodes are color-coded based on burial date—with red nodes representing individuals buried pre ca. A.D. 1640 and blue nodes representing individuals buried after ca. A.D. 1640.⁵⁰ Yellow nodes represent beads and all individuals for which I cannot provide more precise date estimates. Several important observations can be made from this version of the social

⁵⁰ These date estimates are based on temporal patterns in bead morphology and elemental composition (discussed above) (Blair 2009b; Blair, Pendleton, and Francis 2009), as well as based on my unpublished stratigraphic reconstruction of the Mission Santa Catalina burial sequence.

network. First, within module two, almost all individuals for which date estimates were possible fall within the early group within the mission cemetery, consistent with my interpretation above that this group could indicate an early episode of movement to and aggregation at Mission Santa Catalina. Second, the dense, central portion of the network (modules 1 and 3) is comprised of individuals spanning the entire mission occupation. This long temporal span and the dense clustering of this portion of the network suggests that these bead communities of consumption likely include individuals and their descendents from the original community of Guale living on St. Catherines Island as missionization was first initiated. Finally, module four, the navy blue group in figure 7.20, in addition to being characterized by its distinct spatial positioning—strongly separated from the rest of the social network—consists entirely of individuals buried during the latter portion of the 17th century. I believe this combination of relative network isolation—as well as the late burial date—strongly suggests a correlation between this network group and the San Diego de Satuache community that aggregated to Mission Santa Catalina ca. A.D. 1663-1666. Indeed, as I discussed in chapter one, the history of factional conflict between these communities prior to aggregation and the likely community fissioning that occurred during the early 18th century, is a likely explanation for the relative segregation of this portion of the network.

Also clearly evident in figures 7.19 and 7.20 is the distinctive location of Individual 238. This individual dates to the latter portion of the mission cemetery's use and is located precisely between module four and the central network cluster. As discussed above, using Wenger's (1998) terminology for understanding the relationships between interconnected communities of practice, this individual would certainly be identified as a broker within the broader constellation of practice. This identification of Individual 238 in this social role is particularly intriguing when the network is examined in terms of physical space. Looking at figure 7.11 and 7.12, Individual 238 is located directly in the center of the church (NE/SW axis) and separated from the other clusters of burials (Blair 2009a:143). Indeed, the "in-betweenness" of this individual as depicted in social space is mirrored in the physical location of his or her cemetery plot. This is also one of the few individuals in the mission cemetery buried with a clearly identifiable rosary (Blair 2009a, 2009c).

These network visualizations clearly depict distinct bead communities of consumption, and close analysis shows that they articulate with both the documented and undocumented history of the Mission Santa Catalina community. Additional close analysis also shows that specific social roles of individuals can also be explored through network analysis. In the next section of this chapter, however, I shift scales—exploring how the network analysis linking individuals within the mission cemetery can be explored across the mission landscape—into the broader mission pueblo and neophyte village—and ultimately linking the bead communities of consumption with the analyses presented in the preceding chapters.

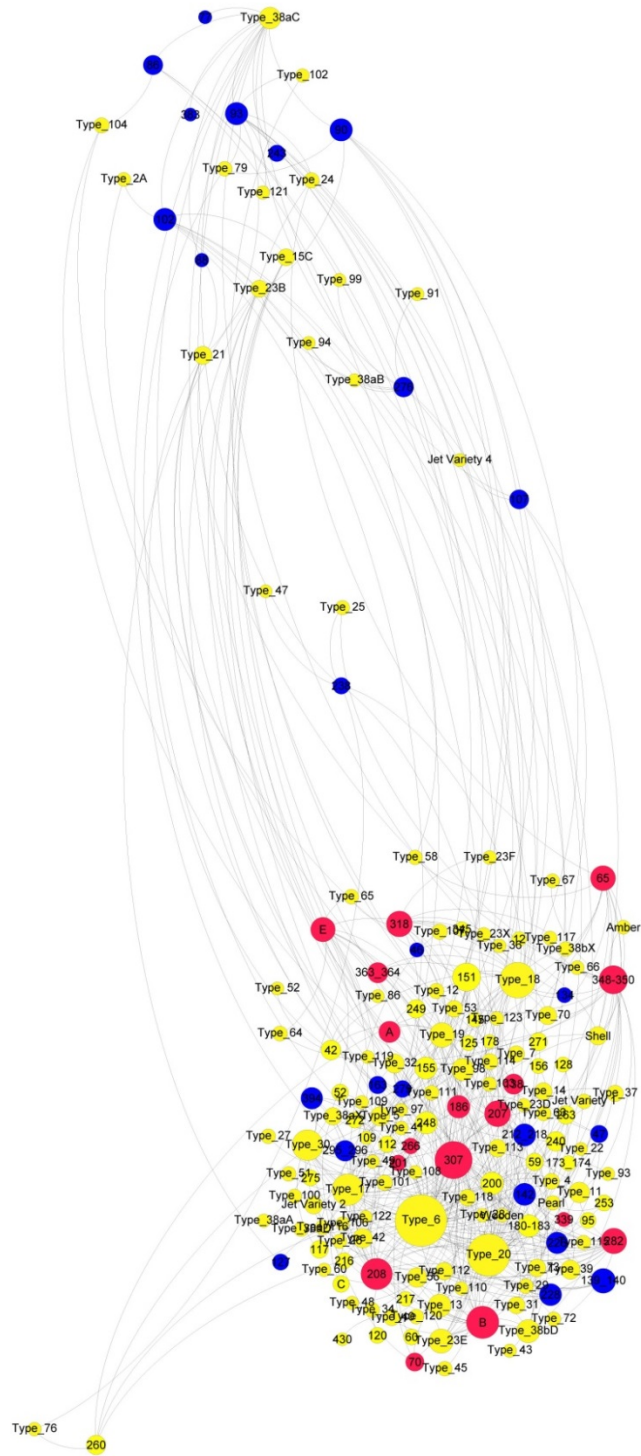


Figure 7.21. Bimodal social network visualization of beads and individuals within the Mission Santa Catalina cemetery. Red nodes represent individuals thought to have been buried before ca. A.D. 1640. Blue nodes represent individuals thought to have been buried after ca. A.D. 1640. Yellow nodes represent bead types and individuals without burial date estimates. Nodes are labeled by burial number or bead type number.

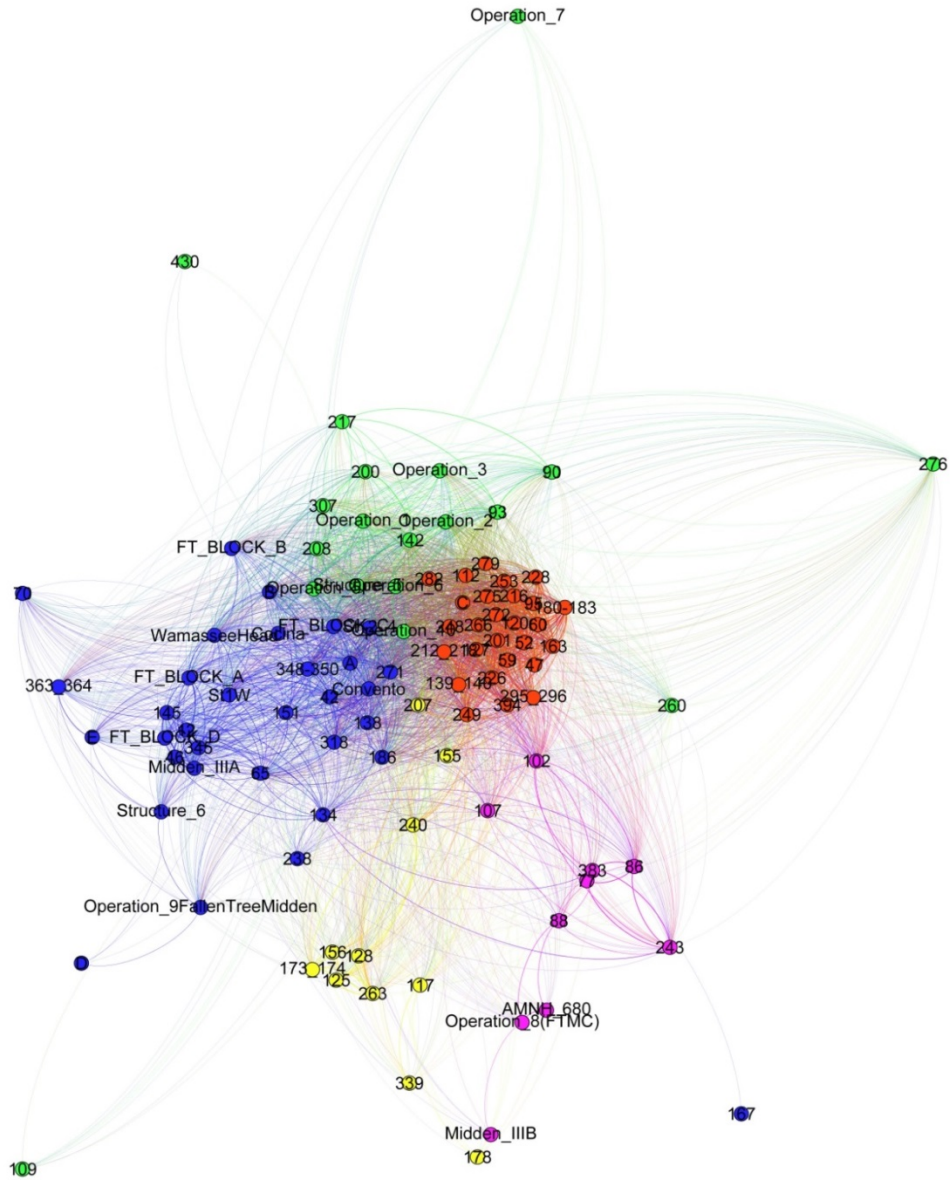
OUTSIDE THE CEMETERY: BEAD NETWORKS ACROSS THE MISSION LANDSCAPE

The mission cemetery was not the only location at Mission Santa Catalina in which beads were recovered. Smaller numbers of glass beads were also found in most other excavated contexts (Blair, Pendleton, and Francis 2009; Blair and May 2008). In almost all cases these beads were not intentionally deposited, but rather were lost during daily use. While beads could of course be lost anywhere, I assume that they were *most commonly* lost in locations that were the loci of daily practices. Because of this, I also assume that similarities between bead assemblages found with groups of individuals in the cemetery and bead assemblages recovered from the mission pueblo can be used to establish linkages between individuals and their residential neighborhoods. That is, specific bead communities of consumption can be identified within the mission cemetery, as well as within the mission pueblo.

In order to model this relationship I reconstructed the unimodal network model presented earlier, but in addition to including individual burials, bead assemblages from the mission pueblo were also included in the Brainerd-Robinson coefficient of similarity calculation (Brainerd 1951; Peeples 2011; Robinson 1951). Two network visualizations were then constructed using these data. In the first (figure 7.22) the topology was constructed using the Force-Atlas 2 layout algorithm (Jacomy, et al. 2014) and nodes were colored based on an updated modularity analysis (Newman 2006; Noack 2009). In the second network visualization the same modularity results were used to color code the nodes, while the layout of the network was based upon physical space and plotted on top of the actual mission site (figure 7.23).

The network results presented in figure 7.22 are broadly similar to those in figure 7.13, though the addition of places into the network resulted in five major groups emerging from the modularity analysis. The most significant change is that module four—the group I associate with the San Diego de Satuache community—is now split between the green and the pink clusters in figure 7.22, and some individuals from module three are now included in the green cluster. While this subtle shift in cluster membership merely indicates some of the fluidity and interconnectedness of the multiple bead communities of consumption, the more interesting pattern is evident in figure 7.23—where the specific consumption communities are linked to places in the landscape. First, module two (dark blue in 7.13, 7.22, and 7.23; olive-green in figure 7.20) has strong connections to the southern neighborhoods at Mission Santa Catalina, particularly Fallen Tree and Wamassee Head. Module two also has strong linkages to locations within the central mission complex—specifically the mission kitchen and friary. At the same time the green cluster in figure 7.22-23 (primarily module three [yellow] in figure 7.13) has strong connections to multiple excavation locations in the Pueblo North, and module one (red in figure 7.13 and 7.22) shows no connections onto the broader landscape. Module four (pink in 7.22,

green in 7.13, and dark blue in 7.20)—the cluster that I associate with San Diego de Satuache—shows limited connections to both the Pueblo North and the Pueblo East.⁵¹



⁵¹ Of course, the connections to the Pueblo East are very tentative due to extremely limited samples sizes, and no beads were recovered during excavations at 9Li210.

Figure 7.22. Social Network unimodal visualization of bead communities of consumption at Mission Santa Catalina, including Pueblo excavations. Node color is based on the results of a modularity analysis. Nodes are labeled by burial number or excavation area.

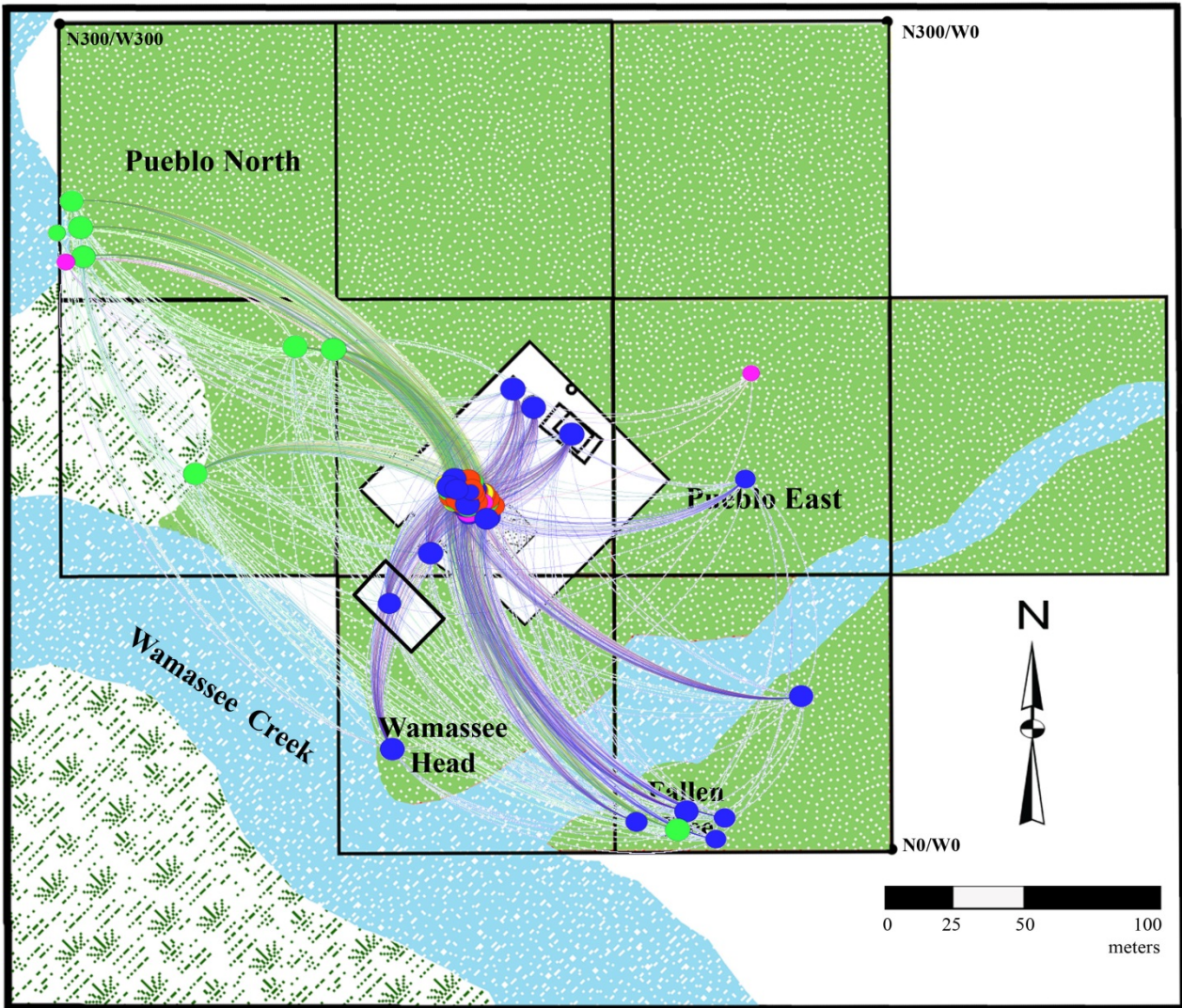


Figure 7.23. Social Network unimodal visualization of bead communities of consumption at Mission Santa Catalina across the Pueblo landscape. Node color is based on the results of a modularity analysis.

SUMMARY

In this chapter I have done three things. First, I presented a model for the object itineraries of glass beads, tracing their journeys from the collection and processing of raw materials, through manufacture and distribution, and into circulation within the Mission Santa Catalina community. As part of this I argued that by following the objects their morphological and chemical traces of manufacture can be used to understand and explore patterns of circulation and exchange. Second, I presented compositional data for white glass beads from

Mission Santa Catalina, identifying six glassmaking communities of practice and combine this with morphological analyses of the Santa Catalina bead assemblage presented elsewhere (Blair, Pendleton, and Francis 2009). Finally, I used the compositional and morphological bead analyses to construct a series of social network models of the Mission Santa Catalina communities of bead consumption. I also discussed how these networks likely connect to historically documented and undocumented aggregated communities at Mission Santa Catalina, while also discussing how these network models can also be used to explore the structure and interactions between different consumption communities—both within the cemetery and across the mission landscape. In the following chapter I discuss how this analysis of bead consumption communities of practice connect to the pottery production and consumption communities discussed in chapter six and the landscape and architectural data from chapters four and five.

Chapter 8. Discussion and Conclusions

In the previous chapters I presented an analysis of archaeological materials from Mission Santa Catalina that was designed to explore social diversity within the mission pueblo. As I discussed in chapter one, a close reading of the ethnohistorical sources—particularly the recent interpretation of the 1597 Guale revolt presented by Francis and Kole (2011)—suggests that “Guale” as an identity is considerably “overdetermined” (Voss 2008a) and might not be a useful analytical category for examining the dynamics of colonial population aggregation. This, in combination with Worth’s detailed documentation of the intensive episodes of population aggregation that occurred in *La Florida*—particularly during the latter portion of the 17th century, suggested that a more fine-grained examination of social identity and intra-chieftom diversity within the mission pueblos was needed. To this end, I elaborated in chapter three on a theoretical orientation framed around practice-based approaches to colonialism focused on exploring identities in pluralistic contexts. Further, I suggested an approach grounded in situated learning that seeks to identify past communities of practice in the archaeological record and provides a methodology for using archaeological materials to explore social practice and identity without relying on, or ascribing, any particular predetermined category of identity to groups in the past. After elaborating on this theoretical and methodological approach I presented four sets of archaeological data that I used to explore social relationships and internal diversity at Mission Santa Catalina. Below I briefly summarize and discuss these results, present some additional evidence that supports the interpretations presented here, discuss the limitations of the present analysis and suggest directions for future work, and conclude with some final thoughts.

SUMMARY OF RESULTS

Following the ethnohistoric and theoretical framing of this work, I presented four chapters of archaeological data and analysis designed to address the research questions of this dissertation. In chapter four of this dissertation I presented the results of a number of surveys conducted at Mission Santa Catalina, including auger, topographic, geophysical, and pedestrian. These included surveys conducted in the early 1980s and 1990s as part of the original search for Mission Santa Catalina, as well as more recent surveys conducted specifically as part of this dissertation project. Using these survey data I identified at least five⁵² neighborhoods within the Santa Catalina pueblo. These neighborhoods were identified based on natural features (i.e., the two freshwater creeks), their locations in relation to the central mission quadrangle, as well as the presence of distinct clusters of shell midden deposits. Additionally, these surveys indicate the possible location of a major plaza—or perhaps a ball court—located within the Pueblo North neighborhood.

⁵² As I mentioned briefly in chapter four, my suspicion is that further archaeological work will allow the 9Li210 neighborhood to be further subdivided.

In chapter five I briefly described the excavations that have taken place within each of these neighborhoods—highlighting where and how samples were obtained for the analyses presented in chapters six and seven—as well as describing the limited evidence for architectural remains within the Mission Pueblo. While most of the architectural evidence is still poorly defined and difficult to interpret, these data were important to present because, as Voss (2005:467) has explained, “many researchers studying colonization in the New World have identified architectural practices as an important expression of cultural identity at pluralistic frontier settlements (Deagan 1983; Lightfoot et al. 1998; Loren 1999).” Indeed, despite no architectural evidence from 9Li210 or the Pueblo East, the differential use of wall trench and post architecture amongst the mission neighborhoods is likely significant and needs to be further explored, particularly considering the limited understanding of both Irene period and mission-era domestic architecture (see also Caldwell 2014; Keene and Garrison 2013).

In chapter six I evaluated the social reality of the defined neighborhoods by considering micro-stylistic variation—in the both the realms of design and technology—on a sample of pottery from each of the mission neighborhoods. This analysis indicated subtle but distinct differences between the different neighborhoods. While some of the distinctions certainly reflect some temporal variation in the timing of the initial occupation of the different neighborhoods, this cannot account for the full spectrum of documented variation. This variation in potting practices between neighborhoods is also significant in that Saunders (2000b) did not identify similar variation between contemporaneous midden deposits in her detailed examination of ceramics from the Irene period Meeting House Field site on St. Catherines Island. This suggests that population aggregation during the mission period most likely accounts for the significant intra-site variation.

While I identified distinct micro-stylistic differences between these neighborhoods, I do not want to suggest that each of these neighborhoods corresponds to a unique community of practice. In some cases I would make this assessment (e.g., 9Li210), but in most cases I would interpret the distinct and complicated patterns of variation of specific attributes to reflect the complicated intersection of ceramic production communities of practice that existed prior to aggregation being reformulated, and recombined as new social relationships developed within the context of colonialism. That is, while unique permutations of technological and design attributes amongst different neighborhoods signifies a persistence of distinct potting practices, the complex combinations of overlapping practices also indicate the entanglements of multiple communities of practice, such as would result from intermarriage of individuals from the aggregating communities.

In chapter seven I examined the bead assemblage from Mission Santa Catalina and used it to explore social relationships within the Santa Catalina community. I began by delineating a model of an object itinerary that the beads would have followed from manufacturing source to final archaeological provenience. I argued that by tracing the itinerary of these objects, the

morphological and compositional attributes of the beads could be used to reconstruct past social relationships, of both specific episodes of exchange as well as evidence for shared bead consumption practices. After presenting the argument for using the bead assemblage in this way, I constructed a formal social network model that I used to identify specific bead communities of consumption, as well as to explore the relationships between the different communities of consumption. Further, I argued that some of the bead communities of consumption evident in the mission cemetery could be linked to specific neighborhoods in the pueblo based on similarities in the assemblages.

The bead network analysis in chapter seven presented three subtly different interpretations of communities of consumption within the mission pueblo: 1) a unimodal model of individuals linked by a bead assemblage similarity index; 2) the same unimodal model slightly transformed by the inclusion of mission neighborhoods and excavation areas; and 3) a more complicated bimodal model that linked individuals and beads directly. While the specific configurations of the groups—that I inelegantly refer to as modules—shifted depending upon the parameters used for the network analysis, the broad patterns remained relatively similar. In general, I identify four bead communities of consumption at Mission Santa Catalina. Of these, module one is relatively indistinct and appears to be closely entwined with module three. Both of these modules include individuals buried throughout the entire mission period. Module three also appears to be strongly associated with the Pueblo North neighborhood, which may have been the primary residential location for individuals within this bead community of consumption. Module two primarily includes individuals buried during the first half of the 17th century, has strong ties to the Wamassee Head and Fallen Tree neighborhoods, and also includes several burials possessing grave goods that indicate connections external to Mission Santa Catalina. Perhaps most interestingly, module four only includes burials from the latter portion of the 17th century and the network topology suggests that the individuals comprising this module were socially distant from the rest of the community, at least in terms of bead consumption. I think a plausible argument can be made that this bead community of consumption can be associated with the ca. 1663-66 Mission San Diego de Satuaque aggregation with Santa Catalina. Unfortunately, this module only shows weak connections to specific mission neighborhoods (e.g., the Pueblo East and Pueblo North), and cannot be associated with a specific neighborhood more precisely.

ADDITIONAL EVIDENCE

The analysis I have presented in this dissertation—indicating significant diversity within the aggregated community at Mission Santa Catalina—is supported by several additional lines of archaeological evidence. The most robust of these is Reitz et al.'s (2010:153-158) analysis of vertebrate remains from Mission Santa Catalina. In this analysis the vertebrate fauna was examined from all contexts at Mission Santa Catalina, including several of the neighborhoods in

the mission pueblo: Fallen Tree, the Pueblo North, and Wamssee Head (identified as the Pueblo South in their analysis). Though they note that all sectors of the mission pueblo were dominated by wild fauna, with relatively little evidence for the consumption of European domestic species, especially in comparison with the faunal remains recovered from the central mission quadrangle, they also observed considerable variation between the pueblo neighborhoods. They state that “variability in the use of Eurasian animals, deer, and other wild vertebrates may be the most significant aspect of the zooarchaeological study of the animal remains from the pueblo” (Reitz, et al. 2010:153).

Specifically, they noted that the people residing at Fallen Tree consumed a particularly high quantity of venison and had access to higher quality cuts of meat in comparison to Wamassee Head and the Pueblo North where low quality cuts—particularly elements from the head—were significantly overrepresented. Reitz et al. (2010) also documented significant variation in the consumption of estuarine fishes between the different mission neighborhoods. While they suggested three possible hypotheses to explain the diversity seen between sectors of the mission pueblo, including temporal differences, differences in screen size used to recover remains, and social distinctions between the neighborhoods, I strongly suspect that the latter almost certainly explains most of the observed differences (see also Thomas 2010b:107).

That said, temporal distinctions could explain some of the variability. Indeed, as discussed in chapter six, the high percentage of complicated stamped wares recovered at Fallen Tree indicate that it was first occupied earlier than the other neighborhoods. But, occupation certainly continued throughout the 17th century and was largely contemporaneous with Wamassee Head and the Pueblo North—the two other sectors discussed by Reitz et al. (2010). Additionally, the fauna from Fallen Tree is significantly different in comparison to Irene period sites that entirely lack any mission-era components (Dukes 1993; Reitz and Dukes 2008). Ceramic evidence presented in chapter five also suggests that 9Li210 likely includes an “early” occupational component (ca. A.D. 1580-1600), but this neighborhood too was likely occupied through much of the 17th century, though further excavation is needed in this neighborhood. Unfortunately fauna from 9Li210 was included in neither the Santa Catalina analysis, nor in the St. Catherines Island transect survey analysis (Reitz 2008; Reitz, et al. 2010). In short, I believe that there might be temporal variation in the use of fauna within the mission pueblo, but I do not think it can explain the significant differences noted between Fallen Tree, Wamassee Head (the Pueblo South), and the Pueblo North. The second explanation offered by Reitz et al. (2010) was that perhaps differences in screen size used during excavations within the different sectors might explain the observed variation. However, this too seems unlikely as the primary source of variation in that specific comparisons of the faunal remains recovered at Fallen Tree using different screen sizes did not indicate substantial differences (Dukes 1993).

Other, more limited, archaeological evidence also indicates significant social variation within the mission pueblo. For example, Triozzi (2014) recently evaluated the differential use of

stone, metal, and shell tools for processing vertebrate fauna at Mission Santa Catalina. While his primary comparison examined the differences between tool use within the mission quadrangle and the pueblo, he makes several tantalizing observations about differential tool use between the various neighborhoods of the pueblo. While most locations within the pueblo indicated the use of both stone and metal tools for butchery, in the Pueblo North—specifically Structure 5—only bones modified by metal tools were recovered. At the same time, Structure 6 at Wamassee Head only had bones modified by stone tools (Triozi 2014:263, fig. 5-22 and 5-23). While not conclusive, these data hint at differential access to European tools or different choices in how game was butchered across the mission pueblo. In yet another study, analysis of shell beads recovered from Mission Santa Catalina indicates that shell beads and bead blanks occur in significantly greater quantities at Fallen Tree than at other regions of the pueblo—suggesting that the individuals living south of the freshwater creek were engaging in shell bead manufacture more intensively than those residing in other neighborhoods of the mission pueblo (Blair 2009a:155; Blair and Francis 2008:760).

LIMITS TO THE ANALYSIS AND DIRECTIONS FOR FUTURE WORK

This research also points in the direction of needed future work. In terms of the spatial analysis presented in chapter four, the largest—and most glaring—weakness is the absence of spatial data from 9Li210, other than the pedestrian survey. Obvious next steps include topographic and geophysical surveys in this neighborhood, while additional subsurface testing is needed to confirm that the bulk of the site actually dates to the mission-era. This work would also help confirm whether or not additional neighborhoods can be defined within the 9Li210 neighborhood.

Additionally, more broad-scale excavation data is needed from several neighborhoods, particularly the Pueblo East and 9Li210. Only midden deposits were tested in both of these neighborhoods, and subsequently the sample of beads from these contexts for the network analysis is either miniscule or non-existent respectively. Excavations in these neighborhoods could also provide important comparative architectural data, in order to better understand the differential distribution of specific architectural techniques (e.g., wall trench architecture). Expanded excavations in the other neighborhoods—particularly Fallen Tree and Wamassee Head—could also help confirm and clarify some of the tantalizing features and likely evidence of domestic architecture exposed by Larsen and Caldwell and during the AMNH Structure 6 excavations.

The ceramic evidence presented in chapter 5 also suggests several lines of needed future research. First, the sample from several neighborhoods needs to be expanded in order to confirm some of the patterns identified. In particular, the samples from the Wamassee Head and the Pueblo East neighborhoods were entirely derived from a single midden deposit respectively. Ceramics from additional middens and other contexts need to be examined in order to confirm

these patterns. Additionally, intra-neighborhood analyses are needed. While samples from several middens at the Pueblo North, 9Li210, and Fallen Tree were combined in this study, household-based analyses would significantly expand our understanding of potting communities of practice within the mission. Petrographic analyses would also be useful to confirm the more macroscopic analyses of aplastic inclusions conducted for this dissertation.

The network analysis presented in chapter seven also points to several directions for future work. First, the network analysis was primarily used to identify bead communities of consumption, as well as to explore the broader constellations of practice—that is, how the multiple communities of practice articulated with each other within the broader social landscape of Mission Santa Catalina. Three aspects of the network analysis, however, are underexplored and provide directions for future work. First, the roles of specific individuals within the network need further elaboration. Specifically, greater attention to measures of network centrality can be used to explore how individuals navigated and facilitated new social relationships in the changing colonial landscape. Second, though I have explored the spatial structure of the Santa Catalina cemetery elsewhere (Blair 2009a, 2009b, 2009c), the network analysis raises new questions about how and where specific social groups were interred. Recent biodistance analyses by Stojanowski (2013) suggest that mission cemeteries were spatially structured along diverse lines, including status and age, as well as structured by family and community identities (see also McEwan 2001). As I mentioned in the previous chapter, the identified bead communities of consumption at Mission Santa Catalina do not seem to define spatially distinct clusters within the cemetery, and further work interrogating the spatial structure of these networks—perhaps in concert with biodistance analyses—could provide considerable information about the intersection between burial practices, bead consumption, and other axes of social identity. Finally, while beads were explicitly conceived as social actors within the bimodal network analysis, further work needs to be done to explore the materiality of these objects and how they were actively mobilized within diverse social groups and mediated new colonial relationships (e.g., Loren 2009, 2010; Loren 2013; Mitchem 1993; Turgeon 2004).

More broadly, additional comparative analyses amongst the pueblo neighborhoods are needed to supplement the analyses presented here. Particularly important would be additional research into differential foodways practices in the pueblo. As discussed above, Reitz et al. (2010) have identified significant differences in the vertebrate faunal remains recovered in Fallen Tree, Wamassee Head (the Pueblo South in their analysis), and the Pueblo North. Expanding this analysis to include the Pueblo East and 9Li210 could be particularly important for more precisely identifying neighborhoods in which newly aggregated mission communities resided. Additionally, no work has been done to look at changing consumption of invertebrates during the mission-era. While Bergh (2012a, 2012b) has recently extensively analyzed changes in invertebrate consumption during the Mississippian period on St. Catherines Island, such work needs to be extended into the mission-era in order to characterize changes in shellfishing

precipitated by missionization and increased maize agriculture, as well as to examine how foodways were differentially structured at the neighborhood and household level. And, of course, archaeobotanical work at the same scale is also needed for the same purposes.

FINAL THOUGHTS

While the documentary record from *La Florida* clearly indicates that population aggregation substantially occurred in the Atlantic provinces of Guale and Mocama (Worth 1995, 2004a, 2009a, 2009b), the analysis presented in this dissertation demonstrates that the social consequences of aggregation were neither negligible nor benign. Indeed, even within a mission province or chiefdom, aggregation substantially transformed the social landscape resulting in the persistence of existing social identities as well as the emergence of new alliances and associations. While this dissertation specifically provides a case study of how this process “played out” at Mission Santa Catalina, this work also has implications for how we understand the formation and organization of other colonial communities in *La Florida*. Additionally, the methods and results presented here also provide a model for examining identities and social relationships amongst the constituent communities in Mississippian chiefdoms prior to European contact, as well as supporting an understanding of chiefdoms as diverse and heterogeneous entities. More broadly, this dissertation provides an example for how situated learning theory and communities of practice provide a theory and method for exploring social difference in colonial contexts, without relying on broad, overdetermined, specific categories of identity. Or, framed in Latour’s (2005) terms, it provides an approach for following the actors—both human and nonhuman—in order to reassemble the social within pluralistic colonial communities. For Mission Santa Catalina specifically, this dissertation shows that despite decades of work at this site, there is still much more to be done.

References

- Alberti, Gianmarco
2013 Making Sense of Contingency Tables in Archaeology: The Aid of Correspondence Analysis to Intra-Site Activity Areas Research. *Journal of Data Science* 11(3):479-499.
- Anderson, Benedict
1983 *Imagined Communities*. Verso, London.
- Anderson, David G.
1994a Factional Competition and the Political Evolution of Mississippian Chiefdoms in the Southeastern United States. In *Factional Competition and Political Development in the New World*, edited by Elizabeth M. Brumfiel and John W. Fox, pp. 61-75. Cambridge University Press, Cambridge.
- 1994b *The Savannah River Chiefdoms: Political Change in the Late Prehistoric Southeast*. University of Alabama Press, Tuscaloosa.
- 1996 Chiefly Cycling and Large-Scale Abandonments as Viewed from the Savannah River Basin. In *Political Structure and Change in the Prehistoric Southeastern United States*, edited by John F. Scarry, pp. 150-191. University Press of Florida, Gainesville.
- Anderson, David G., David J. Hally and James L. Rudolph
1986 The Mississippian Occupation of the Savannah River Valley. *Southeastern Archaeology* 5(1):32-51.
- Anderson, David G., David W. Stahle and Malcolm K. Cleaveland
1995 Paleoclimate and the Potential Food Reserves of Mississippian Societies: A Case Study from the Savannah River Valley. *American Antiquity* 60(2):258-286.
- Andrefsky, William, Jr.
2009 The Analysis of Stone Tool Procurement, Production, and Maintenance. *Journal of Archaeological Research* 17(1):65-103.
- Andrews, Evangeline Walker and Charles McLean Andrews (editors)
1985 *Jonathan Dickinson's Journal or, God's Protecting Providence: Being the Narrative of a Journey from Port Royal in Jamaica to Philadelphia between August 23, 1696 and April 1, 1697*. Florida Classics Library, Port Salerno.
- Andrus, C. Fred T. and Douglas E. Crowe
2008 Isotopic Analysis as a Means for Determining Season of Capture for *Mercenaria*. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 498-518. Anthropological Papers of the American Museum of Natural History, New York.
- Anonymous

- 1835 Miscellaneous Communications from an American Naval Officer, Travelling in Europe; Forwarded from the Mediterranean, May 1834. *American Journal of Science and Arts* 27(1):74-84.
- Anuskiewicz, Richard J.
1989 A Study of Maritime and Nautical Sites Associated with St. Catherines Island, Georgia. PhD Dissertation, Department of Anthropology, University of Tennessee, Knoxville.
- Arletti, Rossella, Erica Bertoni, Giovanna Vezzalini and Davide Mengoli
2011 Glass Beads from Villanovian Excavations in Bologna (Italy): An Archaeometrical Investigation. *European Journal of Mineralogy* 23(6):959-968.
- Arnold, Dean E.
1984 Social Interaction and Ceramic Design: Community-Wide Correlates in Quinoa, Peru. In *Pots and Potters: Current Approaches in Ceramic Archaeology*, edited by Prudence M. Rice, pp. 133–161. Institute of Archaeology Monographs, University of California, Los Angeles.
- Ashley, Keith H.
2008 Refining the Ceramic Chronology of Northeastern Florida. *The Florida Anthropologist* 61(3-4):123-131.
- 2009 Straddling the Florida-Georgia State Line: Ceramic Chronology of the St. Marys Region (A.D. 1400-1700). In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by Kathleen Deagan and David Hurst Thomas, pp. 125-139. American Museum of Natural History, New York.
- 2013 Grafting onto the Native Landscape: The Franciscan Mission System in Northeastern Florida. In *From La Florida to La California: Franciscan Evangelization in the Spanish Borderlands*, edited by Timothy J. Johnson and Gert Melville, pp. 143-164. Academy of American Franciscan History, Berkeley.
- Ashley, Keith H. and Vicki L. Rolland
1997 Grog-Tempered Pottery in the Mocama Province. *The Florida Anthropologist* 50(2):51-65.
- Ashley, Keith, Vicki L. Rolland and Robert L. Thunen
2013 Missions San Buenaventura and Santa Cruz De Guadalquini: Retreat from the Georgia Coast. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 395-422. Anthropological Papers of the American Museum of Natural History, New York.
- Aspinall, Arnold, Chris Gaffney and Armin Schmidt
2009 *Magnetometry for Archaeologists*. Altamira Press, Lanham.
- Azzarello, Jennifer

- 1999 Structure 1: The Proposed Convento from the O'Connell Mission Site (8Le157). MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Baker, James Graham
1982 Computers and Nautical Archaeology: Characterization of the CSS Georgia Wreck Site. MA Thesis, Department of Anthropology, Texas A&M University, College Station.
- Barnes, John A. and Frank Harary
1983 Graph Theory in Network Analysis. *Social Networks* 5(2):235-244.
- Bastian, M., S. Heymann and M. Jacomy
2009 Gephi: An Open Source Software for Exploring and Manipulating Networks. *Proceedings of the Proceedings of the Third International AAAI Conference on Weblogs and Social Media*:361-362.
- Beck, Robin A., Jr.
2003 Consolidation and Hierarchy: Chiefdom Variability in the Mississippian Southeast. *American Antiquity* 68(4):641-662.
- 2013 *Chiefdoms, Collapse, and Coalescence in the Early American South*. Cambridge University Press, Cambridge.
- Beck, Robin A., Jr., David G. Moore and Christopher B. Rodning
2006 Identifying Fort San Juan: A Sixteenth-Century Spanish Occupation at the Berry Site, North Carolina. *Southeastern Archaeology* 25(1):65-77.
- Bennett, Charles
2001 *Laudonnière and Fort Caroline: History and Documents*. University of Alabama Press, Tuscaloosa.
- Bergh, Sarah G.
2012a Late Prehistoric Settlement Patterns: Zooarchaeological Evidence from Back Creek Village, St. Catherines Island. In *Seasonality and Human Mobility Along the Georgia Bight*, edited by Elizabeth J. Reitz, Irvy R. Quitmyer and David Hurst Thomas, pp. 103-121. Anthropological Papers of the American Museum of Natural History, New York.
- 2012b Subsistence, Settlement, and Land-Use Changes During the Mississippian Period on St. Catherines Island, Georgia. PhD Dissertation, Department of Anthropology, University of Georgia, Athens.
- Biron, Isabelle and Marco Verità
2012 Analytical Investigation on Renaissance Venetian Enamelled Glasses from the Louvre Collections. *Journal of Archaeological Science* 39(8):2706-2713.
- Bishop, Gale A., Royce H. Hayes, Brian K. Meyer, Harold B. Rollins, Frederick J. Rich, David Hurst Thomas and R. Kelly Vance

2007 Transgressive Barrier Island Features of St. Catherines Island, Georgia. In *Guide to Fieldtrips: 56th Annual Meeting, Southeastern Section, Geological Society of America*, edited by Frederick J. Rich, pp. 39-85. Geological Society of America, Savannah.

Blair, Elliot H.

2009a The Distribution and Dating of Beads from St. Catherines Island. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 125-166. Anthropological Papers of the American Museum of Natural History, New York.

—
2009b Exploring Mortuary Variability at Mission Santa Catalina De Guale (Georgia). Paper presented at the Society for American Archaeology, Atlanta, GA.

—
2009c The Role of Beads on St. Catherines Island. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 167-178. Anthropological Papers of the American Museum of Natural History, New York.

—
2013 The Guale Landscape of Santa Catalina De Guale: 30 Years of Geophysics at a Spanish Colonial Mission. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 375-393. Anthropological Papers of the American Museum of Natural History, New York.

—
2015 Glass Beads and Global Itineraries. In *Things in Motion: Object Itineraries in Archaeological Practice*, edited by Rosemary A. Joyce and Susan Gillespie, pp. 81-99. School for Advanced Research Press, Santa Fe.

—
in press Glass Beads and Constellations of Practice. In *Knowledge in Motion: Making Communities and Constellations of Practice across Time and Place*, edited by Andrew P. Roddick and Ann B. Stahl. University of Arizona Press, Tucson.

Blair, Elliot H. and Peter Francis, Jr.

2008 The Archaeology of Fallen Tree (9Li8): Artifacts of Aboriginal Manufacture: Shell Beads In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 756-760. Anthropological Papers of the American Museum of Natural History, New York.

Blair, Elliot H., Lorann S. A. Pendleton and Peter Francis, Jr.

2009 *The Beads of St. Catherines Island*. Anthropological Papers of the American Museum of Natural History, New York.

Blair, Elliot H. and David Hurst Thomas

2014 The Guale Uprising of 1597: An Archaeological Perspective from Mission Santa Catalina De Guale (Georgia). In *Indigenous Landscapes and Spanish Missions: New*

- Perspectives from Archaeology and Ethnohistory*, edited by Lee M. Panich and Tsim D. Schneider, pp. 25-40. University of Arizona Press, Tucson.
- Blair, Elliot H., David Hurst Thomas, Matthew F. Napolitano and Anna M. Semon
2014 (Re)Envisioning the Irene Landscape on St. Catherines Island, Georgia. Paper presented at the Southeastern Archaeology Conference, Greenville, SC.
- Blair, Elliot and J. Alan May
2008 The Archaeology of Fallen Tree (9Li8): Artifacts of Euro-American Manufacture: Glass Beads. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 765-769. Anthropological Papers of the American Museum of Natural History, New York.
- Blanton, Dennis B. and Elliot H. Blair
2015 The Complex Story of Complex Beads: Elemental Analysis of Some Early Types from the Southeastern US. Paper presented at the Society for American Archaeology, San Francisco, CA.
- Blanton, Dennis B. and David Hurst Thomas
2008 Paleoclimates and Human Responses Along the Central Georgia Coast: A Tree-Ring Perspective. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 799-806. Anthropological Papers of the American Museum of Natural History, New York.
- Blitz, John H.
1999 Mississippian Chiefdoms and the Fission-Fusion Process. *American Antiquity* 64(4):577-592.
- 2010 New Perspectives in Mississippian Archaeology. *Journal of Archaeological Research* 18:1-39.
- Boer, Pieter and Paul Engle
2010 Antonio Neri: An Annotated Bibliography of Primary References. *Journal of Glass Studies* 52:51-67.
- Bolton, Herbert E.
1917 The Mission as a Frontier Institution in the Spanish-American Colonies. *The American Historical Review* 23(1):42-61.
- Bonneau, Adelphine, J. -F. Moreau, R. G. V. Hancock, R. Auger and B. Emard
2012 Investigating the Influence of Instrumental Neutron Activation Analysis on European Trade Glass Beads. *Proceedings of the 39th International Symposium for Archaeometry* 180-185. Leuven.
- Bonneau, Adelphine, Jean-François Moreau, Ron G.V. Hancock and Karlis Karklins
2014 Archaeometrical Analysis of Glass Beads: Potential, Limitations, and Results. *Beads: Journal of the Society of Bead Researchers* 26:35-46.
- Borck, Lewis, Barbara J. Mills, Matthew A. Peeples and Jeffery J. Clark

- 2015 Are Social Networks Survival Networks? An Example from the Late Pre-Hispanic US Southwest. *Journal of Archaeological Method and Theory* 22(1):33-57.
- Borgatti, Stephen P. and Daniel S. Halgin
2011 On Network Theory. *Organization Science* 22(5):1168-1181.
- Bossy, Denise I.
2014 Spiritual Diplomacy, the Yamasees, and the Society for the Propagation of the Gospel: Reinterpreting Prince George's Eighteenth-Century Voyage to England. *Early American Studies: An Interdisciplinary Journal* 12(2):366-401.
- Bourdieu, Pierre
1977 *Outline of a Theory of Practice*. Cambridge University Press, Cambridge.
—
1990 *The Logic of Practice*. Polity Press, Cambridge.
- Bow, Sierra May
2012 A Tale of Two Shelters: Using XRF Analysis to Assess Compositional Variability of Pottery from Two Sites in Franklin County, Tennessee. MA Thesis, Department of Anthropology, University of Tennessee, Knoxville.
- Bowne, Eric E.
2000 The Rise and Fall of the Westo Indians: An Evaluation of the Documentary Evidence. *Early Georgia* 28(1):56-78.
—
2005 *The Westo Indians: Slave Traders of the Early Colonial South*. University of Alabama Press, Tuscaloosa.
- Bowser, Brenda J.
2000 From Pottery to Politics: An Ethnoarchaeological Study of Political Factionalism, Ethnicity, and Domestic Pottery Style in the Ecuadorian Amazon. *Journal of Archaeological Method and Theory* 7(3):219-248.
- Bowser, Brenda J. and John Q. Patton
2008 Learning and Transmission of Pottery Style; Women's Life Histories and Communities of Practice in the Ecuadorian Amazon In *Cultural Transmission and Material Culture*, edited by Miriam T. Stark, Brenda J. Bowser and Lee Horne, pp. 105-129. The University of Arizona Press, Tucson.
- Boyer, Willet A.
2005 Nuestra Senora Del Rosario De La Punta Lifeways of an Eighteenth-Century Colonial Spanish Refugee Mission Community, St. Augustine, Florida. MA Thesis, Department of Anthropology, University of Florida, Gainesville.
- Bradley, James W.
1983 Blue Crystals and Other Trinkets: Glass Beads from 16th and Early 17th Century New England. In *Proceedings of the 1982 Glass Trade Bead Conference*, edited by Charles

- F. Hayes, pp. 29-39. Research Division, Rochester Museum & Science Center, Rochester, NY.
- Brain, Jeffrey P.
1975 Artifacts of the Adelantado. *The Conference on Historic Site Archaeology Papers* 8:129-138.
- 1979 *Tunica Treasure*. Papers of the Peabody Museum of Archaeology and Ethnology, Cambridge.
- Brainerd, George W.
1951 The Place of Chronological Ordering in Archaeological Analysis. *American Antiquity* 16(4):301-313.
- Braje, Todd J.
2003 Neighboring Communities of Practice: A Case Study of Classic Stallings Pottery. MA Thesis, Department of Anthropology, University of Florida.
- Braley, Chad O.
1990 The Lamar Ceramics of the Georgia Coast. In *Lamar Archaeology: Mississippian Chiefdoms in the Deep South*, edited by Mark Williams and Gary Shapiro, pp. 94-103. University of Alabama Press, Tuscaloosa.
- Braley, Chad O., Lisa D. O'Steen and Irvy R. Quitmyer
1986 *Archeological Investigations at 9 McI 41, Harris Neck National Wildlife Refuge, McIntosh County, Georgia*. Southeastern Archeological Services, Inc., Athens, GA.
- Braun, David P. and Stephen Plog
1982 The Evolution of "Tribal" Social Networks: Theory and Prehistoric North American Evidence. *American Antiquity* 47(3):504-525.
- Brewer, Mary Ann
1985 Pottery from Wamassee Head. *Early Georgia* 13(1-2):15-28.
- Brill, Robert H.
1999 *Chemical Analysis of Early Glasses: Volume 2, Tables of Analyses*. The Corning Museum of Glass, Corning.
- Brill, Robert H. and Charles A. Hoffman
1987 Some Glass Beads Excavated on San Salvador Island in the Bahamas. Paper presented at the Annales du 10e Congrès de l'Association Internationale pour l'Histoire de Verre, Madrid-Segovie, 23-28 Septembre 1985.
- Broadwell, George A.
1991 The Muskogean Connection of the Guale and Yamasee. *International Journal of American Linguistics* 57(2):267-270.
- Brown, Ian W.

- 1979a Functional Group Changes and Acculturation: A Case Study of the French and the Indian in the Lower Mississippi Valley. *Mid-Continental Journal of Archaeology* 4(2):147-165.
-
- 1979b Historic Artifacts and Sociocultural Change: Some Warnings from the Lower Mississippi Valley. *The Conference on Historical Site Archaeology Papers 1978* 13:109-121.
-
- 1994 Recent Trends in the Archaeology of the Southeastern United States. *Journal of Archaeological Research* 2(1):45-111.
- Brughmans, Tom
- 2010 Connecting the Dots: Towards Archaeological Network Analysis. *Oxford Journal of Archaeology* 29(3):277-303.
-
- 2013 Thinking through Networks: A Review of Formal Network Methods in Archaeology. *Journal of Archaeological Method and Theory* 20(4):623-662.
- Brumfiel, Elizabeth M.
- 1995 Factional Competition in Complex Society. In *Domination and Resistance*, edited by Daniel Miller, Michael Rowlands and Christopher Tilley, pp. 127-139. Routledge, London.
- Brumfiel, Elizabeth M. and John W. Fox
- 2003 *Factional Competition and Political Development in the New World*. Cambridge University Press, Cambridge.
- Bruseh, James E. and Toni S. Turner
- 2005 *From a Watery Grave: The Discovery and Excavation of La Salle's Shipwreck, La Belle*. Texas A&M University Press, College Station.
- Bryne, Stephen Cowles
- 1986 Apalachee Settlement Patterns. MS Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Burley, David
- 2000 Creolization and Late Nineteen Century Metis Vernacular Log Architecture on the South Saskatchewan River. *Historical Archaeology* 34(3):27-35.
- Bushnell, Amy Turner
- 1981 *The King's Coffer: Proprietors of the Spanish Florida Treasury, 1565-1702*. University Press of Florida, Gainesville.
-
- 1994 *Situado and Sabana: Spain's Support System for the Presidio and Mission Provinces of Florida*. Anthropological Papers of the American Museum of Natural History, New York.
- Cagno, S., M. Mendera, T. Jeffries and K. Janssens

- 2010 Raw Materials for Medieval to Post-Medieval Tuscan Glassmaking: New Insight from LA-ICP-MS Analyses. *Journal of Archaeological Science* 37:3030-3036.
- Cajigas, Rachel
n.d. Report on Buckle at Santa Catalina De Guale, Manuscript on file at the Nels Nelson North American Archaeology Lab, American Museum of Natural History, New York.
- Caldwell, Joseph and Catherine McCann
1941 *Irene Mound Site. Chatam County, Georgia*. University of Georgia Press, Athens.
- Caldwell, Joseph R.
1943 Cultural Relations of Four Indian Sites of the Georgia Coast. MA Thesis, Department of Anthropology, University of Chicago, Chicago.
- 1971 Chronology of the Georgia Coast. *Southeastern Archaeological Conference, Bulletin* 13:88-92.
- 1972 *Excavations on St. Catherines Island: Report Submitted to the Edward John Noble Foundation*. Manuscript on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
- Caldwell, Joseph R. and Antonio J. Waring
1939a Some Chatham County Pottery Types and Their Sequence. *Southeastern Archaeology Conference Newsletter* 1(5):4-12.
- 1939b Some Chatham County Pottery Types and Their Sequence. *Southeastern Archaeology Conference Newsletter* 1(6):1-9.
- 1939c The Use of a Ceramic Sequence in the Classification of Aboriginal Sites in Chatham County, Georgia. *Southeastern Archaeology Conference Newsletter* 2(1):6-7.
- Caldwell, Sheila K.
1953 Excavations at a Spanish Mission Site in Georgia. *Southeastern Archaeological Conference Newsletter* 3(3):31-32.
- 1954 A Spanish Mission Site near Darien. *Early Georgia* 1(3):13-17.
- 2014 Archaeological Excavations at the Darien Bluff Site, 9MC10, 1952-1953, Edited by Mark Williams, Richard W. Jefferies, and Mary C. Scales. University of Georgia Laboratory of Archaeology Series Report 81, University of Georgia, Athens.
- n.d. *Preliminary Report on Fort King George, Darien Georgia*. Georgia Historical Commission, Atlanta.

- Canuto, Marcello-Andrea and Jason Yaeger (editors)
2000 *The Archaeology of Communities: A New World Perspective*. Routledge, New York.
- Card, Jeb J. (editor)
2013a *The Archaeology of Hybrid Material Culture*. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- 2013b Introduction. In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, pp. 1-21. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Carr, Christopher and Robert F. Maslowski
1995 Cordage and Fabrics: Relating Form, Technology, and Social Processes. In *Style, Society, and Person: Archaeological and Ethnological Perspectives*, edited by Christopher Carr and Jill E. Neitzel, pp. 298-343. Plenum Press, New York.
- Carroll, B. Harvey, Jr.
2004 Bead Making at Murano and Venice, with an Introduction and Annotation by Jamey D. Allen. *Beads: Journal of the Society of Bead Researchers* 16:17-37.
- Carter, Alison Kyra
2011 Trade and Exchange Networks in Iron Age Cambodia: Preliminary Results from a Compositional Analysis of Glass Beads. *Bulletin of the Indo-Pacific Prehistory Association* 30:178-188.
- Casella, Eleanor Conlin and Chris Fowler
2005 *The Archaeology of Plural and Changing Identities: Beyond Identification*. Kluwer Academic/Plenum Publishers, New York.
- Cílová, Zuzana and Jiří Woitsch
2011 Potash—a Key Raw Material of Glass Batch for Bohemian Glasses from 14th-17th Centuries? *Journal of Archaeological Science* 39(2):371-380.
- Clark, Anthony
1997 *Seeing beneath the Soil*. Routledge, New York.
- Cohen, Anthony P.
1985 *The Symbolic Construction of Community*. Routledge, New York.
- Collar, Anna, Fiona Coward, Tom Brughmans and Barbara J. Mills
2015 Networks in Archaeology: Phenomena, Abstraction, Representation. *Journal of Archaeological Method and Theory* 22(1):1-32.
- Collard, Mark and Stephen J. Shennan
2008 Patterns, Processes, and Parsimony: Studying Cultural Evolution with Analytical Techniques from Evolutionary Biology. In *Cultural Transmission and Material Culture*, edited by Miriam T. Stark, Brenda J. Bowser and Lee Horne, pp. 17-33. The University of Arizona Press, Tucson.
- Conkey, Margaret W.

- 1990 Experimenting with Style in Archaeology: Some Historical and Theoretical Issues. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 5-17. Cambridge University Press, Cambridge.
-
- 2005 Dwelling at the Margins, Action at the Intersection? Feminist and Indigenous Archaeologies, 2005. *Archaeologies* 1(1):9-59.
- Conkey, Margaret W. and Christine A. Hastorf
1990 *The Uses of Style in Archaeology*. Cambridge University Press, Cambridge.
- Conrey, R. M., M. Goodman-Elgar, N. Bettencourt, A. Seyfarth, A. Van Hoose and J. A. Wolff
2014 Calibration of a Portable X-Ray Fluorescence Spectrometer in the Analysis of Archaeological Samples Using Influence Coefficients. *Geochemistry: Exploration, Environment, Analysis* 14:291-301.
- Conyers, Lawrence B.
2010 Ground-Penetrating Radar for Anthropological Research. *Antiquity* 84:175-184.
-
- 2012 *Interpreting Ground-Penetrating Radar for Archaeology*. Left Coast Press, Walnut Creek.
- Conyers, Lawrence B. and Catherine M. Cameron
1998 Ground-Penetrating Radar Techniques and Three-Dimensional Computer Mapping in the American Southwest. *Journal of Field Archaeology* 25(4):417-430.
- Cook, Fred C.
1978 The Kent Mound: A Study of the Irene Phase on the Lower Georgia Coast. MS Thesis, Department of Anthropology, Florida State University, Tallahassee.
-
- 1980 Chronological and Functional Reexamination of the Irene Ceramic Complex. In *Excursions in Southeastern Geology: The Archaeology - Geology of the Georgia Coast*, edited by James D. Howard, Chester B. DePratter and Robert W. Frey, pp. 160-169. The Geological Society of America, Atlanta.
-
- 1986 Origin and Change of Irene Rim Decoration in Coastal Georgia. *The Chesopiean* 24(4):2-22.
-
- n.d. The 1971 Excavation at "the Seven Mile Bend Site". Manuscript on file at the Georgia State Archaeological Site Files, University of Georgia, Athens.
- Cordell, Ann S.
2002 Continuity and Change in Apalachee Pottery Manufacture. *Historical Archaeology* 36(1):36-54.
-

- 2013 Continuity and Change in Early Eighteenth-Century Apalachee Colonowares. In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, pp. 80-99. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Cordell, Ann S. and Kathleen D. Deagan
 2013 Paste Variability and Clay Resource Utilization at the Fountain of Youth Site, St. Augustine, 8sj31. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 95-117. American Museum of Natural History, New York.
- Cordell, Linda S. and Judith A. Habicht-Mauche
 2012 *Potters and Communities of Practice: Glaze Paint and Polychrome Pottery in the American Southwest, Ad 1250 to 1700*. University of Arizona Press, Tucson.
- Covington, James W. (editor)
 1963 *Pirates, Indians and Spaniards: Father Escobedo's "La Florida"*. Great Outdoors Publishing Co., St. Petersburg.
- Crane, Verner W.
 2004 [1929] *The Southern Frontier, 1670-1732*. University of Alabama Press, Tuscaloosa.
- Cresswell, Robert
 1990 A New Technology Revisited. *Archaeological review from Cambridge* 9(1):39-54.
- Crook, Morgan R., Jr.
 1978a Mississippian Period Community Organizations on the Georgia Coast. PhD Dissertation, Department of Anthropology, University of Florida., Gainesville.
- 1978b Spatial Associations and Distribution of Aggregate Village Sites in a Southeastern Atlantic Coastal Area. *Florida Anthropologist* 31(1):21-34.
- 1980a Archaeological Indications of Community Structures at the Kenan Field Site. In *Sapelo Papers: Researches in the History and Prehistory of Sapelo Island, Georgia*, edited by Daniel P. Juengst, pp. 89-100. West Georgia College Studies in the Social Sciences, Carrollton.
- 1980b Spatial Associations and Distribution of Aggregate Village Sites in a Southeastern Atlantic Coastal Area. In *Sapelo Papers: Researches in the History and Prehistory of Sapelo Island, Georgia*, edited by Daniel P. Juengst, pp. 77-87. West Georgia College Studies in the Social Sciences, Carrollton.
- 1984a Evolving Community Organization on the Georgia Coast. *Journal of Field Archaeology* 11(3):247-263.
-

- 1984b Irene Manifestations on Sapelo Island. *Early Georgia* 12(1-2):59-63.
-
- 1986 *Mississippi Period Archeology of the Georgia Coastal Zone* 23. University of Georgia, Athens.
-
- 2012 Settlement Mobility on the Georgia Coast During the Mississippi Period: An Explicit Frame of Reference. *Early Georgia* 40(1):45-58.
- Crouch, Dora P., Daniel J. Garr and Axel I. Mundigo
1982 *Spanish City Planning in North America*. MIT Press, Cambridge.
- Crouch, Dora P. and Axel I. Mundigo
1977 The City Planning Ordinances of the Laws of the Indies Revisited. Part II: Three American Cities. *The Town Planning Review* 48(4):397-418.
- Crown, Patricia L.
2001 Learning to Make Pottery in the Prehispanic American Southwest. *Journal of Anthropological Research* 57(4):451-469.
- Cushner, Nicholas P.
2006 *Why Have You Come Here?: The Jesuits and the First Evangelization of Native America*. Oxford University Press, New York.
- Cusick, James G.
1995 The Importance of the Community Study Approach in Historical Archaeology, with an Example from Late Colonial St. Augustine. *Historical Archaeology* 29(4):59-83.
-
- 1998 Historiography of Acculturation: An Evaluation of Concepts and Their Application in Archaeology. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by James G. Cusick, pp. 126-145. Center for Archaeological Investigations, Southern Illinois University Carbondale.
-
- 2000 Creolization and the Borderlands. *Historical Archaeology* 34(3):46-55.
- D'Altroy, Terence N.
2005 Remaking the Social Landscape: Colonialization in the Inka Empire. In *The Archaeology of Colonial Encounters: Comparative Perspectives*, edited by Gil J. Stein, pp. 263-296. School of American Research Press, Santa Fe.
- Dalton-Carriger, Jessica and Elliot H. Blair
2013 Compositional Analysis of Glass Trade Beads from the Interior Southeast. Paper presented at the Southeastern Archaeological Conference, Tampa, FL.
-
- 2015 Answering Chronological and Regional Interaction Questions Via pXRF and LA-ICP-MS Analyses in the Interior Southeast Paper presented at the Society for American Archaeology, San Francisco, CA.

Davison, Claire Crawford

1972 Glass Beads in African Archaeology: Results of Neutron Activation Analysis, Supplemented by Results of X-Ray Fluorescence Analysis. PhD Dissertation, Department of Anthropology, University of California, Berkeley, Berkeley.

Dawdy, Shannon Lee

2000a Preface. *Historical Archaeology* 34(3):1-4.

—
2000b Understanding Cultural Change through the Vernacular: Creolization in Louisiana. *Historical Archaeology* 34(3):107-123.

de San Miguel, Fray Andrés

2001 *An Early Florida Adventure Story*. Translated by John H. Hann. University Press of Florida, Gainesville.

Deagan, Kathleen A.

1973 Mestizaje in Colonial St. Augustine. *Ethnohistory* 20(1):55-65.

—
1974 Sex, Status and Role in the Mestizaje of Spanish Colonial Florida. PhD Dissertation, Anthropology, University of Florida, Gainesville.

—
1978a Cultures in Transition: Fusion and Assimilation among the Eastern Timucua. In *Tacachale: Essays on the Indians of Florida and Southeastern Georgia During the Historic Period*. Gainesville: University Presses of Florida. P, edited by Jerald T. Milanich and Samuel Proctor, pp. 89-119. The University Presses of Florida, Gainesville.

—
1978b The Material Assemblage of 16th Century Spanish Florida. *Historical Archaeology* 1(2):25-50.

—
1980a Archaeology in the Ancient City: Past, Present and Future. In *Spanish Colonial Frontier Research* pp. 47-54. Center for Anthropological Studies, Albuquerque.

—
1980b Spanish St. Augustine: America's First 'Melting Pot'. *Archaeology* 33(5):20-30.

—
1981 Downtown Survey: The Discovery of Sixteenth-Century St. Augustine in an Urban Area. *American Antiquity* 46(3):626-634.

—
1983 The Mestizo Minority: Archaeological Patterns of Inter-marriage. In *Spanish St. Augustine: The Archaeology of a Colonial Creole Community*, edited by Kathleen A. Deagan, pp. 99-124. Academic Press, New York.

- 1987 *Artifacts of the Spanish Colonies of Florida and the Caribbean. Volume 1: Ceramics, Glassware, and Beads.* Smithsonian Institution Press, Washington DC.
-
- 1993 St. Augustine and the Mission Frontier. In *The Spanish Missions of La Florida*, edited by Bonnie G. McEwan, pp. 87-110. University Press of Florida, Gainesville.
-
- 1998 Transculturation and Spanish American Ethnogenesis: The Archaeological Legacy of the Quincentenary. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by James G. Cusick, pp. 23-43. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
-
- 2002 *Artifacts of the Spanish Colonies of Florida and the Caribbean, 1500-1800. Volume 2: Portable Personal Possessions.* Smithsonian Institution Press, Washington DC.
-
- 2009a Historical Archaeology at the Fountain of Youth Park Site (8SJ31), St. Augustine, Florida, 1934-2007, Final Report on Florida Bureau of Historical Resources Special Category Grant #Sc616. On file, Florida Division of Historical Resources, Tallahassee.
-
- 2009b Native American Ceramics at the Fountain of Youth Park Site, St. Augustine (8-SJ-31). In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by Kathleen A. Deagan and David Hurst Thomas, pp. 141-164. Anthropological Papers of the American Museum of Natural History, New York.
- Deagan, Kathleen A. and David Hurst Thomas (editors)
- 2009 *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*. Anthropological Papers of the American Museum of Natural History, New York.
- Deetz, James
- 1963 Archaeological Investigations at La Purisima Mission. In *Annual Report, Archaeological Survey*. Department of Anthropology-Sociology, University of California, Los Angeles.
-
- 1965 *The Dynamics of Stylistic Change in Arikara Ceramics.* University of Illinois Press, Urbana.
-
- 1996 *In Small Things Forgotten: An Archaeology of Early American Life.* Anchor Books, New York.
- DePratter, Chester B.
- 1979 Ceramics. In *The Anthropology of St. Catherines Island: 2. The Refuge-Deptford Mortuary Complex*, edited by David Hurst Thomas and Clark Spencer Larsen, pp. 109-132. Anthropological Papers of the American Museum of Natural History, New York.

-
- 1984 Irene Manifestations on the Northern Georgia Coast. *Early Georgia* 12(1-2):44-58.
-
- 1991 WPA Archaeological Excavations in Chatham County, Georgia, 1937-1942. Laboratory of Archaeology, University of Georgia, Athens.
-
- 1994 The Chiefdom of Cofitachequi. In *The Forgotten Centuries: Indians and Europeans in the American South, 1521-1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp. 197-226. University of Georgia Press, Athens.
-
- 2009 Irene and Altamaha Pottery from the Charlesfort/Santa Elena Site, Parris Island, South Carolina. In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by Kathleen Deagan and David Hurst Thomas, pp. 19-47. Anthropological Papers of the American Museum of Natural History, New York.
- DePratter, Chester B., Greg Paulk and David Hurst Thomas
- 2008 Archaeological Sites Recorded in the Shoreline Survey. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 666-680. Anthropological Papers of the American Museum of Natural History, New York.
- Depratter, Chester B. and Stanley South
- 1990 *Charlesfort: The 1989 Search Project*. Research Manuscript Series No. 210. The South Carolina Institute of Archeology and Anthropology, University of South Carolina, Columbia.
- Dickinson, M.F. and L.B. Wayne
- 1985 *Archaeological Testing of the San Juan Del Puerto Mission Site (8du53), Fort George Island, Florida*. Division of Historical Resources, Tallahassee, FL.
- Dietler, Michael and Ingrid Herbich
- 1989 Tich Matek: The Technology of Luo Pottery Production and the Definition of Ceramic Style. *World Archaeology* 21(1):148-164.
-
- 1998 Habitus, Techniques, Style: An Integrated Approach to the Social Understanding of Material Culture and Boundaries. In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, pp. 232-263. Smithsonian Institution Press, Washington D.C.
- Dillon, Edward
- 1907 *Glass*. Methuen and Co., London.
- Dobres, Marcia-Anne
- 1995 Gender and Prehistoric Technology: On the Social Agency of Technical Strategies. *World Archaeology* 27(1):25-49.
-

- 1999 Technology's Links and Chaînes: The Processual Unfolding of Technique and Technician. In *The Social Dynamics of Technology. Practice, Politics and World Views*, edited by Marcia-Anne Dobres and Christopher R. Hoffman, pp. 124-146. Smithsonian Institution Press, Washington DC.
-
- 2000 *Technology and Social Agency: Outlining a Practice Framework for Archaeology*. Social Archaeology. Blackwell Publishers, Oxford.
-
- 2009 The Phenomenal Promise of *Chaîne Opératoire*. In *Technologies and Regions in a Long Time Perspective*, edited by Randi Barndon. Institutt for Arkeologi, Historie, Kultur, University of Bergen, Sweden.
-
- 2010 Archaeologies of Technology. *Cambridge Journal of Economics* 34(1):103-114.
- Dobres, Marcia-Anne and Christopher R. Hoffman
- 1994 Social Agency and the Dynamics of Prehistoric Technology. *Journal of Archaeological Method and Theory* 1(3):211-258.
- Dominguez, Adolfo J.
- 2002 Greeks in Iberia: Colonialism without Colonization. In *The Archaeology of Colonialism*, edited by Claire L. Lyons and John K. Papadopoulos, pp. 65-95. Getty Research Institute, Los Angeles.
- Dooley, Mathew A.
- 2004 Long-Term Hunter-Gatherer Land Use in Central North Dakota: An Environmental Analysis. *Plains Anthropologist* 49(190):105-127.
-
- 2008 Investigating Persistent Places in the Northern Great Plains, Central North Dakota. In *Time in Archaeology: Time Perspectivism Revisited*, edited by Simon Holdaway and LuAnn Wandsnider, pp. 94-109. University of Utah Press, Salt Lake City.
- Dornan, Jennifer L.
- 2002 Agency and Archaeology: Past, Present, and Future Directions. *Journal of Archaeological Method and Theory* 9(4):303-329.
- Doublerly-Gorman, Rebecca
- 2013 Searching for Fort Caroline: New Perspectives. *The Florida Anthropologist* 66(4):157-173.
- Dozier, Edward P.
- 1951 Resistance to Acculturation and Assimilation in an Indian Pueblo. *American Anthropologist* 53(1):56-66.
- Dukes, Joel Anthony

- 1993 Change in Vertebrate Use between the Irene Phase and the Seventeenth Century on St. Catherines Island, Georgia. MA Thesis, Department of Anthropology, University of Georgia, Athens.
- Dunlop, William
 1929 Journall. Capt. Dunlop's Voyage to the Southward, 1687. *South Carolina Historical and Genealogical Magazine* 30(3):127-133.
- Dunnell, Robert C.
 1978 Style and Function: A Fundamental Dichotomy. *American Antiquity* 43(2):197-202.
 — 1990 The Role of the Southeast in American Archaeology. *Southeastern Archaeology* 9(1):11-22.
 —
 1992 Archaeology and Evolutionary Science. In *Quandaries and Quests: Visions of Archaeology's Future*, edited by LuAnn Wandsnider, pp. 209-224. Center for Archaeological investigations, Southern Illinois University, Carbondale.
- Durham, Roger S. and David Hurst Thomas
 1978 The History of St. Catherines Island after 1684. In *The Anthropology of St. Catherines Island 1. Natural and Cultural History*, edited by David Hurst Thomas, Grant D. Jones, Roger S. Durham and Clark Spencer Larsen, pp. 210-241. Anthropological Papers of the American Museum of Natural History, New York.
- Dussubieux, Laure, Peter Robertshaw and Micheal D. Glascock
 2009 LA-ICP-MS Analysis of African Glass Beads: Laboratory Inter-Comparison with an Emphasis on the Impact of Corrosion on Data Interpretation. *International Journal of Mass Spectrometry* 284(1-3):152-161.
- Duwe, Samuel
 2005 Communities of Practice and Ancient Apprenticeship in the American Southwest: Pigment Analyses of Pueblo IV Period Ceramics from Bailey Ruin, East Central Arizona. MA Thesis, Department of Anthropology, University of Arizona, Tucson.
- Eckert, Suzanne L.
 2008 *Pottery and Practice: The Expression of Identity at Pottery Mound and Hummingbird Pueblo*. University of New Mexico Press, Santa Fe.
- Edmonds, Michael
 1990 Description, Understanding and the Chaîne Opératoire. *Archaeological Review from Cambridge* 9(1):55-70.
- Elliott, Daniel T.
 2008 *Archaeological Reconnaissance at the Drudi Tract, Tybee Island, Chatham County, Georgia*. Lamar Institute Publication Series Report Number 127. The LAMAR Institute, Savannah.
 —

- 2009 *Ground Penetrating Radar Reconnaissance on St. Catherines Island, Georgia*. Lamar Institute Publication Series, Report Number 91. The LAMAR Institute, Savannah.
- Elliott, Daniel T. and Nicholas Honerkamp
2014 *Survey, Remote Sensing, and Testing at Scarlett's Mound, 9ch1350, Ossabaw Island, Georgia*. Lamar Institute Publication Series, Report Number 188. The LAMAR Institute, Savannah.
- Engeström, Yrjö
2007 From Communities of Practice to Mycorrhizae. In *Communities of Practice: Critical Perspectives*, edited by J. Hughes, N. Jewson and L. Unwin, pp. 41-54. Routledge, New York.
- Engle, Paul
2014 *Conciatore, the Life and Times of 17th Century Glassmaker Antonio Neri*. Heiden & Engle, Hubbardston, MA.
- Espinoza, Edgard O. and Mary-Jacque Mann
2000 *Identification Guide for Ivory and Ivory Substitutes*. 3rd ed. World Wildlife Fund, Baltimore.
- Ethridge, Robbie
2010 *From Chicaza to Chickasaw: The European Invasion and the Transformation of the Mississippian World, 1540-1715*. University of North Carolina Press, Chapel Hill.
- Ewen, Charles R.
1991 *From Spaniard to Creole: The Archaeology of Cultural Formation at Puerto Real, Haiti*. University Alabama Press, Tuscaloosa.
- 2000 From Colonist to Creole: Archaeological Patterns of Spanish Colonization in the New World. *Historical Archaeology* 34(3):36-45.
- Farnsworth, Paul
1987 The Economics of Acculturation in the California Missions: A Historical and Archaeological Study of Mission Nuestra Señora Da La Soledad. PhD Dissertation, Department of Anthropology, University of California, Los Angeles, Los Angeles.
- 1992 Missions, Indians, and Cultural Continuity. *Historical Archaeology* 26(1):22-36.
- Fenn, Thomas R., Barbara J. Mills and Maren Hopkins
2006 The Social Contexts of Glaze Paint Ceramic Production and Consumption in the Silver Creek Area. In *The Social Life of Pots: Glaze Wares and Cultural Dynamics in the Southwest, Ad 1250-1680*, edited by Judith A. Habicht-Mauche, Suzanne L. Eckert and Deborah L. Huntley, pp. 60-85. University of Arizona Press, Tucson.
- Ferguson, Leland
1971 South Appalachian Mississippian. PhD Dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.

- 1992 *Uncommon Ground: Archaeology and Early African America, 1650-1800*. Smithsonian Institution Press, Washington DC.
- 2000 Introduction. *Historical Archaeology* 34(3):5-9.
- Fitzgerald, William R.
1982 A Refinement of Historic Neutral Chronologies: Evidence from Shaver Hill, Christianson, and Dwyer. *Ontario Archaeology* 38:31-46.
- 1983 Further Comments on the Neutral Glass Bead Sequence. *Arch Notes Newsletter of the Ontario Archaeological Society* 83(1):31-46.
- 1990 Chronology to Cultural Process: Lower Great Lakes Archaeology, 1500-1650. PhD Dissertation, Department of Anthropology, McGill University, Montreal.
- Ford, James A.
1954a Comment on A. C. Spaulding, "Statistical Techniques for the Discovery of Artifact Types". *American Antiquity* 19(4):390-391.
- 1954b The Type Concept Revisited. *American Anthropologist* 56:42-54.
- Foster, George M.
1960 *Culture and Conquest: America's Spanish Heritage*. Quadrangle Books, Chicago.
- Frahm, Ellery
2013a Is Obsidian Sourcing About Geochemistry or Archaeology? A Reply to Speakman and Shackley. *Journal of Archaeological Science* 40:1444-1448.
- 2013b Validity of "Off-the-Shelf" Handheld Portable XRF for Sourcing near Eastern Obsidian Chip Debris. *Journal of Archaeological Science* 40:1080-1092.
- Frahm, Ellery and Roger C. P. Doonan
2013 The Technological Versus Methodological Revolution of Portable XRF in Archaeology. *Journal of Archaeological Science* 40:1425-1435.
- Frahm, Ellery, Beverly A. Schmidt, Boris Gasparyan, Benik Yeritsyan, Sergei Karapetian, Khachatur Meliksetian and Daniel S. Adler
2014 Ten Seconds in the Field: Rapid Armenian Obsidian Sourcing with Portable XRF to Inform Excavations and Surveys. *Journal of Archaeological Science* 41:333-348.
- Francis, J. Michael and Kathleen M. Kole
2011 *Murder and Martyrdom in Spanish Florida: Don Juan and the Guale Uprising of 1597*. Anthropological papers of the American Museum of Natural History, New York.
- Francis, Peter, Jr.
1979 *The Story of Venetian Beads*. Lapis Route Books, Lake Placid.

-
- 1988 *The Glass Trade Beads of Europe: Their Manufacture, Their History, and Their Identification*. The World of Beads Monograph Series 8. Lapis Route Books, Lake Placid.
-
- 2002 *Asia's Maritime Bead Trade: 300 B.C. To the Present*. University of Hawai'i Press, Honolulu.
-
- 2009a The Glass Beads of the *Margariteri* of Venice. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 59-64. Anthropological Papers of the American Museum of Natural History, New York.
-
- 2009b The Glass Beads of the *Paternostri* of the Netherlands and France. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 73-80. Anthropological Papers of the American Museum of Natural History, New York.
-
- 2009c The Glass Beads of the *Paternostri* of Venice. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 65-71. Anthropological Papers of the American Museum of Natural History, New York.
- Frankel, David
- 1978 Pottery Decoration as an Indicator of Social Relationships: A Prehistoric Cypriot Example. In *Art and Society: Studies in Style, Culture and Aesthetics*, edited by Michael Greenhalgh and Vincent Megaw, pp. 147-160. St. Martin's Press, New York.
-
- 2003 Encounters and Enclosures: Archaeological Approaches to Social Identities in the Past and Present. *Reviews in Anthropology* 32(1):37 - 49.
- Franklin, Maria
- 2001 A Black Feminist-Inspired Archaeology? *Journal of Social Archaeology* 1(1):108-125.
- Freed, Stanley A.
- 1957 Suggested Type Societies in Acculturation Studies. *American Anthropologist* 59(1):55-68.
- Freestone, Ian C., Matthew Ponting and Michael J. Hughes
- 2002 The Origins of Byzantine Glass from Maroni Petrera, Cyprus. *Archaeometry* 44(2):257-272.
- Gaffney, Chris and John Gater
- 2003 *Revealing the Buried Past: Geophysics for Archaeologists*. Tempus Publishing, Stroud.
- Gallay, Alan

- 2003 *The Indian Slave Trade: The Rise of the English Empire in the American South, 1670-1717*. Yale University Press, New Haven.
- Gan, FuXi, HuanSheng Cheng, YongQing Hu, Bo Ma and DongHong Gu
 2009 Study on the Most Early Glass Eye-Beads in China Unearthed from Xu Jialing Tomb in Xichuan of Henan Province, China. *Science in China Series E: Technological Sciences* 52(4):922-927.
- Gannon, Michael V.
 1965 *The Cross in the Sand: The Early Catholic Church in Florida, 1513-1870*. University Press of Florida, Gainesville.
- Garrison, Ervan G., James G. Baker and David Hurst Thomas
 1985 Magnetic Prospection and the Discovery of Mission Santa Catalina De Guale, Georgia. *Journal of Field Archaeology* 12(3):299-313.
- Garrison, Ervan G. and Deborah A. Keene
 2007 *Excavation and Development of Educational Materials for Grove's Creek Site*, Final Technical Report, Cycle IX Coastal Incentive Grant: Proposal no. 032932-01.
- Gasparetto, Astone
 1958 *Il Vetro Di Murano Dalle Origini Ad Oggi*. Neri Pozza, Venice.
- Gavrilets, Sergey, David G. Anderson and Peter Turchin
 2010 Cycling in the Complexity of Early Societies. *Cliodynamics: The Journal of Theoretical and Mathematical History* 1(1):58-80.
- Geiger, Maynard
 1934 An Early Poem on Florida. *Fortnightly Review (St. Louis)* XLI(12):271-272.
 —
 1937 *The Franciscan Conquest of Florida (1573-1618)*. Studies in Hispanic-American History. The Catholic University of America, Washington, D.C.
- Giddens, Anthony
 1979 *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis*. University of California Press, Berkeley.
 —
 1984 *The Constitution of Society: Outline of the Theory of Structuration*. University of California Press, Berkeley.
- Gilligan, Shane Patrick
 2008 Identifying Communities of Practice through Cord Impressed Ceramics at the Early Late Prehistoric Sites of Thomas/Luckey and Chenango Point in Central New York. MA Thesis, Department of Anthropology, Binghamton University, State University of New York, Binghamton.
- Ginn, Sarah M.

- 2009 Creating Community in Spanish California: An Investigation of California Plainwares. PhD Dissertation, Department of Anthropology, University of California, Santa Cruz.
- Glascock, Michael D. and Jeffrey R. Ferguson
2012 *Report on the Analysis of Obsidian Source Samples by Multiple Analytical Methods*. University of Missouri Research Reactor, Columbia.
- Glascock, Michael D.
2013 Application of Neutron Activation Analysis to Archaeological Studies of Natural and Man-Made Glasses. In *Modern Methods for Analysing Archaeological and Historical Glass*, edited by Koen Janssens, pp. 185-199. John Wiley & Sons Ltd, Chichester.
- Goad, Sharon
1975 1975 Excavations on Skidaway Island, 9ch112. Ms. on file, Georgia State Archaeological Site Files, University of Georgia, Athens.
- Goodman, D., Y. Nishimura and J. D. Rogers
1995 GPR Time Slices in Archaeological Prospection. *Archaeological Prospection* 2:85-90.
- Gorman, Rebecca D.
2013 The Last Mission: San Juan Del Puerto and Its Role in the Aggregation and Demise of the Mocama Missions (1587-1702). In *From La Florida to La California: Franciscan Evangelization in the Spanish Borderlands*, edited by Timothy J. Johnson and Gert Melville, pp. 165-186. Academy of American Franciscan History, Berkeley.
- Gosden, Chris and Yvonne Marshall
1999 The Cultural Biography of Objects. *World Archaeology* 31(2):169-178.
- Gosselain, Olivier P.
1992 Technology and Style: Potters and Pottery among Bafia of Cameroon. *Man* 27(3):559-586.
- 1998 Social and Technical Identity in a Clay Crystal Ball. In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, pp. 78–106. Smithsonian Institution Press, Washington DC.
- 2000 Materializing Identities: An African Perspective. *Journal of Archaeological Method and Theory* 7(3):187-217.
- 2008 Mother Bella Was Not a Bella: Inherited and Transformed Traditions in Southwestern Niger In *Cultural Transmission and Material Culture*, edited by Miriam T. Stark, Brenda J. Bowser and Lee Horne, pp. 150-177. The University of Arizona Press, Tucson.
- Gradie, Charlotte M.

- 1988 Spanish Jesuits in Virginia: The Mission That Failed. *The Virginia Magazine of History and Biography* 96(2):131-156.
-
- 1990 Jesuit Missions in Spanish North America, 1566-1623. PhD Dissertation, Department of History, University of Connecticut.
- Graham, Elizabeth
- 1998 Mission Archaeology. *Annual Review of Anthropology* 27(1):25-62.
- Granberry, Julian
- 1990 A Grammatical Sketch of Timucua. *International Journal of American Linguistics* 56(1):60-101.
-
- 1993 *A Grammar and Dictionary of the Timucua Language*. University Alabama Press, Tuscaloosa.
- Gratuze, Bernard
- 2013 Glass Characterisation Using Laser Ablation Inductively Coupled Plasma Mass Spectrometry Methods. In *Modern Methods for Analysing Archaeological and Historical Glass*, edited by Koen Janssens, pp. 201-234. John Wiley & Sons Ltd, Chichester.
- Gray, Saber
- 2014 "I Do Not Know How to Fulfill Those Demands": Rethinking Jesuit Missionary Efforts in La Florida, 1566-1572. MA Thesis, Department of Florida Studies, University of South Florida, St. Petersburg.
- Grazzini, Maria Grazia
- 2012 Discorso Sopra La Chimica: The Paracelsian Philosophy of Antonio Neri. *Nuncius* 27(2):411-467.
- Green, William, Chester B. DePratter and Bobby Southerlin
- 2002 The Yamasee in South Carolina: Native American Adaptation and Interaction Along the Carolina Frontier. In *Another's Country: Archaeological and Historical Perspectives on Cultural Interactions in the Southern Colonies*, edited by J. W. Joseph and Martha Zierden, pp. 13-29. University of Alabama Press, Tuscaloosa.
- Green, William G.
- 1991 The Search for Altamaha: The Archaeology of an Early Eighteenth-Century Yamasee Town. MA Thesis, Department of Anthropology, University of South Carolina, Columbia.
- Greene, Alan F.
- 2013 The Social Lives of Pottery on the Plain of Flowers: An Archaeology of Pottery Production, Distribution, and Consumption in the Late Bronze Age South Caucasus. PhD Dissertation, Department of Anthropology, The University of Chicago, Chicago.
- Griffin, John W.

- 1965a *Notes on the Archaeology of St. Catherines Island, Georgia, Report to the Edward John Noble Foundation*, Report on file Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
-
- 1965b *Santa Catalina Mission, Liberty County Georgia. Documentation for Consideration as a Registered National Historic Landmark*. Report on file Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
- Griffin, Mark C.
- 1989 Dental Variation of Native Populations from Northern Spanish Florida. MA Thesis, Department of Anthropology, Northern Illinois University, DeKalb.
-
- 1993 Morphological Variation of the Late Precontact and Contact Period Guale. PhD Dissertation, Department of Anthropology, Purdue University, West Lafayette.
- Griffin, Mark C., Patricia M. Lambert and Elizabeth Monahan Driscoll
- 2001 Biological Relationships and Population History of Native Peoples in Spanish Florida and the American Southeast. In *Bioarchaeology of Spanish Florida: The Impact of Colonialism*, edited by Clark Spencer Larsen, pp. 226-273. University Press of Florida, Gainesville.
- Groover, Mark D.
- 2000 Creolization and the Archaeology of Multiethnic Households in the American South. *Historical Archaeology* 34(3):99-106.
- Guerrero, Debra Peter and David Hurst Thomas
- 2008 The Ceramic Typology. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 372-403. Anthropological Papers of the American Museum of Natural History, New York.
- Guitar, Lynne
- 1997 Francisco Chicorano: A North American Indian in King Charles I's Court. *Terrae Incognitae* 29(1):1-9.
- Gundaker, Grey
- 2000 Discussion: Creolization, Complexity, and Time. *Historical Archaeology* 34(3):124-133.
- Hahn, Hans Peter and Hadas Weiss (editors)
- 2013 *Mobility, Meaning and the Transformation of Things*. Oxbow Books, Oxford.
- Hall, Joseph M.
- 2007 Between Old World and New: Oconee Valley Residents and the Spanish Southeast, 1540-1621. In *The Atlantic World and Virginia, 1550-1624*, edited by Peter C. Mancall, pp. 66-96. The University of North Carolina Press, Chapel Hill.
-

- 2009 *Zamumo's Gifts: Indian-European Exchange in the Colonial Southeast*. University of Pennsylvania Press, Philadelphia.
- Hall, Stuart
 1996 Introduction: Who Needs 'Identity;? In *Questions of Identity*, edited by Stuart Hall and Paul du Gay, pp. 1-17. Sage, London.
- Hally, David J.
 1971 The Archaeology of European-Indian Contact in the Southeast. In *Red, White, and Black: Symposium on Indians in the Old South*, edited by Charles M. Hudson, pp. 55-66. University of Georgia Press, Athens.
- 1994 An Overview of Lamar Culture. In *Ocmulgee Archaeology, 1936-1986*, edited by David J. Hally, pp. 144-174. University of Georgia Press, Athens.
- Hally, David J. and Marvin T. Smith
 2010 Sixteenth-Century Mechanisms of Exchange. *Journal of Global Initiatives* 5(1):51-58.
- Hammer, Øyvind
 2015 *Past: Paleontological Statistics: Version 3.05: Reference Manual*. Natural History Museum, University of Oslo.
- Hancock, R. G. V.
 2005 Elemental Analysis of North American Glass Trade Beads. *Beads: Journal of the Society of Bead Researchers* 17:52-57.
- 2013 European Glass Trade Beads in Northeastern North America. In *Modern Methods for Analysing Archaeological and Historical Glass*, edited by Koen Janssens, pp. 459-471. John Wiley & Sons, Ltd, Chichester.
- Hancock, R. G. V., A. Chafe and I. Kenyon
 1994 Neutron Activation Analysis of Sixteenth- and Seventeenth-Century European Blue Glass Trade Beads from the Eastern Great Lakes Area of North America. *Archaeometry* 36(2):253-266.
- Hancock, Ronald G. V., Susan Aufreiter and Ian Kenyon
 1997 European White Glass Trade Beads as Chronological Markers. *Materials Issues in Art and Archaeology* V:181-191.
- Hancock, Ronald G. V., Susan Aufreiter, Ian Kenyon and Martha Latta
 1999 White Glass Beads from the Auger Site, Southern Ontario, Canada. *Journal of Archaeological Science* 26(8):907-912.
- Hann, John H.
 1986 Demographic Patterns and Changes in Mid-Seventeenth Century Timucua and Apalachee. *The Florida Historical Quarterly* 64(4):371-392.
-

- 1988 *Apalachee: The Land between the Rivers*. University of Florida Press, Gainesville.
-
- 1989 St. Augustine's Fallout from the Yamasee War. *The Florida Historical Quarterly* 68(2):180-200.
-
- 1990 Summary Guide to Spanish Florida Missions and Visitas. With Churches in the Sixteenth and Seventeenth Centuries. *The Americas* 46(4):417-513.
-
- 1993 *Visitations and Revolts in Florida, 1656-1695*. Florida Archaeology 7. Florida Bureau of Archaeological Research, Tallahassee.
-
- 1996 *A History of the Timucua Indians and Missions*. Gainesville: University Press of Florida.
- Hann, John H. and Bonnie G. McEwan
1998 *The Apalachee Indians and Mission San Luis*. University Press of Florida, Gainesville.
- Hantman, Jeffery L. and Stephen Plog
1982 The Relationship of Stylistic Similarity to Patterns of Material Exchange. In *Contexts for Prehistoric Exchange*, edited by J. E. Ericson and T. K. Earle, pp. 237-263. Academic Press, New York.
- Harkins, Conrad
1990 On Franciscans, Archaeology, and Old Missions. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 459-473. Smithsonian Institution Press, Washington DC.
- Harrell, Kevin T.
2015 The Terrain of Factionalism: How Upper Creek Communities Negotiated the Recourse of Gulf Coast Trade, 1763-1780. *Alabama Review* 68(1):74-113.
- Hayden, Anna
2009 Ceramic Production in Middle Woodland Communities of Practice: A Cordage Twist Analysis in Tidewater Virginia. BA Thesis, Department of Anthropology, The College of William and Mary, Williamsburg.
- Hayden, Lauren R.
2007 Digital Mapping of Mission Santa Catalina De Guale and Pueblo Santa Catalina de Guale, Saint Catherines Island, Georgia. MA Thesis, Department of Anthropology, Hunter College, New York.
- Hayes, Royce H. and David Hurst Thomas
2008 Hydrology of St. Catherines Island. In *Native American Landscapes of St. Catherines Island, Georgia Part 1: The Theoretical Framework*, edited by David Hurst

- Thomas, pp. 56-58. *Anthropological Papers of the American Museum of Natural History*, New York.
- Hegmon, Michelle
1992 Archaeological Research on Style. *Annual Review of Anthropology* 21(1):517-536.
- 1998 Technology, Style, and Social Practices: Archaeological Approaches. In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, pp. 264–279. Smithsonian Institution Press, Washington DC.
- Heide, Gregory M.
1999 Archaeological Analysis and Interpretation of the Northeast Yard of the Patale Mission Site (8Le152). MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Held, Ray E.
1949 Hernando De Miranda, Governor of Florida 1575-1577. *The Florida Historical Quarterly* 28(2):111-130.
- Helms, Mary W.
1992 Political Lords and Political Ideology in Southeastern Chiefdoms: Comments and Observations. *Archeological Papers of the American Anthropological Association* 3(1):185-194.
- 1994 Chiefdom Rivalries, Control, and External Contacts in Lower Central America. In *Factional Competition and Political Development in the New World*, edited by Elizabeth M. Brumfiel and John W. Fox, pp. 55-60. Cambridge University Press, Cambridge.
- Hemmings, E. Thomas and Kathleen A. Deagan
1973 *Excavations on Amelia Island in Northeast Florida* 18. Contributions of the Florida State Museum.
- Hendon, Julia A.
2010 *Houses in a Landscape: Memory and Everyday Life in Mesoamerica*. Duke University Press, Durham.
- Herbert, Joseph M.
2003 Woodland Ceramics and Social Boundaries of Coastal North Carolina. PhD Dissertation, Anthropology, University of North Carolina, Chapel Hill, Chapel Hill.
- 2009 *Woodland Potters and Archaeological Ceramics of the North Carolina Coast*. University Alabama Press, Tuscaloosa.
- Herbich, Ingrid
1987 Learning Patterns, Potter Interaction and Ceramic Style among the Luo of Kenya. *African Archaeological Review* 5(1):193-204.
- Herbich, Ingrid and Michael Dietler

- 2008 The Long Arm of the Mother-in-Law: Learning, Postmarital Resocialization of Women, and Material Culture Style. In *Cultural Transmission and Material Culture*, edited by Miriam T. Stark, Brenda J. Bowser and Lee Horne, pp. 223-244. The University of Arizona Press, Tucson.
- Herskovits, Melville J.
1938 *Acculturation: The Study of Culture Contact*. J.J. Augustin, New York.
- Hilditch, Jillian Ruth
2008 Reconstruction of Technological Choice, Social Practice and Networks of Exchange from a Ceramic Perspective in the Middle Bronze Age Cyclades. PhD Dissertation, Department of Archaeology, University of Exeter, Exeter.
- Hill, J. Brett, Matthew A. Peeples, Deborah L. Huntley and H. Jane Carmack
2015 Spatializing Social Network Analysis in the Late Precontact U.S. Southwest. *Advances in Archaeological Practice* 3(1):63-77.
- Hill, James N.
1970 *Broken K Pueblo: Prehistoric Social Organization in the American Southwest*. Issue 18 of Anthropological Papers of the University of Arizona. University of Arizona, Tucson.
- 1977 Individual Variability in Ceramics and the Study of Prehistoric Social Organization. In *The Individual in Prehistory: Studies of Variability in Style in Prehistoric Technologies*, edited by James N. Hill and Joël Gunn, pp. 57-108. Academic Press, New York.
- 1978 Individuals and Their Artifacts an Experimental Study in Archaeology. *American Antiquity* 43(245-257).
- Hill, James N. and Joël Gunn
1977 *The Individual in Prehistory: Studies of Variability in Style in Prehistoric Technologies*. Academic Press, New York.
- Hill, Jonathan D.
1996 *History, Power, and Identity: Ethnogenesis in the Americas, 1492-1992*. University of Iowa Press, Iowa City.
- 1998 Violent Encounters: Ethnogenesis and Ethnocide in Long-Term Contact Situations. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by James G. Cusick, pp. 146-171. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Hitchcock, Louise A. and Aren M. Maeir
2013 Beyond Creolization and Hybridity: Entangled and Transcultural Identities in Philistia. *Archaeological Review from Cambridge* 28(1):51-73.

- Hodder, Ian
1982 *Symbols in Action: Ethnoarchaeological Studies of Material Culture*. Cambridge University Press, Cambridge.
- Hoffman, Paul E.
1980 A New Voyage of North American Discovery: Pedro De Salazar's Visit to the "Island of Giants". *The Florida Historical Quarterly* 58(4):415-426.
- 1990 *A New Andalusia and a Way to the Orient: The American Southeast During the Sixteenth Century*. Louisiana State University Press, Baton Rouge.
- 1994 Lucas Vazquez De Ayllón's Discovery and Colony. In *The Forgotten Centuries: Indians and Europeans in the American South 1521-1704*, edited by Charles Hudson and Carmen Chaves Tesser, pp. 36-49. The University of Georgia Press, Athens.
- 2002 *Florida's Frontiers*. Indiana University Press, Bloomington.
- Hoffmann, P.
1994 Analytical Determination of Colouring Elements and of Their Compounds in Glass Beads from Graveyards of the Merowings Time. *Fresenius' Journal of Analytical Chemistry* 349(4):320-333.
- Holmes, William H.
1898 *Aboriginal Pottery of the Eastern United States*. 20th Annual Report of the Bureau of American Ethnology, Washington, DC.
- Hudson, Charles, Robin A. Beck, Jr., Chester B. DePratter, Robbie Ethridge and John E. Worth
2008 On Interpreting Cofitachequi. *Ethnohistory* 55(3):465-490.
- Hughes, Jason
2007 Lost in Translation: Communities of Practice: The Journey from Academic Model to Practitioner Tool. In *Communities of Practice: Critical Perspectives*, edited by Jason Hughes, Nick Jewson and Lorna Unwin, pp. 30-40. Routledge, New York.
- Hughes, Jason, Nick Jewson and Lorna Unwin
2007 Introduction. Communities of Practice: A Contested Concept in Flux. In *Communities of Practice: Critical Perspectives*, edited by Jason Hughes, Nick Jewson and Lorna Unwin, pp. 1-16. Routledge, New York.
- Hunt, Alice M. W. and Robert J. Speakman
2015 Portable XRF Analysis of Archaeological Sediments and Ceramics. *Journal of Archaeological Science* 53:626-638.
- Huntley, Deborah L.
2006 From Recipe to Identity: Exploring Zuni Glaze Ware Communities of Practice. In *The Social Lives of Pots: Glaze Wares and Cultural Dynamics in the Southwest, AD 1250-*

- 1680, edited by J. A. Habicht-Mauche, S. L. Eckert and D. L. Huntley, pp. 105-123. University of Arizona Press, Tucson.
- Hutchinson, Dale L., Clark Spencer Larsen, Margaret J. Schoeninger and Lynette Norr
1998 Regional Variation in the Pattern of Maize Adoption and Use in Florida and Georgia. *American Antiquity* 63(3):397-416.
- Hvidt, Kristian (editor)
1980 *Von Reck's Voyage: Drawings and Journal of Philip Georg Friedrich Von Reck*. The Beehive Press, Savannah.
- Ingold, Tim
2000 *The Perception of the Environment: Essays on Livelihood, Dwelling and Skill*. Routledge, London.
- 2007 *Lines: A Brief History*. Routledge, New York.
- 2009 Against Space: Place, Movement, Knowledge. In *Boundless Worlds: An Anthropological Approach to Movement*, edited by Peter W. Kirby, pp. 29–43. Berghahn Books, New York.
- Isbell, William H.
2000 What We Should Be Studying: The "Imagined Community" and the "Natural Community". In *The Archaeology of Communities: A New World Perspective*, edited by Marcello-Andrea Canuto and Jason Yaeger, pp. 243-266. Routledge, New York.
- Jackson, Caroline M.
2005 Making Colourless Glass in the Roman Period. *Archaeometry* 47(4):763-780.
- Jacoby, David
1993 Raw Materials for the Glass Industries of Venice and the Terraferma, About 1370 - About 1460. *Journal of Glass Studies* 35:65-90.
- Jacomy, Mathieu, Tommaso Venturini, Sebastien Heymann and Mathieu Bastian
2014 ForceAtlas2, a Continuous Graph Layout Algorithm for Handy Network Visualization Designed for the Gephi Software. *PLoS One* 9(6):e98679.
- James, W. D., E. S. Dahlin and D. L. Carlson
2005 Chemical Compositional Studies of Archaeological Artifacts: Comparison of LA-ICP-MS to INAA Measurements. *Journal of Radioanalytical and Nuclear Chemistry* 263(3):697-702.
- Jefferies, Richard W. and Christopher R. Moore
2010 Recent Investigations of Mission Period Activity on Sapelo Island, Georgia. *Journal of Global Initiatives* 5(1):67-85.
- 2013 Mission San Joseph De Sapala: Mission-Period Archaeological Research on Sapelo Island. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor

- D. Thompson and David Hurst Thomas, pp. 345-374. *Anthropological Papers of the American Museum of Natural History*, New York.
- Jelinek, Arthur
 1976 Form, Function, and Style in Lithic Analysis. In *Cultural Change and Continuity: Essays in Honour of James Bennett Griffin*, edited by Charles E. Cleland, pp. 19-33. Academic Press, New York.
- Jewson, Nick
 2007 Cultivating Network Analysis: Rethinking the Concept of 'Community' within 'Communities of Practice' In *Communities of Practice: Critical Perspectives*, edited by J. Hughes, N. Jewson and L. Unwin, pp. 68-82. Routledge, New York.
- Jimenez, Joseph A.
 1993 *Pueblo de Santa Catalina De Guale Auger Survey: Computer Data and "Topographic" Distribution Mapping Procedures*. Unpublished report on file, St. Catherines Island Archive, American Museum of Natural History, New York.
- Johnson, James G.
 1923 The Yamassee Revolt of 1597 and the Destruction of the Georgia Missions. *The Georgia Historical Quarterly* 7(1):44-53.
- Johnson, Jay K.
 2006 *Remote Sensing in Archaeology: An Explicitly North American Perspective*. University of Alabama Press, Tuscaloosa.
- Jones, B. Calvin, John Hann and John F. Scarry
 1991 San Pedro Y San Pablo De Patate: A Seventeenth-Century Spanish Mission in Leon County, Florida. *Florida Archaeology* 5. Florida Bureau of Archaeological Research, Tallahassee.
- Jones, B. Calvin and Gary Shapiro
 1990 Nine Mission Sites in Apalachee. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 491-509. Smithsonian Institution Press, Washington DC.
- Jones, Grant D.
 1978 The Ethnohistory of the Guale Coast through 1684. In *The Anthropology of St. Catherines Island 1. Natural and Cultural History*, edited by David Hurst Thomas, Grant D. Jones, Roger S. Durham and Clark Spencer Larsen, pp. 157-248. *Anthropological Papers of the American Museum of Natural History*, New York.
- Joyce, Rosemary A.
 2012a From Place to Place: Provenience, Provenance, and Archaeology. In *Provenance: An Alternate History of Art*, edited by Gail Feigenbaum and Inge Reist, pp. 48-60. Getty Research Institute, Los Angeles.
-

- 2012b Life with Things: Archaeology and Materiality. In *Archaeology and Anthropology: Past, Present and Future*, edited by David Shankland, pp. 119-132. Berg, Oxford.
-
- 2012c Thinking About Pottery Production as Community Practice. In *Potters and Communities of Practice: Glaze Paint and Polychrome Pottery in the American Southwest, AD 1250 to 1700*, edited by Linda S. Cordell and Judith A. Habicht-Mauche, pp. 149-154. University of Arizona Press, Tucson.
-
- 2015 Things in Motion: Itineraries of Ulua Marble Vases. In *Things in Motion: Object Itineraries in Archaeological Practice*, edited by Rosemary A. Joyce and Susan Gillespie, pp. 21-38. School for Advanced Research Press, Santa Fe.
- Joyce, Rosemary A. and Susan Gillespie (editors)
- 2015 *Things in Motion: Object Itineraries in Archaeological Practice*. School for Advanced Research Press, Santa Fe.
- Joyce, Rosemary A. and Julia A. Hendon
- 2000 Heterarchy, History, and Material Reality: "Communities" in Late Classic Honduras. In *The Archaeology of Communities. A New World Perspective*, edited by Marcello-Andrea Canuto and Jason Yaeger, pp. 143-160. Routledge, New York.
- Joyce, Rosemary A. and Jeanne Lopiparo
- 2005 Postscript: Doing Agency in Archaeology. *Journal of Archaeological Method and Theory* 12(4):365-374.
- Joyce, Rosemary A. and Laurie A. Wilkie
- 2008 Identity and Power. In *Encyclopedia of Archaeology*, edited by DM Pearsall, pp. 1483-1489. Academic Press.
- Karklins, Karlis
- 1993 The a Speo Method of Heat Rounding Drawn Glass Beads and Its Archeological Manifestations. *Beads: Journal of the Society of Bead Researchers* 5:27-36.
- Karklins, Karlis and Carol F. Adams
- 1990 Dominique Bussolin on the Glass-Bead Industry of Murano and Venice (1847). *Beads: Journal of the Society of Bead Researchers* 2:69-84.
- Karklins, Karlis and Derek Jordan
- 1990 An Early 19th-Century Account of Beadmaking in Murano and Venice. *The Bead Forum* 17:5-8.
- Keene, Deborah A.
- 2002 Archaeological and Geophysical Investigations of Grove's Creek Site (09ch71), Skidaway Island, Georgia. PhD Dissertation, Department of Anthropology, University of Georgia, Athens.
-

- 2004 Reevaluating Late Prehistoric Coastal Subsistence and Settlement Strategies: New Data from Grove's Creek Site, Skidaway Island, Georgia. *American Antiquity* 69(4):671-689.
- Keene, Deborah A. and Ervan G. Garrison
2013 A Survey of Irene Phase Architecture on the Georgia Coast. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 289-316. Anthropological Papers of the American Museum of Natural History, New York.
- Keeton, Glen, Nicholas P. Triozzi, Thomas Blaber and Matthew Napolitano
2014 When Z Become X: Excavating Three Late Mississippian Ossuaries from the Bottom Up. Paper presented at the Southeastern Archaeology Conference, Greenville, SC.
- Kelly, Isabel
1992 *Trade Beads and the Conquest of Mexico*. Rolston-Bain, Windsor.
- Kelton, Paul
2009 Shattered and Infected: Epidemics and the Origins of the Yamasee War, 1696–1715. In *Mapping the Mississippian Shatter Zone: The Colonial Indian Slave Trade and Regional Instability in the American South*, edited by Robbie Ethridge and Sheri M. Shuck-Hall, pp. 312-332. University of Nebraska Press, Lincoln.
- Kent, Barry C.
1983 The Susquehanna Bead Sequence. In *Proceedings of the 1982 Glass Trade Bead Conference*, edited by Charles F. Hayes, pp. 75-81. Research Division, Rochester Museum & Science Center, Rochester, NY.
- 1984 *Susquehanna's Indians*. The Pennsylvania Historical and Museum Commission, Anthropological Series 6.
- Kenyon, I. and W. Fitzgerald
1986 Dutch Glass Beads in the Northeast: An Ontario Perspective. *Man in the Northeast* 32:1-34.
- Kenyon, Ian, Ronald G. V. Hancock and Susan Aufreiter
1995 Neutron Activation Analysis of AD 1660-1930 European Copper-Coloured Blue Glass Trade Beads from Ontario, Canada. *Archaeometry* 37(2):323-337.
- Kenyon, Ian, Susan Kenyon, Ronald G. V. Hancock and Susan Aufreiter
1995 Neutron Activation Analysis of Some 19th-Century Facetted Glass Trade Beads from Ontario, Canada, That Have Chemical Compositions Resembling Bohemian Glass *The Bead Forum* 27:4-9.
- Killick, David
2004 Social Constructionist Approaches to the Study of Technology. *World Archaeology* 36(4):571-578.
-

- 2015 The Awkward Adolescence of Archaeological Science. *Journal of Archaeological Science* 56:242-247.
- Knappett, Carl
- 2011a *An Archaeology of Interaction: Network Perspectives on Material Culture and Society*. Oxford University Press, Oxford.
-
- 2011b Networks of Objects, Meshworks of Things. In *Redrawing Anthropology: Materials, Movements, Lines*, edited by Tim Ingold, pp. 45-63. Ashgate, Farnham, UK.
- (editor)
- 2013 *Network Analysis in Archaeology: New Approaches to Regional Interaction*. Oxford University Press, Oxford.
- Kohring, Sheila
- 2012 Conceptual Knowledge as Technologically Materialised: A Case Study of Pottery Production, Consumption and Community Practice. In *Embodied Knowledge: Historical Perspectives on Technology and Belief*, edited by Marie Louise Stig Sørensen and Katharina Rebay-Salisbury, pp. 106-116. Oxbow, Oxford.
- Kolb, Michael J. and James E. Snead
- 1997 It's a Small World after All: Comparative Analyses of Community Organization in Archaeology. *American Antiquity* 62(4):609-628.
- Kole, Kathleen M.
- 2009 Allies and Adversaries: Understanding the Nature of Guale Political Organization through the 1597 Uprising. MA Thesis, Department of History, University of North Florida, Jacksonville.
- Kopytoff, Igor
- 1986 The Cultural Biography of Things: Commodization as Process. In *The Social Life of Things: Commodities in Cultural Perspective*, edited by Arjun Appadurai, pp. 64-91. Cambridge University Press, Cambridge.
- Kuhn, Thomas
- 1962 *The Structure of Scientific Revolutions*. University of Chicago Press, Chicago.
- Kuisma-Kursula, Pirkko
- 1999 PIXE and SEM Studies of Old Finnish and European Glass and European Oyster, *Ostrea Edulis*. PhD Dissertation, Department of Physics, University of Helsinki, Helsinki.
- Kvamme, Kenneth L.
- 2003 Geophysical Surveys as Landscape Archaeology. *American Antiquity* 68(3):435-457.
- Lanning, John Tate
- 1935 *The Spanish Missions of Georgia*. University of North Carolina Press, Chapel Hill.
- Larsen, Clark Spencer

- 1981 Skeletal and Dental Adaptations to the Shift to Agriculture on the Georgia Coast. *Current Anthropology* 22(4):422-423.
-
- 1982 *The Anthropology of St. Catherine's Island 3: Prehistoric Human Biological Adaptation*. Anthropological Papers of the American Museum of Natural History, New York.
-
- 1990 *The Archaeology of Mission Santa Catalina De Guale, 2: Biocultural Interpretations of a Population in Transition*. Anthropological Papers of the American Museum of Natural History, New York.
-
- 2001 *Bioarchaeology of Spanish Florida: The Impact of Colonialism*. University Press of Florida, Gainesville.
-
- 2002 *Bioarchaeology of the Late Prehistoric Guale: South End Mound I, St. Catherines Island, Georgia*. Anthropological Papers of the American Museum of Natural History, New York.
- Larsen, Clark Spencer, Dale L. Hutchinson, Margaret J. Schoeninger and Lynette Norr
- 2001 Food and Stable Isotopes in La Florida: Diet and Nutrition before and after Contact. In *Bioarchaeology of Spanish Florida: The Impact of Colonialism*, edited by Clark Spencer Larsen, pp. 52-81. University Press of Florida, Gainesville.
- Larsen, Clark Spencer and David Hurst Thomas
- 1982 *The Anthropology of St. Catherines Island: 4. The St. Catherines Period Mortuary Complex*. Anthropological Papers of the American Museum of Natural History, New York.
-
- 1986 *The Archaeology of St. Catherines Island: 5. The South End Mound Complex*. Anthropological Papers of the American Museum of Natural History, New York.
- Larson, Katherine A.
- 2013 A Network Approach to Hellenistic Sculptural Production. *Journal of Mediterranean Archaeology* 26(2):235-260.
- Larson, Lewis H., Jr.
- 1953 *Coastal Mission Survey*. Unpublished Manuscript, Copy on file Nels Nelson North American Archaeology Laboratory, American Museum of Natural History.
-
- 1969 Aboriginal Subsistence Technology on the Southern Coastal Plain During the Late Prehistoric Period. PhD Dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
-

- 1978 Historic Guale Indians of the Georgia Coast and the Impact of the Spanish Mission Effort. In *Tacachale: Essays on the Indians of Florida and Southeastern Georgia During the Late Prehistoric Period*, edited by Jerald T. Milancih and Samuel Proctor, pp. 120-140. The University Presses of Florida, Gainesville.
-
- 1980a *Aboriginal Subsistence Technology on the Southeastern Coastal Plain During the Late Prehistoric Period*. Ripley P. Bullen Monographs in Anthropology and History. University Press of Florida, Gainesville.
-
- 1980b The Spanish on Sapelo. In *Sapelo Papers: Researches in the History and Prehistory of Sapelo Island, Georgia*, edited by Daniel P. Juengst, pp. 35-45. West Georgia College Studies in the Social Sciences, Carrollton.
-
- 1984 Irene: A Georgia Coast Archaeological Manifestation in Time and Space: Introduction. *Early Georgia* 12(1-2):41-43.
-
- 1998 Introduction. In *The Georgia and South Carolina Expeditions of Clarence Bloomfield Moore*, pp. 1-85. University Alabama Press, Tuscaloosa.
- Larson, Lewis H. and John Scott
- 1959 Georgia Historical Commission, Wamasse Head, 9lb8, St. Catherines Island, Summer 1959. On file University of West Georgia, Antonio J. Waring, Jr. Archaeology Laboratory.
- Latour, Bruno
- 2005 *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford University Press, New York.
- Laudonnière, René
- 2001 *Three Voyages*. Translated by Charles E. Bennett. University of Alabama Press, Tuscaloosa.
- Lave, Jean and Etienne Wenger
- 1991 *Situated Learning: Legitimate Peripheral Participation*. Cambridge University Press, Cambridge.
- Lechtman, Heather
- 1977 Style in Technology: Some Early Thoughts. In *Material Culture: Styles, Organization, and Dynamics of Technology*, edited by Heather Lechtman and Robert S. Merrill, pp. 3-20. 1975 Proceedings of the American Ethnological Society. West Publishing Company, St. Paul.
-
- 1984 Andean Value Systems and the Development of Prehistoric Metallurgy. *Technology and Culture* 25(1):1-36.

-
- 1993 Technologies of Power: The Andean Case. In *Configurations of Power: Holistic Anthropology in Theory and Practice*, edited by John S. Henderson and Patricia J. Netherly, pp. 244-280. Cornell University Press, Ithaca.
- Lemonnier, Pierre
- 1986 The Study of Material Culture Today: Toward an Anthropology of Technical Systems. *Journal of Anthropological Archaeology* 5(2):147-186.
-
- 1992 *Elements for an Anthropology of Technology*. University of Michigan Museum, Ann Arbor.
-
- 1993a Introduction. In *Technological Choices: Transformation in Material Cultures since the Neolithic*, edited by Pierre Lemonnier, pp. 1-35. Routledge, New York.
-
- 1993b *Technological Choices: Transformation in Material Cultures since the Neolithic*. Routledge, New York.
- Lemonnier, Pierre and Bryan Pfaffenberger
- 1989 Towards an Anthropology of Technology. *Man* 24(3):526-527.
- Lenik, Stephan
- 2009 Considering Multiscalar Approaches to Creolization among Enslaved Laborers at Estate Bethlehem, St. Croix, Us Virgin Islands. *International Journal of Historical Archaeology* 13(1):12-26.
- Leroi-Gourhan, Andre
- 1993 *Gesture and Speech*. MIT Press, Cambridge.
- Lewis, Clifford M. and Albert J. Loomie
- 1953 *The Spanish Jesuit Mission in Virginia, 1570-1572*. Published for the Virginia Historical Society by the University of North Carolina Press, Chapel Hill.
- Liebmann, Matthew
- 2013 Parsing Hybridity: Archaeologies of Amalgamation in Seventeenth-Century New Mexico. In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, pp. 25-49. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Lightfoot, Kent G.
- 1995 Culture Contact Studies: Redefining the Relationship between Prehistoric and Historical Archaeology. *American Antiquity* 60(2):199-217.
-
- 2005a The Archaeology of Colonization: California in Cross-Cultural Perspective. In *The Archaeology of Colonial Encounters: Comparative Perspectives*, edited by Gil J. Stein, pp. 207-235. School of American Research Press, Santa Fe.
-

- 2005b *Indians, Missionaries, and Merchants: The Legacy of Colonial Encounters on the California Frontiers*. University of California Press, Berkeley.
- Lightfoot, Kent G. and Antoinette Martinez
 1995 Frontiers and Boundaries in Archaeological Perspective. *Annual Review of Anthropology* 24(1):471-492.
- Lightfoot, Kent G., Antoinette Martinez and Ann M. Schiff
 1998 Daily Practice and Material Culture in Pluralistic Social Settings: An Archaeological Study of Culture Change and Persistence from Fort Ross, California. *American Antiquity* 63(2):199-222.
- Lightfoot, Kent G., Lee M. Panich, Tsim D. Schneider, Sara L. Gonzalez, Matthew A. Russell, Darren Modzelewski, Theresa Molino and Elliot H. Blair
 2013 The Study of Indigenous Political Economies and Colonialism in Native California: Implications for Contemporary Tribal Groups and Federal Recognition. *American Antiquity* 78(1):89-103.
- Lightfoot, Kent G., Thomas A. Wake and Ann M. Schiff
 1993 Native Responses to the Russian Mercantile Colony of Fort Ross, Northern California. *Journal of Field Archaeology* 20(2):159-175.
- Linton, Ralph
 1940 Acculturation and the Process of Culture Change. In *Acculturation in Seven American Indian Tribes*, edited by Ralph Linton, pp. 463-482. D. Appleton-Century Company, Inc., New York.
- Little, Keith J.
 2008 European Artifact Chronology and Impacts of Spanish Contact in the Sixteenth-Century Coosa Valley. PhD Dissertation, Department of Anthropology, University of Alabama, Tuscaloosa.
- 2010 Sixteenth-Century Glass Bead Chronology in Southeastern North America. *Southeastern Archaeology* 29(1):222-232.
- Liu, S., Q. H. Li, Q. Fu, F. X. Gan and Z. M. Xiong
 2013 Application of a Portable XRF Spectrometer for Classification of Potash Glass Beads Unearthed from Tombs of Han Dynasty in Guangxi, China. *X-Ray Spectrometry* 42:470-479.
- Longacre, William A.
 1970 *Archaeology as Anthropology: A Case Study*. Anthropology Papers 17. University of Arizona, Tucson.
- Looper, Edward E.
 1982 *Soil Survey of Liberty and Long Counties, Georgia*. United States Department of Agriculture, Soil Conservation Service.
- Loren, Diana DiPaolo

- 1999 Creating Social Distinction: Articulating Colonial Policies and Practices Along the 18th Century Louisiana/Texas Frontier. PhD Dissertation, Department of Anthropology, State University of New York at Binghamton.
-
- 2000 The Intersection of Colonial Policy and Colonial Practice: Creolization on the Eighteen-Century Louisiana/Texas Frontier. *Historical Archaeology* 34(3):85-98.
-
- 2009 Material Manipulations: Beads and Cloth in the French Colonies. *The Materiality of Individuality*:109-124.
-
- 2010 *The Archaeology of Clothing and Bodily Adornment in Colonial America*. The American Experience in Archaeological Perspective. University Press of Florida, Gainesville.
-
- 2013 Considering Mimicry and Hybridity in Early Colonial New England: Health, Sin and the Body "Behung with Beades". *Archaeological Review from Cambridge* 28(1):151-168.
- Lorenz, Karl G.
- 1997 A Re-Examination of Natchez Sociopolitical Complexity: A View from the Grand Village and Beyond. *Southeastern Archaeology* 16(2):97-112.
- Low, Setha M.
- 1993 Cultural Meaning of the Plaza: The History of the Spanish-American Gridplan-Plaza Urban Design. In *The Cultural Meaning of Urban Space*, edited by Robert Rotenberg and Gary McDonogh, pp. 75-93. Greenwood Publishing Group, Westport, CT.
-
- 1995 Indigenous Architecture and the Spanish American Plaza in Mesoamerica and the Caribbean. *American Anthropologist* 97(4):748-762.
-
- 2000 *On the Plaza: The Politics of Public Space and Culture*. University of Texas Press, Austin.
- Lyon, Eugene
- 1976 *The Enterprise of Florida: Pedro Menéndez De Avilés and the Spanish Conquest of 1565-1568*. University Presses of Florida, Gainesville.
-
- 1984 *Santa Elena: A Brief History of the Colony, 1566-1587*. Research Manuscript Series 193. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
-
- 1987 The Revolt of 1576 at Santa Elena: A Failure of Indian Policy. Paper presented at the American Historical Association, Washington DC.

-
- 1992 The Failure of the Guale and Orista Mission: 1572-1575. In *Columbus and the Land of Ayllón: The Exploration and Settlement of the Southeast*, edited by Jeannine Cook, pp. 89-104. Lower Altamaha Historical Society, Darien.
- Lyons, Claire L. and John K. Papadopoulos
2002 Archaeology and Colonialism. In *The Archaeology of Colonialism*, edited by Claire L. Lyons and John K. Papadopoulos, pp. 1-26. Getty Research Institute, Los Angeles.
- Macdonald, William K.
1990 Investigating Style: An Exploratory Analysis of Some Plains Burials. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 52-60. Cambridge University Press, Cambridge.
- MacEachern, Scott
1998 Scale, Style, and Cultural Variation: Technological Traditions in the Northern Mandara Mountains. In *The Archaeology of Social Boundaries*, edited by Miriam T. Stark, pp. 107-131. Smithsonian Institution Press, Washington DC.
- Magnaghi, Russell M.
1997 Sassafras and Its Role in Early America, 1562 - 1662. *Terrae Incognitae* 29(1):10-21.
- Mahar, Ginessa J.
2010 Theorizing Formation and Function through Shallow Geophysics: An Integrated Approach to the Remote Sensing of Two Late Archaic Shell Rings, St. Catherines Island, GA. MA Thesis, Department of Anthropology, Hunter College, The City University of New York, New York.
-
- 2013 Archaeological Geophysics on St. Catherines Island: Beyond Prospection. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 75-94. Anthropological Papers of the American Museum of Natural History, New York.
- Malkin, Irad
2002 A Colonial Middle Ground: Greek, Etruscan, and Local Elites in the Bay of Naples In *The Archaeology of Colonialism*, edited by Claire L. Lyons and John K. Papadopoulos, pp. 151-181. Getty Research Institute, Los Angeles.
- Mallios, Seth
2006 *The Deadly Politics of Giving: Exchange and Violence at Ajacan, Roanoke, and Jamestown*. University Alabama Press, Tuscaloosa.
-
- 2007 The Apotheosis of Ajacan's Jesuit Missionaries. *Ethnohistory* 54(2):223-244.
- Mann, Barbara Alice and Donald A. Grinde

- 2001 "Now the Friar Is Dead": Sixteenth-Century Spanish Florida and the Guale Revolt. In *Native American Speakers of the Eastern Woodlands: Selected Speeches and Critical Analyses*, edited by Barbara Alice Mann, pp. 1-33. Greenwood Publishing Group, Westport.
- Marcoux, Jon Bernard
- 2008 Cherokee Households and Communities in the English Contact Period, A.D. 1670-1740. PhD Dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.
-
- 2010 *Pox, Empire, Shackles, and Hides: The Townsend Site, 1670-1715*. University Alabama Press, Tuscaloosa.
-
- 2012a Glass Trade Beads. In *The Cherokees of Tuckaleechee Cove*, edited by Jon Bernard Marcoux, pp. 157-178. Museum of Anthropology, University of Michigan, Ann Arbor.
-
- 2012b Glass Trade Beads from the English Colonial Period in the Southeast, Ca. A.D. 1607-1783. *Southeastern Archaeology* 31:157-184.
- Marotti, Frank
- 1984 Juan Baptista De Segura and the Failure of the Florida Jesuit Mission (1566-1572). PhD Dissertation, Department of History, University of Miami, Miami.
-
- 1985 Juan Baptista De Segura and the Failure of the Florida Jesuit Mission, 1566-1572. *The Florida Historical Quarterly* 63(3):267-279.
- Marrinan, Rochelle A.
- 1993 Archaeological Investigations at Mission Patale, 1984-1992. In *The Spanish Missions of La Florida*, edited by Bonnie G. McEwan, pp. 244-294. University Press of Florida, Gainesville.
- Martin, Shawn, W. Michael Brown, Richard Klavans and Kevin W. Boyack
- 2011 OpenOrd: An Open-Source Toolbox for Large Graph Layout. *Proceedings of the IS&T/SPIE Electronic Imaging Conference*.
- Martinez, Carlos A.
- 1975 Culture Sequence on the Central Georgia Coast, 1000 B.C. - 1650 A.D. MA Thesis, Department of Anthropology, University of Florida, Gainesville.
- Martinón-Torres, Marcos
- 2002 Chaîne Opératoire: The Concept and Its Applications within the Study of Technology. *Gallaecia* 21:29-43.
- Mass, Jennifer L., Richard E. Stone and Mark T. Wypyski

- 1996 An Investigation of the Antimony-Containing Minerals Used by the Romans to Prepare Opaque Colored Glasses. *Materials Reserach Society Symposium Proceedings* 462:193-204.
- Mathews, Maurice
- 1911 Mr. Mathews's 'Relación' of St. Katherina [1670]. In *Narratives of Early Carolina, 1650-1708*, edited by Alexander S. Salley, pp. 114-116. Charles Scribner's Sons, New York.
- Matter, Robert Allen
- 1972 The Spanish Missions of Florida: The Friars Versus the Governors in the "Golden Age", 1606-1690. PhD Dissertation, Department of History, University of Washington, Seattle.
- Mauss, Marcel
- 1935 [1973] Techniques of the Body. *Economy and Society* 2(1):70-88.
- May, J. Alan
- 1983 Fallen Tree Site Revisited: Preliminary Results of Test Excavations at 9Li8, St. Catherines Island, Georgia. Paper presented at the Southeastern Archaeological Conference, Columbia, SC.
-
- 1985 Ground Penetrating Radar at Fallen Tree. Paper presented at the Southeastern Archaeological Conference, Birmingham, Alabama.
-
- 2008 The Archaeology of Fallen Tree (9Li8). In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 727-777. Anthropological Papers of the American Museum of Natural History, New York.
- McCafferty, Geoffrey G.
- 2000 The Cholula Massacre: Factional Histories and Archaeology of the Spanish Conquest. *The Entangled Past: Integrating History and Archaeology. Proceedings of the 30th Annual Chacmool Conference*:347-359. Calgary, Alberta, CA.
- McClintock, Anne
- 1995 *Imperial Leather: Race, Gender, and Sexuality in the Colonial Contest*. Routledge, New York.
- McCray, W. Patrick
- 1996 The Culture and Technology of Glass in Renaissance Venice. PhD Dissertation, Department of Materials Science and Engineering, The University of Arizona, Tucson.
-
- 1997 An Integrative Review and Examination of Glass Furnace Technology in Renaissance Italy. In *The Prehistory and History of Ceramic Kilns*, edited by Prudence M. Rice and W. David Kingery, pp. 219-243. American Ceramic Society, Columbus.
-

- 1999a Creating Networks of Skill: Technology Transfer and the Glass Industry in Venice. *Journal of European Economic History* 28(2):301-334.
-
- 1999b *Glassmaking in Renaissance Venice: The Fragile Craft*. Ashgate, Aldershot.
- McEwan, Bonnie G.
- 1991 San Luis De Talimali: The Archaeology of Spanish-Indian Relations at a Florida Mission. *Historical Archaeology* 25(3):36-60.
-
- 1992 *Archaeology of the Apalachee Village at San Luis De Talimali*. Florida Bureau of Archaeological Research, Tallahassee.
-
- 2001 The Spiritual Conquest of La Florida. *American Anthropologist* 103(3):633-644.
-
- 2014 Colonialism on the Spanish Florida Frontier: Mission San Luis, 1656-1704. *Florida Historical Quarterly* 92(3):591-625.
- McEwan, Bonnie G. and Clark Spencer Larsen
- 1996 *Archaeological and Biocultural Investigations in the Church Complex at Mission San Luis. Final Report to the National Endowment for the Humanities*. RK-20111-94. Tallahassee: Florida Bureau of Archaeological Research.
- McKivergan, David A.
- 1991 Migration and Settlement among the Yamasee in South Carolina. MA thesis, Department of Anthropology, University of South Carolina, Columbia.
- McMurray, Judith Angley
- 1973 The Definition of the Ceramic Complex at San Juan Del Puerto. MA Thesis, Department of Anthropology, University of Florida, Gainesville.
- Melcher, Jennifer Ann
- 2011 More Than Just Copies: Colono Ware as a Reflection of Multi-Ethnic Interaction on the 18th-Century Spanish Frontier of West Florida. MA Thesis, Department of Anthropology, University of West Florida, Pensacola.
- Merritt, James Donald
- 1977 Excavations of a Coastal Eastern Timucuan Village in Northeast Florida. MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
-
- 1983 Beyond the Town Walls: The Indian Element in Colonial St. Augustine. In *Spanish St. Augustine: The Archaeology of a Colonial Creole Community*, edited by Kathleen Deagan, pp. 125-147. Academic Press, New York.
- Meskill, Lynn
- 2001 Archaeologies of Identity. In *Archaeological Theory Today*, edited by Ian Hodder, pp. 187-213. Blackwell, Malden, MA.

-
- 2002 The Intersections of Identity and Politics in Archaeology. *Annual Review of Anthropology* 31(1):279-301.
- Meyer, Brian K.
- 2013 Shoreline Dynamics and Environmental Change under the Modern Marine Transgression: St. Catherines Island, Georgia. PhD Dissertation, Department of Geology, Georgia State University, Atlanta.
- Meyer, Brian K., Elliot Blair, Gale A. Bishop, David Hurst Thomas, R. Kelly Vance and Daniel M. Deocampo
- 2013 Landform Dynamics Associated with Mission Santa Catalina De Guale: St. Catherines Island, Georgia. *National Meeting of Geological Society of America, Abstracts with Programs* 45.7:407.
- Michelaki, K. and R. G. V. Hancock
- 2011 Chemistry Versus Data Dispersion: Is There a Better Way to Assess and Interpret Archaeometric Data? *Archaeometry* 53(6):1259-1279.
- Milanich, Jerald T.
- 1978 The Western Timucua: Patterns of Acculturation and Change. In *Tacachale: Essays on the Indians of Florida and Southeastern Georgia During the Historic Period*, edited by Jerald T. Milanich and Samuel Proctor, pp. 59-88. The University Presses of Florida, Gainesville.
-
- 1990 The European Entrada into La Florida: An Overview. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 3-29. Smithsonian Institution Press, Washington DC.
-
- 1996 *The Timucua*. Blackwell Publishers, Malden.
-
- 2000 The Timucua Indians of Northern Florida and Southern Georgia. In *Indians of the Greater Southeast*, edited by Bonnie G. McEwan, pp. 1-25. University Press of Florida, Gainesville.
-
- 2004 Timucua. In *Handbook of North American Indians Volume 14: Southeast*, edited by Raymond D. Fogelson, pp. 219-228, William C. Sturtevant, general editor. Smithsonian Institution Press, Washington DC.
-
- 2006 *Laboring in the Fields of the Lord: Spanish Missions and Southeastern Indians*. Smithsonian Institution Press, Washington, DC.
- Milanich, Jerald T. and Rebecca Saunders

- 1986 *The Spanish Castillo and the Franciscan Doctrina of Santa Catalina, at Santa Maria, Amelia Island, Florida (8-Na-41)*. Dept. of Anthropology, Florida State Museum, University of Florida.
- Mills, Barbara J., Jeffery J. Clark, Matthew A. Peeples, W. R. Haas, John M. Roberts, J. Brett Hill, Deborah L. Huntley, Lewis Borck, Ronald L. Breiger, Aaron Clauset and M. Steven Shackley
2013 Transformation of Social Networks in the Late Pre-Hispanic US Southwest. *Proceedings of the National Academy of Sciences* 110(15):5785-5790.
- Mills, Barbara J., Matthew A. Peeples, Jeffery J. Clark, William R. Haas Jr., Lewis Borck and John M. Roberts Jr.
2015 Multiscalar Perspectives on Social Networks in the Prehispanic Southwest. *American Antiquity* 80(1):3-24.
- Mills, Barbara J., John M. Roberts, Jr., Jeffery C. Clark, William R. Haas Jr., Deborah Huntley, Matthew A. Peeples, Lewis Borck, Susan C. Ryan, Meaghan Trowbridge and Ronald L. Breiger
2013 Late Prehispanic Social Dynamics in the Southwest U.S., A.D. 1200–1500. In *Regional Network Analysis in Archaeology*, edited by Carl Knappett, pp. 181-202. Oxford University Press, Oxford.
- Milsom, John
2003 *Field Geophysics*. Wiley, Chichester.
- Minar, C. Jill
1999 Impression Analysis of Cord-Marked Pottery, Learning Theory, and the Origins of the Alachua. PhD Dissertation, Department of Anthropology, University of California, Riverside.
- 2001 Motor Skills and the Learning Process: The Conservation of Cordage Final Twist Direction in Communities of Practice. *Journal of Anthropological Research* 57(4):381-405.
- Minar, C. Jill and Patricia L. Crown
2001 Learning and Craft Production: An Introduction. *Journal of Anthropological Research* 57(4):369-380.
- Mitchem, Jeffrey M.
1993 Beads and Pendants from San Luis De Talimali: Inferences from Varying Contexts. In *The Spanish Missions of La Florida*, edited by Bonnie G. McEwan, pp. 399-417. University Press of Florida, Gainesville.
- Moore, Christopher R. and Richard W. Jefferies
2012 The Social Implications of Altamaha Ceramic Attributes. Paper presented at the 77th Annual Meeting of the Society for American Archaeology, Memphis, TN.
- 2014 Who Were the Guale?: Reevaluating Interaction in the Mission Town of San Joseph De Sapala. In *Indigenous Landscapes and Spanish Missions: New Perspectives from*

- Archaeology and Ethnohistory*, edited by Lee M. Panich and Tsim D. Schneider, pp. 79-92. University of Arizona Press, Tucson.
- Moore, Clarence Bloomfield
1897 *Certain Aboriginal Mounds of the Georgia Coast*. P.C. Stockhausen, Philadelphia.
- Moreau, J. -F., R. G. V. Hancock, S Aufreiter and I Kenyon
2002 Late French (1700-1750) to Early English (1750-1800) Regime White Glass Trade Beads from a Presumed Decorated Bag Found at the Ashuapmushuan Site (Eastern Central Québec), Canada. In *Archaeometry 98, Proceedings of the 31st Archaeometry Symposium, Budapest*, edited by E. Jerem and T.K. Biro, pp. 613-620. vol. 1043 (II). BAR International Series, Oxford.
- Moreau, J. F., B. Gratuze, R. G. V. Hancock and M. Blet Lemarquand
2011 The Dating of a Sixteenth Century Settlement in the Vicinity of Quebec City (Canada) by Means of Elemental Analysis of Glass Beads through Thermal and Fast Neutron Activation Analyses. In *37th International Symposium on Archaeometry, May 13-16, 2008, Siena, Italy*, edited by Isabella Turbanti-Memmi, pp. 501-508. Springer, Berlin.
- Moreau, J., R. G. V. Hancock and M. Moussette
2006 Toward a Chrono-Seriation Method Based on European Trade White Beads in Northeastern North America. *Proceedings of the 34th International Symposium on Archaeometry*:85-90.
- Moretti, Cesare and Sandro Hreglich
2005 Opaque Glass Manufacturing Techniques Used by Venetian Glassmakers between the 15th and 20th Centuries. *Rivista della Stazione Sperimentale del Vetro* 35(5):28-32.
- 2013 Raw Materials, Recipes and Procedures Used for Glass Making. In *Modern Methods for Analysing Archaeological and Historical Glass*, edited by Koen Janssens, pp. 23-47. John Wiley & Sons Ltd, Chichester.
- Moretti, Cesare, Carlo Stefano Salerno and Sabina Tommasi Ferroni
2004 *Ricette Vetrarie Muranesi: Gasparo Brunoro E Il Manoscritto Di Danzica*. Istituto Centrale per il Restauro/Nardini Editore, Roma.
- Moretti, Cesare and Tullio Toninato
2001 *Ricettario Vetrario Del Rinascimento: Trascrizione Da Un Manoscritto Anonimo Veneziano*. Marsilio Editori, Venezia.
- Mountgomery, Sir Robert and John Barnwell
1720 *A Description of the Golden Islands, with an Account of the Undertaking Now on Foot for Making a Settlement There*. Printed and sold by J. Morphew, London.
- Mullins, Paul R. and Robert Paynter
2000 Representing Colonizers: An Archaeology of Creolization, Ethnogenesis, and Indigenous Material Culture among the Haida. *Historical Archaeology* 34(3):73-84.

- Mundigo, Axel I. and Dora P. Crouch
1977 The City Planning Ordinances of the Laws of the Indies Revisited. Part I: Their Philosophy and Implications. *The Town Planning Review* 48(3):247-268.
- Murphree, Daniel S.
2001 Racialization and the Middle Ground: Europeans and Indians in the Colonial Floridas, 1513-1783. PhD Dissertation, Department of History, Florida State University, Tallahassee.
- Murray, Tim
2004 The Archaeology of Contact in Settler Societies. In *The Archaeology of Contact in Settler Societies*, edited by Tim Murray, pp. 1-16. Cambridge University Press, Cambridge.
- Nakai, Izumi and Yoko Shindo
2013 Glass Trade between the Middle East and Asia. In *Modern Methods for Analysing Archaeological and Historical Glass*, edited by Koen Janssens, pp. 445-457. John Wiley & Sons Ltd, Chichester.
- Nakai, Izumi, Kriengkamol Tantrakarn, Yoshinari Abe and Sachihiko Omura
2013 Study on Western Asiatic Cast Ribbed Rectangular Beads from Kaman-Kalehöyük, Turkey by Using Portable X-Ray Fluorescence. *Open Journal of Archaeometry* 1(23):109-114.
- Napolitano, Matthew F.
2012 The Role of Back-Barrier Islands in the Native American Economies of St. Catherines Island, Georgia. MA Thesis, Department of Anthropology, University of West Florida, Pensacola.
- 2013 The Role of Small Islands in Foraging Economies of St. Catherines Island. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 191-210. Anthropological Papers of the American Museum of Natural History, New York.
- 2014 Exploring the Mississippian Connections through Mortuary Objects on St. Catherines Island, Georgia. Paper presented at the Southeastern Archaeological Conference, Greenville, South Carolina.
- Napolitano, Matthew and Anna Semon
2008 Putting the Pieces Together: Synthesizing and Reconstructing the Pueblo Landscape at St. Catherines Island, Georgia. Paper presented at the Society for American Archaeology, Vancouver, British Columbia.
- Nazaroff, Adam J. and M. Steven Shackley

- 2009 Testing and the Size Dimension Limitation of Portable XRF Instrumentation for Obsidian Provenance. Paper presented at the Geological Society of America, Portland, OR.
- Neff, Hector
 1998 Units in Chemistry-Based Ceramic Provenance Investigations. In *Unit Issues in Archaeology: Measuring Time, Space, and Material*, edited by Ann F. Ramenofsky and Anastasia Steffen, pp. 115-127. University of Utah Press, Salt Lake City.
- Neri, Antonio
 1612 *L'arte Vetraria Distinta in Libri Sette*. Nella Stamperia de' Giunti, Florence.
- 1662 [1612] *The Art of Glass, Wherein Are Shown the Wayes to Make and Colour Glass, Pastes, Enamels, Lakes, and Other Curiosities. Written in Italian by Antonio Neri, and Translated into English, with Some Observations on the Author*. Translated by Christopher Merret. Octavian Pulleyn, London.
- 2003 [1612] *L'arte Vetraria, the Art of Glass, Vol. I Translated & Annotated by Paul Engle*. Heiden & Engle, Hubbardston, MA.
- 2004 [1612] *L'arte Vetraria, the Art of Glass, Vol. Ii Translated & Annotated by Paul Engle*. Heiden & Engle, Hubbardston, MA.
- 2007 [1612] *L'arte Vetraria, the Art of Glass, Vol. Iii Translated & Annotated by Paul Engle*. Heiden & Engle, Hubbardston, MA.
- Nettles, Wendy M.
 1996 A New Mission Model? A Study of Long Term Research at Six Franciscan Missions in La Florida. MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Newman, M. E. J.
 2004 Analysis of Weighted Networks. *Physical Review E* 70(5):056131.
- 2006 Modularity and Community Structure in Networks. *Proceedings of the National Academy of Sciences* 103(23):8577-8582.
- Newton, Dolores
 1974 The Timbira Hammock as a Cultural Indicator of Social Boundaries. In *The Human Mirror: Material and Spatial Images of Man*, edited by Miles Richardson, pp. 231-251. Louisiana State University Press, Baton Rouge.
- Noack, Andreas
 2009 Modularity Clustering Is Force-Directed Layout. *Physical Review E* 79(2):026102.
- Noël Hume, Ivor

- 2001 *A Guide to Artifacts of Colonial America*. University of Pennsylvania Press, Philadelphia.
- O'Brien, Deborah Mayer and David Hurst Thomas
 2008 The Molluscan Incremental Sequence. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 474-497. Anthropological Papers of the American Museum of Natural History, New York.
- O'Brien, Edward Joseph
 1942 The Jesuits in Spanish Florida, or an Inquiry into the Circumstances Leading to the Abandonment of This Mission. MA Thesis, Department of History, Loyola University, Chicago.
- Oatis, Steven J.
 2004 *A Colonial Complex: South Carolina's Frontiers in the Era of the Yamasee War, 1680-1730*. University of Nebraska Press, Lincoln.
- Oré, Luís Geronimo de
 1936 *The Martyrs of Florida (1513-1616)*. Translated by Maynard J. Geiger. Franciscan Studies 18. Joseph F. Wagner, New York.
- Ortner, Sherry B.
 1984 Theory in Anthropology since the Sixties. *Comparative Studies in Society and History* 26(1):126-166.
- 2006 Updating Practice Theory. In *Anthropology and Social Theory: Culture, Power, and the Acting Subject*, pp. 1-18. Duke University Press, Durham.
- Orton, Clive, Paul Tyers and Alan Vince
 1993 *Pottery in Archaeology*. Cambridge University Press, Cambridge.
- Oswin, John
 2009 *A Field Guide to Geophysics in Archaeology*. Springer, Chichester.
- Otto, John Solomon and Russell Lamar Lewis, Jr.
 1974 A Formal and Functional Analysis of San Marcos Pottery from Site SA 16-23, St. Augustine, Florida. *Bureau of Historic Sites and Properties Bulletin, Tallahassee, Florida*:95-117.
- Owre, J. Riis
 1964 Alonso De Escobedo and "La Florida". *Hispania* 47(2):242-250.
- Paar, Karen L.
 1999 "To Settle Is to Conquer": Spaniards, Native Americans, and the Colonization of Santa Elena in Sixteenth-Century Florida. PhD Dissertation, Department of History, University of North Carolina, Chapel Hill.
- Pailes, Matthew C
 2014 Social Network Analysis of Early Classic Hohokam Corporate Group Inequality. *American Antiquity* 79(3):465-486.

- Panich, Lee M
 2013 Archaeologies of Persistence: Reconsidering the Legacies of Colonialism in Native North America. *American Antiquity* 78(1):105-122.
- Parkinson, William A.
 2006 Tribal Boundaries: Stylistic Variability and Social Boundary Maintenance During the Transition to the Copper Age on the Great Hungarian Plain. *Journal of Anthropological Archaeology* 25(1):33-58.
- Pauketat, Timothy R.
 2001 Practice and History in Archaeology: An Emerging Paradigm. *Anthropological Theory* 1(1):73-98.
- Pearsall, Sarah M. S.
 2013 "Having Many Wives" in Two American Rebellions: The Politics of Households and the Radically Conservative. *The American Historical Review* 118(4):1001-1028.
- Pearson, Charles E.
 1976 Analysis of Late Prehistoric Settlement on Ossabaw Island, Georgia. MA Thesis, Department of Anthropology, University of Georgia, Athens.
 —
 1977 *Analysis of Late Prehistoric Settlement on Ossabaw Island, Georgia*. Laboratory of Archaeology Series Report No. 12, University of Georgia, Athens.
 —
 1979 Patterns of Mississippian Period Adaptation in Coastal Georgia. PhD Dissertation, Department of Anthropology, University of Georgia, Athens.
 —
 1980a Late Prehistoric Settlement Systems on Ossabaw Island, Georgia In *Excursions in Southeastern Geology, the Archaeology-Geology of the Georgia Coast*, edited by James D. Howard, Chester B. DePratter and Robert W. Frey, pp. 179-191. The Geological Society of America, Guidebook 20, Georgia Department of Natural Resources, Atlanta.
 —
 1980b Rank-Size Distributions and the Analysis of Prehistoric Settlement Systems. *Journal of Anthropological Research* 36(4):453-462.
 —
 1984 Red Bird Creek: Late Prehistoric Material Culture and Subsistence in Coastal Georgia. *Early Georgia* 12(1-2):1-39.
 —
 2012 Clarence Bloomfield Moore's Unpublished Excavations on Sapelo Island, Georgia; 1898. *Early Georgia* 40(2):171-188.
- Pearson, Charles E. and Fred C. Cook
 2003 Clarence Bloomfield Moore's Unpublished Excavations on St. Simons Island, Georgia: 1898. *Early Georgia* 31(1):25-39.

-
- 2010 Excavations at the "Bead Maker's Midden," Ossabaw Island, Georgia: An Examination of Mississippian Period Craft Production on the Georgia Coast. *The South Georgia Archaeological Research Team Special Publication* 3:1-181.
- Pearson, Fred Lamar
- 1975 The Arguelles Inspection of Guale: December 21, 1677 - January 10, 1678. *The Georgia Historical Quarterly* 59:210-222.
- Peck, Douglas T.
- 2001 Lucas Vásquez De Ayllón's Doomed Colony of San Miguel De Gualdape. *The Georgia Historical Quarterly* 85(2):183-198.
- Peelo, Sarah
- 2011 Pottery-Making in Spanish California: Creating Multi-Scalar Social Identity through Daily Practice. *American Antiquity* 76(4):642-666.
- Peeples, Matthew A.
- 2011 R Script for Calculating the Brainerd-Robinson Coefficient of Similarity and Assessing Sampling Error. Electronic document, <http://www.mattpeeples.net/br.html>, accessed February 8, 2015.
- Peeples, Matthew A. and W. Randall Haas, Jr.
- 2013 Brokerage and Social Capital in the Prehispanic US Southwest. *American Anthropologist* 115(2):232-247.
- Peeples, Matthew A. and John M. Roberts, Jr.
- 2013 To Binarize or Not to Binarize: Relational Data and the Construction of Archaeological Networks. *Journal of Archaeological Science* 40(7):3001-3010.
- Peeples, Matthew A. and Gregson Schachner
- 2012 Refining Correspondence Analysis-Based Ceramic Seriation of Regional Data Sets. *Journal of Archaeological Science* 39(8):2818-2827.
- Pendleton, Lorann S. A., Elliot H. Blair and Eric Powell
- 2009 The Bead Assemblage from St. Catherines Island. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 35-50. Anthropological Papers of the American Museum of Natural History, New York.
- Pfaffenberger, Bryan
- 1998 Mining Communities, Chaînes Operatoires and Sociotechnical Systems. In *Social Approaches to an Industrial Past: The Archaeology and Anthropology of Mining*, edited by A. Bernard Knapp, Vincent C. Pigott and Eugenia W. Herbert, pp. 291-300. Routledge, New York.
- Piatek, Bruce J.
- 1985 Non-Local Aboriginal Ceramics from Early Historic Contexts in St. Augustine. *Florida Anthropologist* 38(1-2):81-89.
- Pike, Ruth

- 1966 *Enterprise and Adventure: The Genoese in Seville and the Opening of the New World*. Cornell University Press, Ithaca.
- Plog, Stephen
 1978 Social Interaction and Stylistic Similarity: A Reanalysis. *Advances in Archaeological Method and Theory* 1:143-182.
- 1980 *Stylistic Variation in Prehistoric Ceramics: Design Analysis in the American Southwest*. Cambridge University Press, Cambridge.
- 1990 Sociopolitical Implications of Stylistic Variation in the American Southwest. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 61-72. Cambridge University Press, Cambridge.
- 1995 Approaches to Style: Complements and Contrasts. In *Style, Society, and Person: Archaeological and Ethnological Perspectives*, edited by Christopher Carr and Jill E. Neitzel, pp. 369-387. Plenum Press, New York.
- Pluckhahn, Thomas J. and David A. McKivergan
 2002 A Critical Appraisal of Middle Mississippian Settlement and Social Organization on the Georgia Coast. *Southeastern Archaeology* 21(2):149-161.
- Polikreti, Kyriaki, Joanne M. A. Murphy, Vasilike Kantarelou and Andreas Germanos Karydas
 2011 XRF Analysis of Glass Beads from the Mycenaean Palace of Nestor at Pylos, Peloponnesus, Greece: New Insight into the Lba Glass Trade. *Journal of Archaeological Science* 38(11):2889-2896.
- Quimby, George I. and Alexander Spoehr
 1951 Acculturation and Material Culture. *Fieldiana: Anthropology* 36(6):107-147.
- Quitmyer, Irvy R.
 1985 Aboriginal Subsistence Activities in the Kings Bay Locality. In *Aboriginal Subsistence and Settlement Archaeology of the Kings Bay Locality*, edited by William Hampton Adams, pp. 73-91. vol. 2. University of Florida, Department of Anthropology, Gainesville.
- Rahman, S., M. Hamzah, A. Wood, M. Elias and K. Zakaria
 2008 INAA of Ancient Glass Beads from Sungai Mas Archaeological Site, Bujang Valley, Malaysia. *Journal of Radioanalytical and Nuclear Chemistry* 278(2):271-276.
- Redfield, Robert, Ralph Linton and Melville J. Herskovits
 1935 A Memorandum for the Study of Acculturation. *Man* 35:145-148.
- 1936 Memorandum for the Study of Acculturation. *American Anthropologist* 38(1):149-152.
- Reitz, Elizabeth J.

- 2008 Nonhuman Vertebrate Remains. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 615-665. Anthropological Papers of the American Museum of Natural History, New York.
- Reitz, Elizabeth J. and Joel Dukes
 2008 Change and Stability in Vertebrate Use between the Irene Period and the Mission Period: Nonhuman Vertebrate Remains from Meeting House Field and Fallen Tree. In *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*, edited by David Hurst Thomas, pp. 778-798. Anthropological Papers of the American Museum of Natural History, New York.
- Reitz, Elizabeth J., Barnet Pavao-Zuckerman, Daniel C. Weinand and Gwyneth A. Duncan
 2010 *Mission and Pueblo of Santa Catalina De Guale, St. Catherines Island, Georgia: A Comparative Zooarchaeological Analysis*. Anthropological Papers of the American Museum of Natural History, New York.
- Restall, Matthew
 2004 Maya Ethnogenesis. *Journal of Latin American Anthropology* 9(1):64-89.
- Richter, Daniel K.
 1985 Iroquois Versus Iroquois: Jesuit Missions and Christianity in Village Politics, 1642-1686. *Ethnohistory* 32(1):1-16.
- Robertshaw, Peter, Marilee Wood, Erik Melchiorre, Rachel S. Popelka-Filcoff and Michael D. Glascock
 2010 Southern African Glass Beads: Chemistry, Glass Sources and Patterns of Trade. *Journal of Archaeological Science* 37(8):1898-1912.
- Robertshaw, Peter, Marilee Wood, Anne Haour, Karlis Karklins and Hector Neff
 2014 Chemical Analysis, Chronology, and Context of a European Glass Bead Assemblage from Garumele, Niger. *Journal of Archaeological Science* 41:591-604.
- Robinson, W. S.
 1951 A Method for Chronologically Ordering Archaeological Deposits. *American Antiquity* 16(4):293-301.
- Rock, Carolyn
 2006 *Archaeological Investigations at the Dungeness Wharf Site and the Fort Andrews Site, Cumberland Island National Seashore, Camden County, Georgia*. The National Park Service, Cumberland Island National Seashore.
- 2010 The San Pedro Mission Village on Cumberland Island, Georgia. *Journal of Global Initiatives* 5(1):87-98.
- Roddick, Andrew P.
 2009 Communities of Pottery Production and Consumption on the Taraco Peninsula, Bolivia. PhD Dissertation, Department of Anthropology, University of California, Berkeley.

-
- 2015 Geologies in Motion: Itineraries of Stone, Clay, and Pots in the Lake Titicaca Basin. In *Things in Motion: Object Itineraries in Archaeological Practice*, edited by Rosemary A. Joyce and Susan Gillespie, pp. 123-145. School for Advanced Research Press, Santa Fe.
- Rolland, Vicki and Keith H. Ashley
- 2000 Beneath the Bell: A Study of Mission Period Colonoware from Three Spanish Missions in Northeastern Florida. *The Florida Anthropologist* 53(1):36-61.
- Rooksby, H. P.
- 1962 Opacifiers in Opal Glasses. *Journal of science and technology* 29(1):20-26.
- Ross, Mary
- 1923 French Intrusions and Indian Uprisings in Georgia and South Carolina (1577-1580). *The Georgia Historical Quarterly* 7(3):251-281.
-
- 1924 The French on the Savannah 1605. *The Georgia Historical Quarterly* 8(3):167-194.
-
- 1925 The Spanish Settlement of Santa Elena (Port Royal) in 1578. *The Georgia Historical Quarterly* 9(4):352-379.
- Roux, Valentine
- 1990 The Psychological Analysis of Technical Activities: A Contribution to the Study of Craft Specialisation. *Archaeological review from Cambridge* 9(1):142-153.
- Rumrill, Donald A.
- 1991 The Mohawk Glass Trade Bead Chronology: Ca. 1560-1785. *Beads: Journal of the Society of Bead Researchers* 3:5-45.
- Russell, Matthew A.
- 2011a Encounters at Tamal-Huye: An Archaeology of Intercultural Engagement in Sixteenth-Century Northern California. PhD Dissertation, Department of Anthropology, University of California, Berkeley.
-
- 2011b Precolonial Encounters at Tamál-Húye: An Event-Oriented Archaeology in Sixteenth-Century Northern California. In *The Archaeology of Capitalism in Colonial Contexts*, edited by Sarah K. Croucher and Lindsay Weiss, pp. 39-63. Springer New York.
- Russo, Michael
- 1991 A Method for the Measurement of Season and Duration of Oyster Collection: Two Case Studies from the Prehistoric South-East U.S. Coast. *Journal of Archaeological Science* 18(2):205-221.
- Rust, Tina M.

- 1992 Franciscan Religious Architecture in Apalachee Province: An Example from Patale (8Le152). MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Ryan, E. Dean, Tim Blakeslee and David M. Furst
 1986 Mental Practice and Motor Skill Learning: An Indirect Test of the Neuromuscular Feedback Hypothesis. *International Journal of Sport Psychology* 17(1):60-70.
- Rye, Owen S.
 1981 *Pottery Technology: Principles and Reconstruction*. Taraxacum, Washington DC.
- Sackett, James R.
 1977 The Meaning of Style in Archaeology: A General Model. *American Antiquity* 42(3):369-380.
- 1982 Approaches to Style in Lithic Archaeology. *Journal of Anthropological Archaeology* 1:59-112.
- 1985 Style and Ethnicity in the Kalahari: A Reply to Wiessner. *American Antiquity* 50(1):154-159.
- 1990 Style and Ethnicity in Archaeology: The Case for Isochrestism. In *The Uses of Style in Archaeology*, edited by Margaret W. Conkey and Christine A. Hastorf, pp. 32-43. Cambridge University Press Cambridge.
- Sahlins, Marshall
 1981 *Historical Metaphors and Mythical Realities: Structure in the Early History of the Sandwich Islands Kingdom*. University of Michigan Press, Ann Arbor.
- Sandford, Robert
 1911 A Relation of a Voyage on the Coast of the Province of Carolina, 1666. In *Narratives of Early Carolina, 1650-1708*, edited by Alexander S. Salley, pp. 82-108. Charles Scribner's Sons, New York.
- Sanger, Matthew C.
 2013 Ever-Shifting Landscapes: Tracking Changing Spatial Usage Along Coastal Georgia. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 211-234. Anthropological Papers of the American Museum of Natural History, New York.
- Sassaman, Kenneth E. and Wictoria Rudolphi
 2001 Communities of Practice in the Early Pottery Traditions of the American Southeast. *Journal of Anthropological Research* 57(4):407-425.
- Saunders, Rebecca
 1988 *Excavations at 8NA41: Two Mission Period Sites on Amelia Island, Florida*. Florida State Museum, Tallahassee. Miscellaneous Project Report Series No. 35.

-
- 1990 Ideal and Innovation: Spanish Mission Architecture in the Southeast. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 527-542. Smithsonian Institution Press, Washington DC.
-
- 1992a Continuity and Change in Guale Indian Pottery, Ad 1350-1702. PhD Dissertation, University of Florida, Gainesville, FL.
-
- 1992b Guale Indian Pottery: A Georgia Legacy in Northeast Florida. *The Florida Anthropologist* 45(2):139-147.
-
- 1993 Architecture of the Missions Santa María and Santa Catalina De Amelia. In *The Spanish Missions of Florida*, edited by Bonnie G. McEwan, pp. 35-61. University Press of Florida, Gainesville.
-
- 1996 Mission-Period Settlement Structure: A Test of the Model at San Martin De Timucua. *Historical Archaeology* 30(4):24-35.
-
- 1998 Forced Relocation, Poor Relations, and Culture Contacts in the Missions of La Florida. In *Studies in Culture Contact: Interaction, Culture Change, and Archaeology*, edited by J.G. Cusick, pp. 402-429. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
-
- 2000a The Guale Indians of the Lower Atlantic Coast: Change and Continuity. In *Indians of the Greater Southeast During the Historic Period*, edited by Bonnie G. McEwan, pp. 26-56. University Press of Florida, Gainesville.
-
- 2000b *Stability and Change in Guale Indian Pottery, A.D. 1300-1702*. University of Alabama Press, Tuscaloosa.
-
- 2001 Negotiated Tradition? Native American Pottery in the Mission Period in La Florida. In *The Archaeology of Traditions: Agency and History before and after Columbus*, edited by Timothy R. Pauketat and Jerald T. Milanich, pp. 77-93. University Press of Florida, Gainesville.
-
- 2002 Seasonality, Sedentism, Subsistence, and Disease in the Protohistoric: Archaeological Vs. Ethnohistoric Data Along the Lower Atlantic Coast. In *Between*

Contacts and Colonies: Archaeological Perspectives on the Protohistoric Southeast, edited by C.B. Wesson and M.A. Rees, pp. 32-48. University of Alabama Press, Tuscaloosa.

—
2004 An Enduring Contribution: Following Larson's Lead on Pottery Change in the Mission Period. *Southeastern Archaeology* 23(2):178-191.

—
2009 Stability and Ubiquity: Irene, Altamaha, and San Marcos Pottery in Time and Space. In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by David Hurst Thomas and Kathleen Deagan, pp. 83-111. vol. 90. Anthropological Papers of the American Museum of Natural History, New York.

—
2012 Deep Surfaces: Pottery Decoration and Identity in the Mission Period. *Historical Archaeology* 46(1):94-107.

Saunders, Rebecca and Michael Russo

1988 *Meeting House Fields: Late Irene Phase Material Culture and Seasonality on St. Catherines Island*. Report on file, Nels Nelson Archaeological Laboratory, American Museum of Natural History, New York.

Scarry, John F. and Bonnie G. McEwan

1995 Domestic Architecture in Apalachee Province: Apalachee and Spanish Residential Styles in the Late Prehistoric and Early Historic Period Southeast. *American Antiquity* 60(3):482-495.

Schiavon, N., A. Candeias, T. Ferreira, M. Da Conceicao Lopes, A. Carneiro, T. Calligaro and J. Mirao

2012 A Combined Multi-Analytical Approach for the Study of Roman Glass from South-West Iberia: Synchrotron μ -XRF, External-PIXE/PIGE and BSEM-EDS. *Archaeometry* 54(6):974-996.

Schlanger, Nathan

1990 Techniques as Human Action. Two Perspectives. *Archaeological Review from Cambridge* 9(1):18-26.

—
1994 Mindful Technology: Unleashing the Chain Opérateur for an Archeology of Mind. In *The Ancient Mind: Elements of Cognitive Archaeology*, edited by Colin Renfrew and Ezra B. W. Zubrow, pp. 143-151. Cambridge University Press, Cambridge.

Schlanger, Sarah H.

1992 Recognizing Persistent Places in Anasazi Settlement Systems. In *Space, Time and Archaeological Landscapes*, edited by Jaqueline Rosignol and LuAnn Wandsnider, pp. 91-112. Plenum, New York.

Schmidt, Armin

2013 *Earth Resistance for Archaeologists*. AltaMira Press, Lanham.

Schneider, Kent A.

1969 *Field Notes, St. Catherines Island*. Manuscript on file, St. Catherines Island Archive, American Museum of Natural History, New York, NY.

Schoeninger, Margaret J., Nicholas J. van der Merwe, Katherine Moore, Julia Lee-Thorp and C. S. Larsen

1990 Decrease in Diet Quality between the Prehistoric and the Contact Periods. In *The Archaeology of Mission Santa Catalina De Guale: 2. Biocultural Interpretations of a Population in Transition*, edited by C. S. Larsen, pp. 78-93. Anthropological Papers of the American Museum of Natural History, New York.

Semon, Anna

2011 Ceramic Distributions at Mission Santa Catalina De Guale (9Li13), St. Catherines Island, Georgia, Unpublished manuscript, on file Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.

—

2014 Characterizing Irene Period Ceramics from Mortuary and Village Contexts on St. Catherines Island. Paper presented at the Southeastern Archaeology Conference, Greenville, SC.

Sempowski, Martha L., A. W. Nohe, Jean-François Moreau, Ian Kenyon, Karlis Karklins, Susan Aufreiter and Ronald G. V. Hancock

2000 On the Transition from Tin-Rich to Antimony-Rich European White Soda-Glass Trade Beads for the Senecas of Northeastern North America. *Journal of Radioanalytical and Nuclear Chemistry* 244(3):559-566.

Sempowski, Martha L. and Lorraine P. Saunders

2001 *Dutch Hollow and Factory Hollow: The Advent of Dutch Trade among the Seneca*. Collections Department of the Rochester Museum and Science Center, Rochester.

Sewell, W.H.

2005 *Logics of History: Social Theory and Social Transformation*. University of Chicago Press.

Shackley, M. Steven

2002 Precision Versus Accuracy in the XRF Analysis of Archaeological Obsidian: Some Lessons for Archaeometry and Archaeology. *Archaeometry* 98: *Proceedings of the 31st Symposium, Budapest, April 26–May 3 1998*:805–810.

—

2010a Is There Reliability and Validity in Portable X-Ray Fluorescence Spectrometry (PXRF)? *The SAA Archaeological Record*:17-20, 44.

—

2010b *X-Ray Fluorescence Spectrometry (XRF) in Geoarchaeology*. Springer, New York.

Shanks, Michael and Christopher Tilley

1992 *Re-Constructing Archaeology: Theory and Practice*. Routledge, London.

- Shapiro, Gary
1987 *Archaeology at San Luis: Broad-Scale Testing, 1984-1985*. Florida Archaeology 3. Florida Bureau of Archaeological Research, Tallahassee.
- Shapiro, Gary, Bonnie G. McEwan and Richard Vernon
1992 *Archaeology at San Luis*. Florida Archaeology. Florida Bureau of Archaeological Research, Tallahassee.
- Shapiro, Gary N. and John H. Hann
1990 The Documentary Image of the Council Houses of Spanish Florida Tested by Excavations at the Mission of San Luis De Talimali. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 491-526. Smithsonian Institution Press, Washington DC.
- Shapiro, Gary and J. Mark Williams
1984 *Soil Resistivity Survey at Santa Catalina De Guale*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
- Shepard, Anna O.
1956 *Ceramics for the Archaeologist*. Carnegie Institution of Washington, Washington DC.
- Shott, Michael J.
2003 Chaîne Opératoire and Reduction Sequence. *Lithic Technology* 28(2):95-105.
- Shugar, Aaron N.
2013 Portable X-Ray Fluorescence and Archaeology: Limitations of the Instrument and Suggested Methods to Achieve Desired Results. In *Archaeological Chemistry VIII*, edited by Ruth Ann Armitage and James H. Burton, pp. 173-193. ACS Symposium Series. vol. 1147. American Chemical Society, Washington DC.
- Shugar, Aaron N. and Jennifer L. Mass (editors)
2012 *Studies in Archaeological Science: Handheld XRF for Art and Archaeology*. Leuven University Press, Leuven.
- Shugar, Aaron N. and Aerial O'Connor
2008 The Analysis of 18th Century Glass Beads from Fort Niagara: Insight into Compositional Variation and Manufacturing Techniques. *Northeast Historical Archaeology* 37:58-68.
- Sider, Gerald
1994 Identity as History: Ethnohistory, Ethnogenesis, and Ethnocide in the Southeastern United States. *Identities* 1(1):109-122.
- Siegmund, Frank
1995 Merovingian Beads on the Lower Rhine. *Beads: Journal of the Society of Bead Researchers* 7:37-53.
- Silliman, Stephen W.

- 2001 Agency, Practical Politics and the Archaeology of Culture Contact. *Journal of Social Archaeology* 1(2):190-209.
-
- 2005 Culture Contact or Colonialism? Challenges in the Archaeology of Native North America. *American Antiquity* 70(1):55-74.
-
- 2013 What, Where, and When Is Hybridity. In *The Archaeology of Hybrid Material Culture*, edited by Jeb J. Card, pp. 486-500. Center for Archaeological Investigations, Southern Illinois University, Carbondale.
-
- 2015 A Requiem for Hybridity? The Problem with Frankensteins, Purées, and Mules. *Journal of Social Archaeology* Advance online publication: doi: 10.1177/1469605315574791.
- Sipe, Ryan O.
- 2013a Archaeological Survey and Limited Testing at the Lincoln Trail Site (9bn17), Bryan County, Georgia. MA Thesis, Department of Anthropology, Georgia Southern University, Statesboro.
-
- 2013b Life and Death on the Ogeechee: A View from the Redbird Creek Village. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 317-342. Anthropological Papers of the American Museum of Natural History, New York.
- Skowronek, Russell K.
- 1992 Empire and Ceramics: The Changing Role of Illicit Trade in Spanish America. *Historical Archaeology* 26:109-118.
- Šmit, Žiga, Timotej Knific, David Jezeršek and Janka Istenič
- 2012 Analysis of Early Medieval Glass Beads – Glass in the Transition Period. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms* 278:8-14.
- Smith, Betty Anderson
- 1972 A Deptford III Midden at Wamassee. In *Excavations on St. Catherines Island: Report Submitted to the Edward John Noble Foundation*, edited by Joseph Caldwell. Manuscript on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History.
- Smith, Hale G.
- 1948 Two Historical Archaeological Periods in Florida. *American Antiquity* 13(4):313-319.
- Smith, Karen Y. and Fraser D. Neiman

- 2007 Frequency Seriation, Correspondence Analysis, and Woodland Period Ceramic Assemblage Variation in the Deep South. *Southeastern Archaeology* 26(1):47.
- Smith, Marvin T.
- 1983 Chronology from Glass Beads: The Spanish Period in the Southeast, 1513-1670. In *Proceedings of the 1982 Glass Trade Bead Conference*, edited by Charles F. Hayes, pp. 147-158. Research Division, Rochester Museum & Science Center, Rochester, NY.
-
- 1987 *Archaeology of Aboriginal Culture Change*. University Press of Florida, Gainesville.
-
- 1992 Archaeological Evidence of the Ayllón Expedition. In *Columbus and the Land of Ayllón*, edited by Jeannine Cook, pp. 125-142. Lower Altamaha Historical Society, Darien.
-
- 2002 Aboriginal Population Movements in the Postcontact Southeast. In *The Transformation of the Southeastern Indians: 1540–1760*, edited by Robbie Ethridge and Charles Hudson, pp. 3-20. University Press of Mississippi, Jackson.
-
- n.d. European Artifacts from the Plum Grove Site, 40WG17, Manuscript on file with the author.
- Sokaras, D., A. Karydas, A. Oikonomou, N. Zacharias, K. Beltsios and V. Kantarelou
- 2009 Combined Elemental Analysis of Ancient Glass Beads by Means of Ion Beam, Portable XRF, and EPMA Techniques. *Analytical and Bioanalytical Chemistry* 395(7):2199-2209.
- Sosna, Daniel, Patrik Galeta, Ladislav Šmejda, Vladimír Sladek and Jaroslav Bruzek
- 2013 Burials and Graphs: Relational Approach to Mortuary Analysis. *Social Science Computer Review* 31(1):56-70.
- South, Stanley
- 1978a Pattern Recognition in Historical Archaeology. *American Antiquity* 43(2):223-230.
-
- 1978b Research Strategies for Archaeological Pattern Recognition on Historic Sites. *World Archaeology* 10(1):36-50.
-
- 1980 Santa Elena, a Spanish Foothold in the New World. In *Excursions in Southeastern Geology, the Archaeology-Geology of the Georgia Coast*, edited by James D. Howard, Chester B. DePratter and Robert W. Frey, pp. 206-214. The Geological Society of America, Guidebook 20, Georgia Department of Natural Resources, Atlanta.
-

- 1982a *Exploring Santa Elena, 1981*. Research Manuscript Series No. 184. Institute of Archaeology and Anthropology, University of South Carolina, Columbia.
-
- 1982b *A Search for the French Charlesfort of 1562*. Research Manuscript Series No. 177. The South Carolina Institute of Archeology and Anthropology, University of South Carolina, Columbia.
-
- 1988 *Santa Elena: Threshold of Conquest*. In *The Recovery of Meaning: Historical Archaeology in the Eastern United States*, edited by Mark P. Leone and Parker B. Potter, Jr., pp. 27–71. Smithsonian Institution Press, Washington, DC.
- South, Stanley, Russell K. Skowronek and Richard E. Johnson
- 1988 *Spanish Artifacts from Santa Elena*. Anthropological Studies #7. University of South Carolina, SC Institute of Archaeology and Anthropology, Columbia.
- Spaulding, Albert C.
- 1953 *Statistical Techniques for the Discovery of Artifact Types*. *American Antiquity* 18(4):305-313.
-
- 1954 *Reply to Ford*. *American Antiquity* 19(4):391-393.
- Speakman, Robert J. and M. Steven Shackley
- 2013 *Silo Science and Portable XRF in Archaeology: A Response to Frahm*. *Journal of Archaeological Science* 40:1435-1443.
- Spicer, Edward H.
- 1961 *Types of Contact and Processes of Change*. In *Perspectives in American Indian Culture Change*, edited by Edward H. Spicer, pp. 517-544. University of Chicago Press, Chicago.
- Stark, Miriam T.
- 1998 *The Archaeology of Social Boundaries*. Smithsonian Institution Press, Washington DC.
-
- 2006 *Glaze Ware Technology, the Social Lives of Pots, and Communities of Practice in the Late Prehistoric Southwest* In *The Social Life of Pots: Glaze Wares and Cultural Dynamics in the Southwest, AD 1250-1680*, edited by Judith A. Habicht-Mauche, Suzanne L. Eckert and Deborah L. Huntley, pp. 17-33. University of Arizona Press, Tucson.
- Stark, Miriam T., Ronald L. Bishop and Elizabeth Miksa
- 2000 *Ceramic Technology and Social Boundaries: Cultural Practices in Kalinga Clay Selection and Use*. *Journal of Archaeological Method and Theory* 7(4):295-331.
- Stark, Miriam T., Brenda J. Bowser and Lee Horne
- 2008 *Why Breaking Down Boundaries Matters for Archaeological Research on Learning and Cultural Transmission: An Introduction*. In *Cultural Transmission and*

Material Culture, edited by Miriam T. Stark, Brenda J. Bowser and Lee Horne, pp. 1-16. The University of Arizona Press, Tucson.

Stein, Gil J.

2002 Colonies without Colonialism: A Trade Diaspora Model of Fourth Millennium Bc Mesopotamian Enclaves in Anatolia. In *The Archaeology of Colonialism*, edited by Claire L. Lyons and John K. Papadopoulos, pp. 27–64. Getty Research Institute, Los Angeles.

—

2005 Introduction: The Comparative Archaeology of Colonial Encounters. In *The Archaeology of Colonial Encounters: Comparative Perspectives*, edited by Gil J. Stein, pp. 3–32. School of American Research Press, Santa Fe.

Sterner, Judy

1989 Who Is Signalling Whom? Ceramic Style, Ethnicity and Taphonomy among the Sirak Bulahay. *Antiquity* 63(240):451-459.

Stewart, Charles

1999 Syncretism and Its Synonyms: Reflections on Cultural Mixture. *Diacritics* 29(3):40-62.

—

2011 Creolization, Hybridity, Syncretism, Mixture. *Portuguese Studies* 27(1):48-55.

Stockhammer, Philipp W. (editor)

2012 *Conceptualizing Cultural Hybridization: A Transdisciplinary Approach*. Springer, Berlin.

Stojanowski, Christopher M.

2001 Cemetery Structure, Population Aggregation, and Biological Variability in the Mission Centers of La Florida. PhD Dissertation, Department of Anthropology, University of New Mexico.

—

2004 Population History of Native Groups in Pre- and Postcontact Spanish Florida: Aggregation, Gene Flow, and Genetic Drift on the Southeastern U.S. Atlantic Coast. *American Journal of Physical Anthropology* 123(4):316-332.

—

2005a The Bioarchaeology of Identity in Spanish Colonial Florida: Social and Evolutionary Transformation before, During, and after Demographic Collapse. *American Anthropologist* 107(3):417-431.

—

2005b *Biocultural Histories in La Florida: A Bioarchaeological Perspective*. University of Alabama Press, Tuscaloosa.

—

2005c Biological Structure of the San Pedro Y San Pablo De Patale Mission Cemetery. *Southeastern Archaeology* 24(2):165-179.

- 2010 *Bioarchaeology of Ethnogenesis in the Colonial Southeast*. University of Press of Florida, Gainesville.
- 2011 Social Dimensions of Evolutionary Research: Discovering Native American History in Colonial Southeastern U.S. *Evolution: Education and Outreach* 4(2):223-231.
- 2013 *Mission Cemeteries, Mission Peoples*. University of Florida Press, Gainesville.
- Stojanowski, Christopher M. and William N. Duncan
2008 Anthropological Contributions to the Cause of the Georgia Martyrs. *Occasional Papers of the Georgia Southern Museum* 3:1-125.
- Stojanowski, Christopher M. and Michael A. Schillaci
2006 Phenotypic Approaches for Understanding Patterns of Intracemetery Biological Variation. *American Journal of Physical Anthropology* 131(S43):49-88.
- Sturtevant, William C.
1962 Spanish-Indian Relations in Southeastern North America. *Ethnohistory* 9(1):41-94.
- 1971 Creek into Seminole. In *North American Indians in Historical Perspective*, edited by Eleanor Burke Leacock and Nancy Oestreich Lurie, pp. 92-128. Random House, New York.
- 1994 The Misconnection of Guale and Yamasee with Muskogean. *International Journal of American Linguistics* 60(2):139-148.
- Sunseri, Jun Ueno
2009 Nowhere to Run, Everywhere to Hide: Multi-Scalar Identity Practices at Casitas Viejas. PhD Dissertation, Department of Anthropology, University of California, Santa Cruz.
- Sununu, Alexandra Elizabeth
1993 Estudio Y Edicion Anotada De "La Florida", De Alonso Gregorio De Escobedo O. F. M, Department of Hispanic and Luso-Brazilian Literatures, City University of New York.
- Swanton, John Reed
1922 *Early History of the Creek Indians and Their Neighbors* Bureau of American Ethnology, Bulletin 73. Government Printing Office, Smithsonian Institution, Washington D.C.
- 1946 *The Indians of the Southeastern United States*. Bureau of American Ethnology, Bulletin 137. Government Printing Office, Smithsonian Institution, Washington D.C.

Sweeney, Alex Y.

2003 Investigating Yamasee Identity: Archaeological Research at Pocotaligo. MA thesis, Department of Anthropology, University of South Carolina, Columbia.

Sweet, Julie Anne

2002 Negotiating a Southeastern Middle Ground: English-Creek Relations in Trustee Georgia, 1733-1752. PhD Dissertation, Department of History, University of Kentucky, Lexington.

Thomas, David Hurst

1987 *The Archaeology of Mission Santa Catalina De Guale: 1. Search and Discovery*. Anthropological Papers of the American Museum of Natural History, New York.

—

1988a Saints and Soldiers at Santa Catalina. *Hispanic Design for Colonial America*. In *The Recovery of Meaning. Historical Archaeology in the Eastern United States*, edited by Mark P. Leone and Parker B. Potter, Jr., pp. 73–140. Smithsonian Institution Press, Washington, DC.

—

1988b *St. Catherines. An Island in Time*. Georgia History and Culture Series. Georgia Humanities Council, Atlanta, Georgia.

—

1990 The Spanish Missions of La Florida: An Overview. In *Columbian Consequences Volume 2: Archaeological and Historical Perspectives on the Spanish Borderlands East*, edited by David Hurst Thomas, pp. 357-397. Smithsonian Institution Press, Washington DC.

—

1991 The Archaeology of Mission Santa Catalina De Guale: Our First Fifteen Years. *The Florida Anthropologist* 44(2-4):107-125.

—

1993a The Archaeology of Mission Santa Catalina De Guale: Our First 15 Years. In *The Spanish Missions of La Florida*, edited by Bonnie G. McEwan, pp. 1–34. University Press of Florida, Gainesville.

—

1993b *Historic Indian Period Archaeology of the Georgia Coastal Zone*. University of Georgia, Athens.

—

2008a *Native American Landscapes of St. Catherines Island, Georgia Part 1: The Theoretical Framework*. Anthropological Papers of the American Museum of Natural History, New York.

—

2008b *Native American Landscapes of St. Catherines Island, Georgia Part 2: The Data*. Anthropological Papers of the American Museum of Natural History, New York.

2008c *Native American Landscapes of St. Catherines Island, Georgia Part 3: Synthesis and Implications*. Anthropological Papers of the American Museum of Natural History, New York.

2009a Late Aboriginal Ceramics from St. Catherines Island (cal. A.D. 1400-1700). In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by Kathleen Deagan and David Hurst Thomas, pp. 49-81. Anthropological Papers of the American Museum of Natural History, New York.

2009b Native American Landscapes of St. Catherines Island. In *The Beads of St. Catherines Island*, edited by Elliot H. Blair, Lorann S. A. Pendleton and Peter Francis, Jr., pp. 15-34. Anthropological Papers of the American Museum of Natural History, New York.

2010a The Cultural Geography of Santa Catalina De Guale. In *Mission and Pueblo of Santa Catalina De Guale: A Comparative Zooarchaeological Analysis*, edited by Elizabeth J. Reitz, Barnet Pavao-Zuckerman, Daniel C. Weinand and Gwyneth A. Duncan, pp. 31-44. Anthropological Papers of the American Museum of Natural History, New York.

2010b Indian Agency in Spanish Florida: Some New Findings from Mission Santa Catalina De Guale. *Journal of Global Initiatives* 5(1):99-112.

2011a *St. Catherines: An Island in Time*. University of Georgia Press, Athens.

2011b Why This Archaeologist Cares About Geoarchaeology: Some Pasts and Futures. In *Geoarchaeology of St. Catherines Island, Georgia*, edited by Gale A. Bishop, Harold B. Rollins and David Hurst Thomas, pp. 25-66. Anthropological Papers of the American Museum of Natural History, New York.

Thomas, David Hurst and Clark Spencer Larsen

1979 *The Anthropology of St. Catherines Island: 2. The Refuge-Deptford Mortuary Complex*. Anthropological Papers of the American Museum of Natural History, New York.

Thomas, David Hurst, Clark Spencer Larsen and Laurie Reitsema

2014 Explicating the “Guale Problem” at Fallen Tree (St. Catherines Island, Georgia). Paper presented at the Southeastern Archaeology Conference, Greenville, SC.

Thomas, David Hurst, Stanley South and Clark Spencer Larsen

- 1977 *Rich Man, Poor Men: Observations on Three Antebellum Burials from the Georgia Coast*. Anthropological Papers of the American Museum of Natural History., New York.
- Thompson, M. Scott
 2014 Interactions with the Incorporeal in the Mississippian and Ancestral Puebloan Worlds. PhD Dissertation, Department of Anthropology, Arizona State University, Phoenix.
- Thompson, Victor D. and C. Fred T. Andrus
 2013 Using Oxygen Isotope Sclerochronology to Evaluate the Role of Small Islands among the Guale (Ad 1325 to 1700) of the Georgia Coast, USA. *The Journal of Island and Coastal Archaeology* 8(2):190-209.
- Thompson, Victor D.
 2006 Questioning Complexity: The Prehistoric Hunter-Gatherers of Sapelo Island, Georgia. PhD Dissertation, Department of Anthropology, University of Kentucky, Lexington.
- 2009 The Mississippian Production of Space through Earthen Pyramids and Public Buildings on the Georgia Coast, USA. *World Archaeology* 41(3):445 - 470.
- 2010 The Rhythms of Space-Time and the Making of Monuments and Places During the Archaic. In *Trend, Tradition, and Turmoil: What Happened to the Southeastern Archaic?*, edited by David Hurst Thomas and Matthew C. Sanger, pp. 217-228. vol. 93. American Museum of Natural History Anthropological Papers, New York.
- Thompson, Victor D., Philip J. Arnold III, Thomas J. Pluckhahn and Amber M. Vanderwarker
 2011 Situating Remote Sensing in Anthropological Archaeology. *Archaeological Prospection* 18(3):195-213.
- Thompson, Victor D. and Thomas J. Pluckhahn
 2010 History, Complex Hunter-Gatherers, and the Mounds and Monuments of Crystal River, Florida, USA: A Geophysical Perspective. *The Journal of Island and Coastal Archaeology* 5(1):33-51.
- Thompson, Victor D., Matthew D. Reynolds, Bryan Haley, Richard Jefferies, Jay K. Johnson and Laura Humphries
 2004 The Sapelo Shell Ring Complex: Shallow Geophysics on a Georgia Sea Island. *Southeastern Archaeology* 23(2):192-201.
- Thompson, Victor D., John A. Turck, Amanda D. Roberts Thompson and Chester B. DePratter
 2013 Entangling Events: The Guale Coastal Landscape and the Spanish Missions. In *Life among the Tides: Recent Archaeology on the Georgia Bight*, edited by Victor D. Thompson and David Hurst Thomas, pp. 423-437. Anthropological Papers of the American Museum of Natural History, New York.
- Thompson, Victor D. and John E. Worth

- 2011 Dwellers by the Sea: Native American Adaptations Along the Southern Coasts of Eastern North America. *Journal of Archaeological Research* 19(1):51-101.
- Toninato, Tullio and Cesare Moretti
 1992 Muranese Recipe Books (16th-20th Centuries). *Rivista della Stazione Sperimentale del Vetro* 22(4):197-202.
- Torre Revello, José
 1943 Merchandise Shipped to America by the Spaniards (1534-1586). *The Hispanic American Historical Review* 23(4):773-781.
- Triozzi, Nicholas P.
 2014 Stone, Shell, or Steel? A Closer Look at Butchery Implements on St. Catherines Island, Georgia. MA Thesis, Department of Anthropology, Monmouth University.
- Triozzi, Nicholas P. and Anna Semon
 2014 A Vessel to the Next World: Examining an Urn Burial from Fallen Tree and Other on the Georgia Coast. Paper presented at the Southeastern Archaeology Conference, Greenville, SC.
- Trivellato, Francesca
 1998 Out of Women's Hands: Notes on Venetian Glass Beads, Female Labour and International Trades. In *Beads and Bead-Makers: Gender, Material Culture and Meaning*, edited by Lidia D. Sciana and Joanne Bubolz Eicher, pp. 47-82. Berg, Oxford.
- 2006 Murano Glass, Continuity and Transformation (1400-1800). In *At the Centre of the Old World: Trade and Manufacturing in Venice and on the Venetian Mainland (1400-1800)*, edited by Paolo Lanaro, pp. 143-184. Centre for Reformation and Renaissance Studies, Toronto.
- Turgeon, Laurier
 2001 French Beads in France and Northeastern North America During the Sixteenth Century. *Historical Archaeology* 35(4):58-82.
- 2004 Beads, Bodies and Regimes of Value. From France to North America, Ca. 1500–Ca. 1650. In *The Archaeology of Contact in Settler Societies*, edited by Tim Murray, pp. 19–47. Cambridge University Press, Cambridge.
- Turner, W. E. S.
 1963 The Tercentenary of Neri-Merrett's the Art of Glass. *Advances in Glass Technology. II. History Papers and Discussions, Papers 6th International Congress on Glass, Washington, 1962*:181-202.
- Turner, W. E. S. and H. P. Rooksby
 1959 A Study of the Opalising Agents in Ancient Opal Glasses Throughout Three Thousand Four Hundred Years. *Glastechnische Berichte* 7:17–29.
-

- 1963 A Study of the Opalizing Agents in Ancient Glasses Throughout 3400 Years: Part II. *Advances in Glass Technology*. 306-307.
- Turner, W. E. S. and H. P. Rooksby
1961 Further Historical Studies Based on X-Ray Diffraction Methods of the Reagents Employed in Making Opal and Opaque Glasses. *Jahrbuch des Römisch-Germanischen Zentralmuseums* 8:1-16.
- Van Buren, Mary
2010 The Archaeological Study of Spanish Colonialism in the Americas. *Journal of Archaeological Research* 18(2):151-201.
- van Dommelen, Peter
1997 Colonial Constructs: Colonialism and Archaeology in the Mediterranean. *World Archaeology* 28(3):305-323.
- 2005 Colonial Interactions and Hybrid Practices Phoenician and Carthaginian Settlement in the Ancient Mediterranean. In *The Archaeology of Colonial Encounters: Comparative Perspectives*, edited by Gil J. Stein, pp. 109-141. School of American Research Press, Santa Fe.
- Van Keuren, Scott
2006 Decorating Glaze-Painted Pottery in East-Central Arizona. In *The Social Lives of Pots: Glaze Wares and Cultural Dynamics in the Southwest, AD 1250-1680*, edited by Judith A. Habicht-Mauche, Suzanne L. Eckert and Deborah L. Huntley, pp. 86-104. University of Arizona Press, Tucson.
- Van Valkenburgh, Parker
2013 Hybridity, Creolization, Mestizaje: A Comment. *Archaeological Review from Cambridge* 28(1):301-322.
- Veiga, J. P. and M. O. Figueiredo
2002 Sixteenth Century Tubular Glass Beads: Non-Destructive Chemical Characterization Using Synchrotron Radiation XRF. *X-Ray Spectrometry* 31(4):300-304.
- Verità, Marco
1986 Technology of Venetian Glassmaking and the Contents of the Darduin Notebook. In *Il Ricettario Darduin: Un Codice Vetrario Del Seicento Trascritto E Commentato*, edited by Luigi Zecchin, pp. 24-33. Arsenale, Venice.
- Voss, Barbara L.
2005 From Casta to Californio: Social Identity and the Archaeology of Culture Contact. *American Anthropologist* 107(3):461-474.
- 2008a *The Archaeology of Ethnogenesis: Race and Sexuality in Colonial San Francisco*. University of California Press, Berkeley.
-

- 2008b Gender, Race, and Labor in the Archaeology of the Spanish Colonial Americas. *Current Anthropology* 49(5):861-893.
-
- 2008c 'Poor People in Silk Shirts': Dress and Ethnogenesis in Spanish-Colonial San Francisco. *Journal of Social Archaeology* 8(3):404-432.
- Wade, Mariah
- 1999 Go-Between: The Roles of Native American Women and Alvar Nunez Cabeza de Vaca in Southern Texas in the 16th Century. *The Journal of American Folklore* 112(445):332-342.
- Wagner, B., A. Nowak, E. Bulska, K. Hametner and D. Günther
- 2012 Critical Assessment of the Elemental Composition of Corning Archeological Reference Glasses by LA-ICP-MS. *Analytical and Bioanalytical Chemistry* 402(4):1667-1677.
- Walder, Heather
- 2013a Laser Ablation-Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) Analysis of Refired Glass Pendants from the North American Upper Great Lakes. In *Archaeological Chemistry VIII*, edited by Ruth Ann Armitage and James H. Burton, pp. 365-395. ACS Symposium Series. vol. 1147. American Chemical Society, Washington DC.
-
- 2013b Stylistic and Chemical Investigation of Turquoise-Blue Glass Artifacts from the Contact Era of Wisconsin. *Midcontinental Journal of Archaeology* 38(1):119-142.
- Wallace, Jayne Talley
- 2006 Indigenous Ceramics from Feature 118 at the O'Connell Site (8Le157): A Late Spanish Mission in Apalachee Province, Leon County, Florida. MA Thesis, Department of Anthropology, Florida State University, Tallahassee.
- Wallace, Ronald Lynn
- 1975 An Archaeological, Ethnohistoric, and Biochemical Investigation of the Guale Aborigines of the Georgia Coastal Strand. PhD Dissertation, Department of Anthropology, University of Florida, Gainesville.
- Wallis, Neill J., Matthew T. Boulanger, Jeffrey R. Ferguson and Michael D. Glascock
- 2010 Woodland Period Ceramic Provenance and the Exchange of Swift Creek Complicated Stamped Vessels in the Southeastern United States. *Journal of Archaeological Science* 37(10):2598-2611.
- Wallis, Neill J., Ann S. Cordell, Kathleen A. Deagan and Michael J. Sullivan
- 2014 Inter-Ethnic Social Interactions in 16th Century La Florida: Sourcing Pottery Using Siliceous Microfossils. *Journal of Archaeological Science* 43(0):127-140.
- Wallis, Neill J. and GD Kamenov
- 2013 Challenges in the Analysis of Heterogeneous Pottery by LA-ICP-MS: A Comparison with INAA*. *Archaeometry* 55(5):893-909.

Waselkov, Gregory A.

1993 Historic Creek Indian Responses to European Trade and the Rise of Political Factions. In *Ethnohistory and Archaeology: Approaches to Postcontact Change in the Americas*, edited by J. Daniel Rogers and Samuel M. Wilson, pp. 123–131. Plenum Press, New York.

—

2009 What Do Spanish Expeditionary Artifacts of Circa 1540 Look Like and How Often Are They Preserved? In *The Search for Mabila: The Decisive Battle between Hernando De Soto and Chief Tascalusa*, edited by Vernon J. Knight, Jr., pp. 94-106. University of Alabama Press, Tuscaloosa.

Waters, Gifford J.

2005 Maintenance and Change of 18th-Century Mission Indian Identity: A Multi-Ethnic Contact Situation. PhD Dissertation, Department of Anthropology, University of Florida, Gainesville.

—

2009 Aboriginal Ceramics at Three 18th-Century Mission Sites in St. Augustine, Florida. In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)* edited by Kathleen Deagan and David Hurst Thomas, pp. 165-176. American Museum of Natural History, New York.

Watts, David C. and Cesare Moretti

2011 *Glass Recipes of the Renaissance: Transcriptions of an Anonymous Venetian Manuscript*. Watts Publishing, London.

Weber, David J.

1992 *The Spanish Frontier in North America*. Yale University Press, New Haven.

Weik, Terrance M.

2009 The Role of Ethnogenesis and Organization in the Development of African-Native American Settlements: An African Seminole Model. *International Journal of Historical Archaeology* 13(2):206-238.

Weisman, Brent R.

1992 *Excavations on the Franciscan Frontier: Archaeology at the Fig Springs Mission*. University Press of Florida, Gainesville.

—

2000 Archaeological Perspectives of Florida Seminole Ethnogenesis. In *Indians of the Greater Southeast: Historical Archaeology and Ethnohistory*, edited by Bonnie G. McEwan, pp. 242–264. University Press of Florida., Gainesville.

Wells, Peter S.

2015 Cultural Colonization without Colonial Settlements: A Case Study in Early Iron Age Temperate Europe. In *Rethinking Colonialism: Comparative Archaeological*

- Approaches*, edited by Craig N. Cipolla and Katherine Howlett Hayes, pp. 76-98. University Press of Florida, Gainesville.
- Wendrich, Willeke (editor)
- 2013 *Archaeology and Apprenticeship: Body Knowledge, Identity, and Communities of Practice*. University of Arizona Press, Tucson.
- Wenger, Etienne
- 1998 *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press, Cambridge.
-
- 2009 A Social Theory of Learning. In *Contemporary Theories of Learning: Learning Theorists... In Their Own Words*, edited by Knud Illeris, pp. 209-218. Routledge, New York.
- Wenger, Etienne, Richard McDermott and William M. Snyder
- 2002 *Cultivating Communities of Practice: A Guide to Managing Knowledge*. Harvard Business School Press, Boston.
- Wenhold, Lucy L.
- 1959 Manrique De Rojas' Report on French Settlement in Florida, 1564. *The Florida Historical Quarterly* 38(1):45-62.
- Wernke, Steven A.
- 2006 Collagua "Eco-Logistics": Intermediate Elites and Hybrid Community Structures in the Colca Valley, Peru. In *Intermediate Elites in Pre-Columbian States and Empires*, edited by Christina M. Elson and R. Alan Covey, pp. 175–211. The University of Arizona Press, Tucson.
- Wesson, Cameron B.
- 1997 *Households and Hegemony: An Analysis of Historic Creek Culture Change*. PhD Dissertation, Department of Anthropology, University of Illinois, Urbana-Champaign.
-
- 2008 *Households and Hegemony: Early Creek Prestige Goods, Symbolic Capital, and Social Power*. University of Nebraska Press, Lincoln.
-
- 2010 When Moral Economies and Capitalism Meet: Creek Factionalism and the Colonial Southeastern Frontier. In *Across a Great Divide: Continuity and Change in Native North American Societies, 1400-1900*, edited by Laura L. Scheiber and Mark D. Mitchell, pp. 61-78. University of Arizona Press, Tucson.
- Weymouth, John
- 1990a *Geophysical Surveys at Selected Sites on St. Catherines Island, December 1990*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
-

- 1990b *Meeting House Field Geophysics*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
-
- 1991 *Resistance Survey of Santa Catalina De Guale, Quad Xxi, 1991*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
-
- 1992 *Geophysical Surveys in Search of Pueblo Santa Catalina De Guale, St. Catherines Island, Georgia*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
-
- n.d. *Summary of Conductivity Tests at the Meeting House Field Site*. Unpublished report on file, Nels Nelson North American Archaeology Laboratory, American Museum of Natural History, New York.
- White, Andrea Paige
- 2002 *Living on the Periphery: A Study of an Eighteenth-Century Yamasee Mission Community in Colonial St. Augustine*. MA Thesis, Department of Anthropology, The College of William and Mary, Virginia.
- White, John R.
- 1975 *Historic Contact Sites as Laboratories for the Study of Culture Change*. *Proceedings of the The Conference on Historic Site Archaeology Papers* 9:153-163.
- White, Richard
- 1991 *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815*. Cambridge University Press, Cambridge.
- Wiegand, Leah Williams
- 2013 *Detecting Preference in the Archaeological Record: A Study of Glass Trade Beads among the Natchez Indians*. MA Thesis, The University of Alabama, Tuscaloosa.
- Wiessner, Polly
- 1983 *Style and Social Information in Kalahari San Projectile Points*. *American Antiquity* 48(2):253-276.
-
- 1985 *Style or Isochrestic Variation? A Reply to Sackett*. *American Antiquity* 50(1):160-166.
- Wilkie, Laurie A.
- 2000 *Culture Bought: Evidence of Creolization in the Consumer Goods of an Enslaved Bahamian Family*. *Historical Archaeology* 34(3):10-26.
- Williams, J. Mark
- 1984 *A New Resistivity Device*. *Journal of Field Archaeology* 11:110-114.
- Williams, J. Mark and Gary Shapiro (editors)

- 1990 *Lamar Archaeology: Mississippian Chiefdoms in the Deep South*. University of Alabama Press, Tuscaloosa.
- Williams, Mark and Victor D. Thompson
1999 A Guide to Georgia Indian Pottery Types. *Early Georgia* 27(1):1-167.
- 2005 A Guide to Georgia Indian Pottery Types.
<<https://archaeology.uga.edu/gip/intro>>, accessed June 2, 2015.
- Wilson, Gregory D.
2008 *The Archaeology of Everyday Life at Early Moundville*. University Alabama Press, Tuscaloosa.
- Winkler, Lauren A.
2011 The Social Structuring of Stress in Contact-Era Spanish Florida: A Bioarchaeological Case Study from Santa Catalina De Guale, St. Catherines Island, Georgia. MA Thesis, Department of Anthropology, The Ohio State University, Columbus.
- Wiseman, James and Farouk El-Baz
2007 *Remote Sensing in Archaeology*. Springer, New York.
- Wobst, H. Martin
1977 Stylistic Behavior and Information Exchange. In *For the Director: Research Essays in Honor of James B. Griffin*, edited by Charles Edward Cleland, pp. 317-342. Museum of Anthropology, University of Michigan, Ann Arbor.
- 1999 Style in Archaeology or Archaeologists in Style. In *Material Meanings: Critical Approaches to the Interpretation of Material Culture*, edited by Elizabeth S. Chilton, pp. 118-132. University of Utah Press, Salt Lake City.
- Worth, John E.
1995 *The Struggle for the Georgia Coast: An Eighteenth-Century Spanish Retrospective on Guale and Mocama*. Anthropological Papers of the American Museum of Natural History, New York.
- 1998a *Timucuan Chiefdoms of Spanish Florida: Volume 1- Assimilation*. University Press of Florida, Gainesville.
- 1998b *Timucuan Chiefdoms of Spanish Florida: Volume 2 - Resistance and Destruction*. University Press of Florida, Gainesville.
- 1999 Coastal Chiefdoms and the Question of Agriculture: An Ethnohistorical Overview. Paper presented at the 56th Annual Southeastern Archaeological Conference, Pensacola, Florida.

-
- 2001 The Ethnohistorical Context of Bioarchaeology in Spanish Florida. In *Bioarchaeology of Spanish Florida: The Impact of Colonialism*, edited by Clark Spencer Larsen, pp. 1-21. University Press of Florida, Gainesville.
-
- 2002 Spanish Missions and the Persistence of Chiefly Power. In *The Transformation of the Southeastern Indians, 1540-1760*, edited by Robbie Ethridge and Charles Hudson, pp. 39-64. University Press of Mississippi, Jackson.
-
- 2003 An Ethnohistorical Synthesis of Southeastern Chiefdoms: How Does Coosa Compare? Paper presented at the Southeastern Archaeological Conference, Charlotte, NC.
-
- 2004a Guale. In *Handbook of North American Indians Volume 14: Southeast*, edited by Raymond D. Fogelson, pp. 238-244, William C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.
-
- 2004b Yamasee. In *Handbook of North American Indians Volume 14: Southeast*, edited by Raymond D. Fogelson, pp. 245-253, William C. Sturtevant, general editor. Smithsonian Institution, Washington D.C.
-
- 2006 Bridging Prehistory and History in the Southeast: Evaluating the Utility of the Acculturation Concept. In *Light on the Path: The Anthropology and History of the Southeastern Indians*, edited by Thomas J. Pluckhahn and Robbie Ethridge, pp. 196-206. University of Alabama Press, Tuscaloosa.
-
- 2007 *The Struggle for the Georgia Coast: An Eighteenth-Century Spanish Retrospective on Guale and Mocama*. University of Alabama Press, Tuscaloosa.
-
- 2009a Ethnicity and Ceramics on the Southeastern Atlantic Coast: An Ethnohistorical Analysis. In *From Santa Elena to St. Augustine: Indigenous Ceramic Variability (A.D. 1400-1700)*, edited by Kathleen Deagan and David Hurst Thomas, pp. 179-207. Anthropological Papers of the American Museum of Natural History, New York.
-
- 2009b Razing Florida: The Indian Slave Trade and the Devastation of Spanish Florida, 1659-1715. In *Mapping the Mississippian Shatter Zone*, edited by Robbie Ethridge and Sheri M. Shuck-Hall, pp. 295-311. University of Nebraska Press, Lincoln.
-

- 2012 Bridging History and Prehistory: General Reflections and Particular Quandries. Paper presented at the 69th Annual Meeting of the Southeastern Archaeological Conference, Baton Rouge, LA.
-
- 2013a Catalysts of Assimilation: The Role of Franciscan Missionaries in the Colonial System of Spanish Florida. In *From La Florida to La California: Franciscan Evangelization in the Spanish Borderlands*, edited by Timothy J. Johnson and Gert Melville, pp. 131-142. Academy of American Franciscan History, Berkeley.
-
- 2013b Inventing Florida: Constructing a Colonial Society in an Indigenous Landscape. In *Native and Imperial Transformations: Sixteenth-Century Entradas in the American Southwest and Southeast*, edited by Clay Mathers, Jeffrey M. Mitchem and Charles Haecker, pp. 189-201. University of Arizona Press, Tucson.
-
- 2015 Precursors of Missionization: Early European Contact on the Georgia Coast, 1514-1587. Paper presented at the Annual Meeting of the Society for American Archaeology, San Francisco, CA.
- Wray, Charles F. and H. L. Schoff
- 1953 A Preliminary Report on the Seneca Sequence in Western New York, 1550-1687. *Pennsylvania Archaeologist* 23(2):53-63.
- Wylie, Alison
- 2002 The Typology Debate. In *Thinking from Things: Essays in the Philosophy of Archaeology*, edited by Alison Wylie, pp. 42-56. University of California Press, Berkeley.
- Zecchin, Luigi
- 1964 Antonio Neri E Le Conterie. *Vetro e Silicati* 8:21-24.
-
- 1986 *Il Ricettario Darduin: Un Codice Vetrario Del Seicento Trascritto E Commentato*. Arsenale, Venice.
- Zucchiatti, Alessandro, Lucia Canonica, Paolo Prati, Aurora Cagnana, Stefano Roascio and Aurelio Climent Font
- 2007 PIXE Analysis of V-XVI Century Glasses from the Archaeological Site of San Martino Di Ovaro (Italy). *Journal of Cultural Heritage* 8(3):307-314.

**APPENDIX A: COLOR PLATES OF BEADS FROM MISSION SANTA
CATALINA DE GUALE**

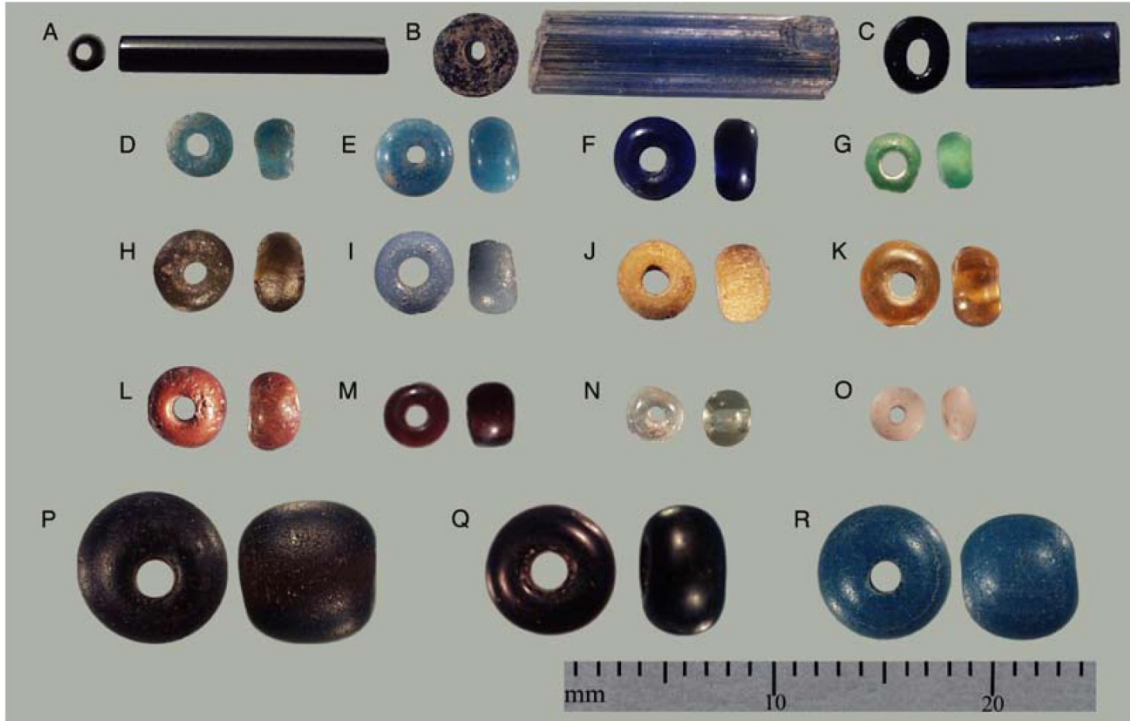


PLATE 1: **A.** Type 1, 28.1/4874.0157; **B.** Type 2, 28.1/4766.0034; **C.** Type 3, 28.1/3258.0001; **D.** Type 4, 28.1/7424.0001; **E.** Type 5, 28.0/8978.0001; **F.** Type 6, 28.1/7284.0001; **G.** Type 7, 28.2/4008.0002; **H.** Type 8, 28.3/4253.0001; **I.** Type 9, 28.1/9153.0001; **J.** Type 10, 28.1/1778.0004; **K.** Type 11, 28.1/5480.0005; **L.** Type 12, 28.1/4071.2182; **M.** Type 13, 28.0/6706.0507; **N.** Type 14, 28.1/7513.0905; **O.** Type 15, 28.0/8237.0001; **P.** Type 16, 28.1/4641.0001; **Q.** Type 17, 28.2/1835.0001; **R.** Type 18, 28.1/8666.0001.

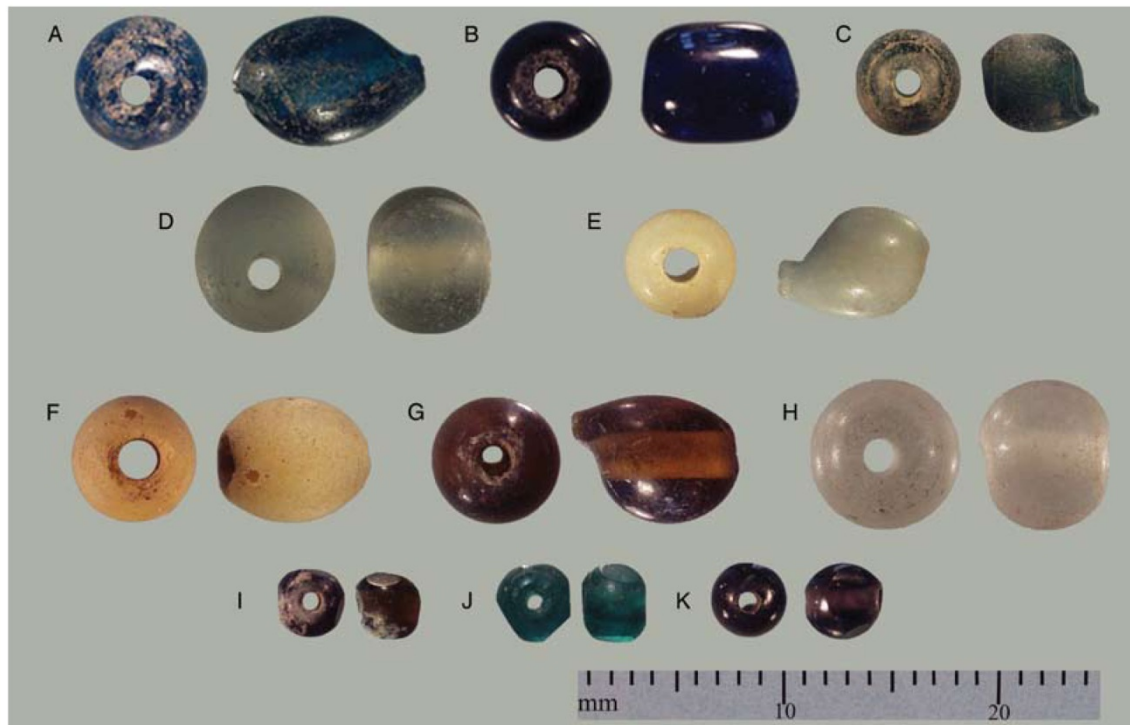


PLATE 2: **A.** Type 19, 28.2/0898.0001; **B.** Type 20, 28.0/4632.0001; **C.** Type 21, 28.1/4868.0002; **D.** Type 22, 28.1/4765.0017; **E.** Type 23, 28.1/7513.0904; **F.** Type 24, 28.1/5053.0091; **G.** Type 25, 28.1/4468.0011; **H.** Type 26, 28.1/2619.0001; **I.** Type 27, 28.1/2339.06617; **J.** Type 28, 28.1/7220.0005; **K.** Type 29, 28.3/2339.04351.



PLATE 3: **A.** Type 30, 28.1/4864.0097; **B.** Type 31, 28.2/5438.0001; **C.** Type 32, 28.1/4071.2353; **D.** Type 33, 28.3/3019.0001; **E.** Type 34, 28.1/2265.0004; **F.** Type 35, 28.1/0884.0003; **G.** Type 36, 28.0/9056.0761; **H.** Type 37, 28.3/2337.0699; **I.** Type 38, 28.1/0924.0004; **J.** Type 39, 28.1/2339; **K.** Type 40, 28.3/2337.3688; **L.** Type 41, 28.1/6628.0001; **M.** Type 42, 28.1/8668.1152; **N.** Type 43, 28.2/5601; **O.** Type 44, 28.3/3020.0001.



PLATE 4: **A.** Type 45, 28.1/7461.0001; **B.** Type 46, 28.1/4921.0001; **C.** Type 47, 28.1/4341.0001; **D.** Type 48, 28.1/9367.0001; **E.** Type 49, 28.0/6706.0001; **F.** Type 50, 28.1/4882.0007; **G.** Type 51, 28.3/2339.06621; **H.** Type 52, 28.1/1125.0061; **I.** Type 53, 28.1/4518.0001.



PLATE 5: A. Type 54, 28.1/8197.0002; B. Type 55, 28.1/5011.0004; C. Type 56, 28.1/4452.0001; D. Type 57, 28.1/0925.0001; E. Type 58, 28.1/7796.0001; F. Type 59, 28.1/6661.0001; G. Type 60, 28.1/6660.0001; H. Type 61, 28.1/0881.0001; I. Type 62, 28.1/7421.0018; J. Type 63, 28.3/2337.6438.

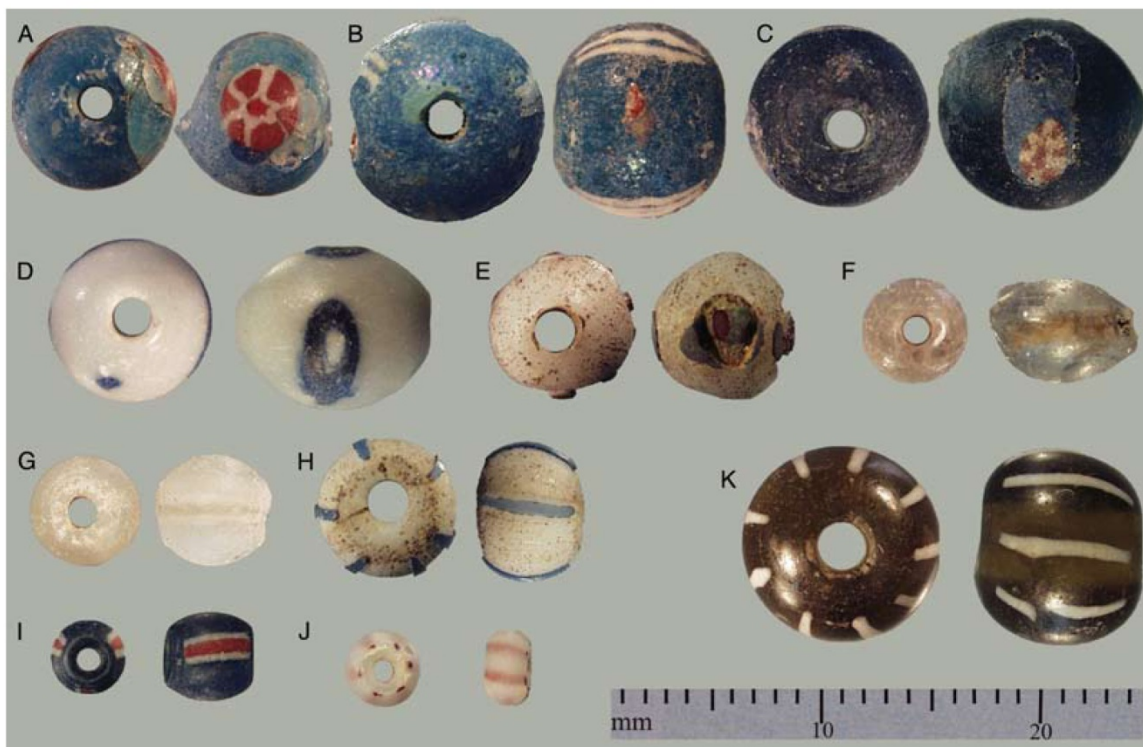


PLATE 6: A. Type 64, 28.1/5263.0049; B. Type 65, 28.0/9056.0755; C. Type 66, 28.1/8754.0120; D. Type 67, 28.1/8754.0156; E. 68, 28.2/8438.0001; F. Type 69, 28.2/3580.0007; G. Type 70, 28.1/7575.0004; H. Type 71, 28.2/4795.0001; I. Type 72, 28.1/7549.0215; J. Type 73, 28.3/2339.11617; K. Type 74, 28.1/5047.0197.



PLATE 7: **A.** Type 75, 28.2/8603.0002; **B.** Type 76, 28.1/5183.0001; **C.** Type 77, 28.2/9188.0001; **D.** Type 78, 28.0/4627.0001; **E.** Type 79, 28.2/3621.0001; **F.** Type 80, 28.1/6932.0002; **G.** Type 81, 28.1/2221.0001; **H.** Type 82, 28.1/9366.0001; **I.** Type 83, 28.1/5464.0020; **J.** Type 84, 28.1/1778.0007; **K.** Type 85, 28.2/3437.0003; **L.** Type 86, 28.1/1152.0062; **M.** Type 87, 28.3/2309.0002; **N.** Type 88, 28.1/1803.0002.



PLATE 8: **A.** Type 96, 28.1/0927.0004; **B.** Type 90, 28.2/9061.0001; **C.** Type 91, 28.1/1555.0025; **D.** Type 92, 28.0/4590.0001; **E.** Type 93, 28.2/8992.0001; **F.** Type 94, 28.1/7618.0001; **G.** Type 95, 28.1/4319.0002; **H.** Type 97, 28.1/8653.0002; **I.** Type 89, 28.1/1730.0007.

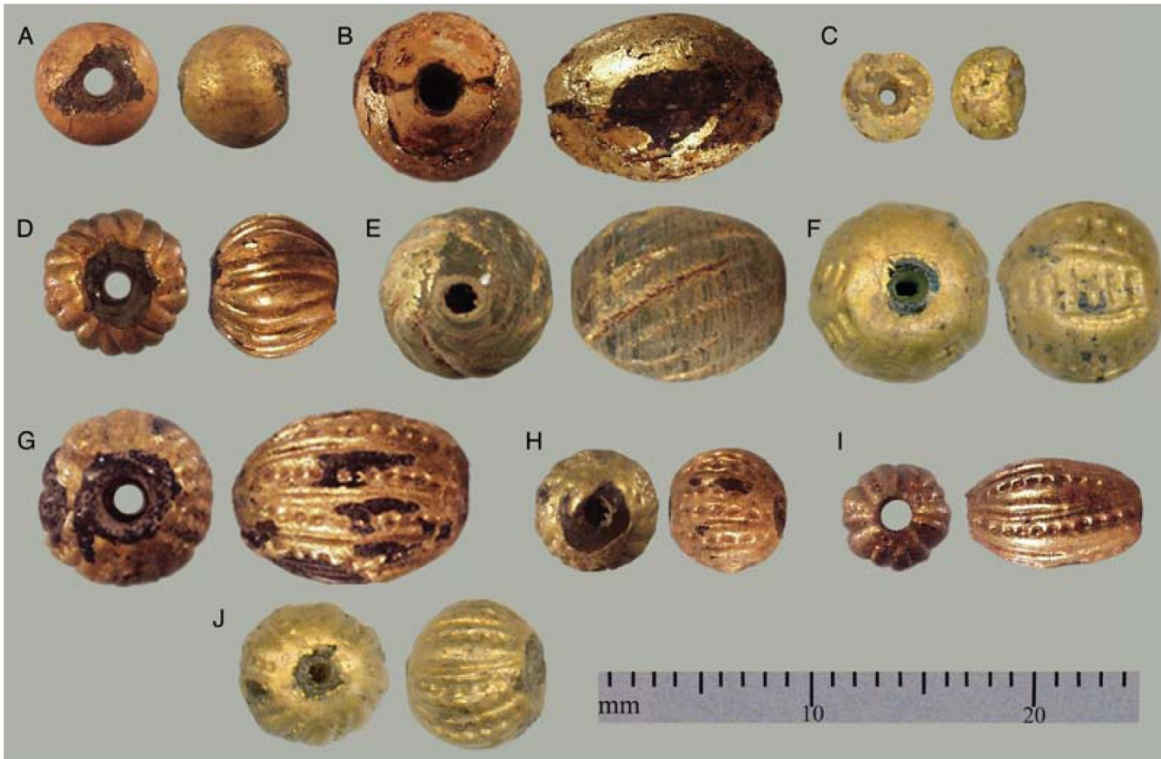


PLATE 9: **A.** Type 98, 28.1/1477.0001; **B.** Type 99, 28.1/1555.0001; **C.** Type 100, 28.0/4661.0017; **D.** Type 101, 28.1/4859.0001; **E.** Type 102, 28.0/8320.0001; **F.** Type 103, 28.1/6874.0029; **G.** Type 104, 28.0/4631.0001; **H.** Type 105, 28.1/5032.0001; **I.** Type 106, 28.1/4867.0001; **J.** 107, 28.1/6875.0013.



PLATE 10: **A.** Type 108, 28.1/1121.0001; **B.** Type 109, 28.0/6507.0009; **C.** Type 110, 28.0/6507.0001; **D.** Type 111, 28.1/8672.0094; **E.** Type 112, 28.3/2337.6173; **F.** Type 113, 28.3/2337.6301; **G.** Type 114, 28.3/2339.11686; **H.** Type 115, 28.1/7553.0016; **I.** Type 116, 28.1/5656.0016; **J.** Type 117, 28.1/4068.0117.

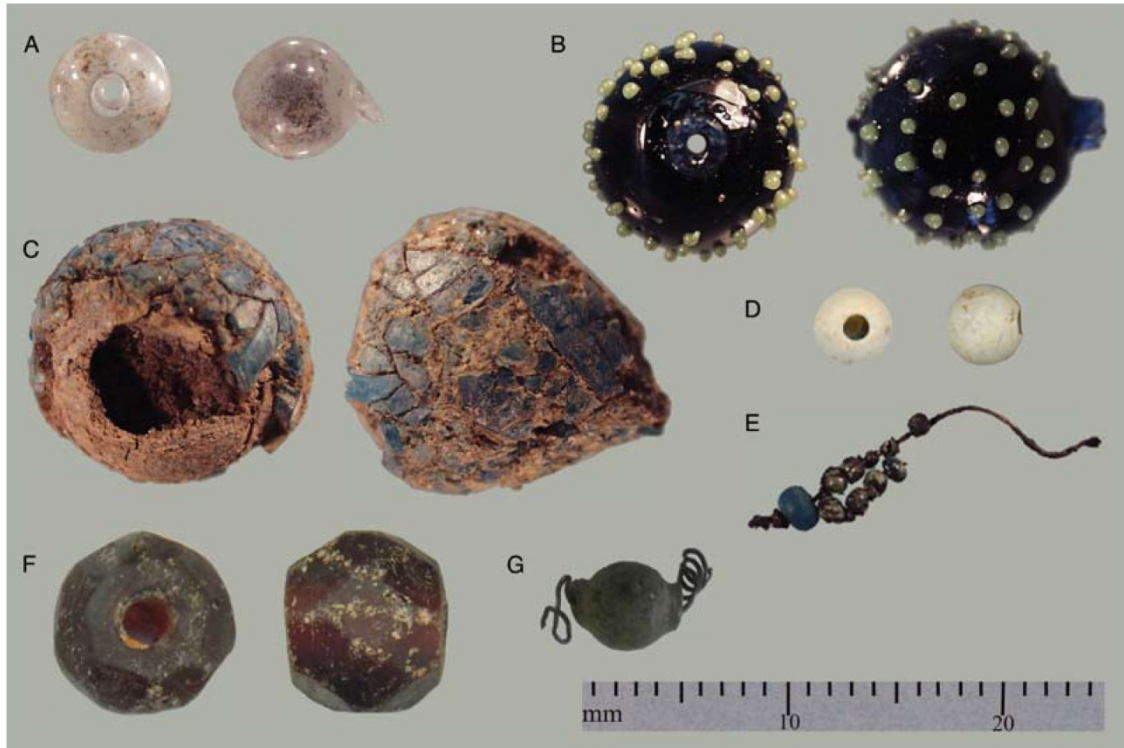


PLATE 11: **A.** Type 118, 28.1/7514.0006; **B.** Type 119, 28.1/1123.0065; **C.** Type 120, 28.3/2337.0767; **D.** Type 121, 28.1/3639.3929 ; **E.** Type 122, 28.0/6505.0004-0013; **F.** Type 123, 28.0/9056.1552; **G.** Metal Bead, 28.2/5666.0001.



PLATE 12: **A.** Jet variety 1, 28.1/7327.0001; **B.** Jet variety 2, 28.3/2337.0268; **C.** Jet variety 3, 28.1/1360.0001; **D.** Jet variety 4, 28.1/3003.0001; **E.** Jet variety 5, 28.1/1117.0001; **F.** Jet variety 6, 28.1/5748.0001; **G.** Amber, 28.1/3884.0001; **H.** Carnelian variety 1, 28.0/5287.0001; **I.** Carnelian variety 2, 28.2/1580.0001; **J.** Cut crystal variety 1, 28.3/3476.0001; **K.** Cut crystal variety 2, 28.0/6730b.