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**BUYING GOODWILL: LOCAL AND REGIONAL CONSUMER RELATIONSHIPS IN NINETEENTH CENTURY NEW MEXICO**

**by**

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DISSERTATION

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# Dedication

For Robin, Andrew and Marian.

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## ABSTRACT

Analysis of historic documents leaves no question that Hispanic identity in New Mexico changed in the years between Mexican Independence (1821) and U.S. Statehood (1912). How can we understand or see these changes archaeologically? This dissertation uses comparative analysis of four nineteenth century Hispanic residential sites to examine the daily practices by Hispanic residents of acquiring and consuming material goods. Through the practice of consumption, Hispanics created and reinforced social relationships with the groups who bartered or sold them pottery, food, and imported goods. In frontier New Mexico consumer relationships were charged with more than just economic convenience and reflected important networks that were essential to the survival of Hispanic settlements and may have played a role in the creation and maintenance of modern Hispanic identity after U.S. annexation (Eiselt 2006; Eiselt and Darling 2012; Gómez 2008; Jenks 2011; Trigg 2003). The nineteenth century was a key moment in the developing racialization of Hispanic

identity in New Mexico, which makes it a vital period of study for archaeologists to understand the relationship between material culture and social identities.

In this dissertation I examine New Mexican ceramics, imported artifacts, and archival documents to create profiles of consumer practices at each Hispanic site in the sample (LA 160, LA 4968, LA 8671 and the Barela-Reynolds house). The sites are located across the New Mexico territory between Cuyamungue in the north and Mesilla in the south. The consumer profiles build an archaeological understanding of community relationships, consumption, and identity in New Mexico 1821–1912, and they demonstrate whether site residents prioritized local *vecino* identity or regional Hispanic identity in their consumer relationships and consumption practices. The artifact and archival analyses showed considerable variation in how people developed consumer relationships and at least three different consumer profiles were identified. LA 160 and LA 4968 near Cuyamungue showed very local consumer profiles, while LA 8671 near Albuquerque showed a regional profile with strong connections to the Santa Fe area, and the Barela-Reynolds house in Mesilla showed a regional profile with strong connections to Mexico. The consumer profiles did not show clear evidence that regional Hispanic ethnic identity shaped consumption practices at any of the sites. However, it does appear that class and power played important roles in nineteenth century New Mexican Hispanic consumer practices, alongside the individual nexus of family and social history at each site.

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# Chapter 1: Introduction

In September 1821, word reached Santa Fe that Mexico successfully seceded from the empire of Spain, to become a republic. Two months later, the first (or maybe second) large caravan of manufactured goods arrived in Santa Fe from St. Louis, headed by William Becknell. Almost exactly twenty-five years after Mexico's independence, General Stephen Kearny marched into Santa Fe at the head of an army of 1,700 men, as well as a caravan of over 300 wagons owned by Hispanic and European American merchants returning from St. Louis with goods (Moorhead 1995). Finally, in January 1912, New Mexico became the forty-seventh state in the union, after over sixty years of work by a wide cast of Hispanic and European American political and economic actors.

Analysis of historic documents leaves no question that Hispanic identity in New Mexico changed in the years between Mexican Independence and U.S. Statehood. How can we understand or see these changes archaeologically? This dissertation uses comparative analysis of four nineteenth century Hispanic residential sites to examine the daily practices by Hispanic residents of acquiring and consuming material goods. Through the practice of consumption, Hispanics created and reinforced social relationships with the groups who bartered or sold them pottery, food, and imported goods. In frontier New Mexico consumer relationships were charged with more than just economic convenience and reflected important networks that were essential to the survival of Hispanic settlements and may have played a role in the creation and maintenance of modern Hispanic identity after U.S. annexation (Eiselt 2006; Eiselt and Darling 2012; Gómez 2008; Jenks 2011; Trigg 2003). The nineteenth century was a key moment in the developing racialization of Hispanic identity in New Mexico, which makes it a vital period of study for archaeologists to understand the relationship between material culture and social identities.

In this dissertation, I examine New Mexican ceramics, imported artifacts, and archival documents to create profiles of consumer practices at each Hispanic site in the sample (LA 160, LA 4968, LA 8671 and the Barela-Reynolds house). The sites are located across the New Mexico territory between Cuyamungue in the north and Mesilla in the south. The consumer profiles build an archaeological understanding of community relationships, consumption, and identity in New Mexico 1821–1912, and they demonstrate whether site residents prioritized local *vecino* identity or regional Hispanic identity in their consumer relationships and consumption practices.

The artifact and archival analyses show considerable variation in how people developed consumer relationships and I identified at least three different consumer profiles. LA 160 and LA 4968 near Cuyamungue showed very local consumer profiles, while LA 8671 near Albuquerque showed a regional profile with strong connections to the Santa Fe area, and the Barela-Reynolds house in Mesilla showed a regional profile with strong connections to Mexico. The consumer profiles did not show clear evidence that regional Hispanic ethnic identity shaped consumption practices at any of the sites. However, it does appear that class and power played important roles in nineteenth century New Mexican Hispanic consumer practices, alongside the individual nexus of family and social history at each site.

The results of this archaeological research make multiple contributions. Within the complex and densely populated landscape of New Mexican Hispanic studies, archaeology can span the middle ground between "big picture" histories built on archival analyses, and personal family histories built from family stories, DNA research, and genealogies. By having a material focus this project illuminates daily relationships and interactions and tells a story about Hispanic identity for regular New Mexicans that were not preserved in the archival record. By focusing on several individual households, I show detail in Hispanic consumer strategies and adaptations to their changing material world at a level that is lost in broader historic narratives at the scale of the state or large regions. Secondly, this dissertation contributes to New Mexican historical archaeology as an in-depth comparative study of Territorial period Hispanic sites. Previously there were only broad comparative analyses of nineteenth century sites, and none with a framework to account for the scale of social identities. This detailed comparative analysis shows variation in Hispanic material practices that we were only beginning to see in individual site studies. Finally, this project examines consumer practices at multiple sites to understand the scale of consumer relationships and social networks created by site residents. This model can be useful in other colonial contexts to understand the role of material culture in changing identities and social responses of consumers as they adapt to new and globalized market environments that are often a part of colonial regimes.

Understanding the historic development and racialization of Hispanic identity in New Mexico has an important role in conversations people are having today about race, racialization, and the history of the United States. In the 2010 U.S. census, nearly twenty percent of the U.S. population self-identified their ethnicity as 'Hispanic.' The combined landmass of Texas, New Mexico, Arizona, and California—all part of the territory seized in the Mexican-American War—represents over 17 percent of the U.S. landmass. This means the history and racialization of Hispanics/Latinos encompasses a fifth of the nation. This story and the role that historic racialization continues to play in peoples' lives is a vital, albeit difficult, part of the national narrative and archaeology also needs to participate and contribute to this broader conversation.

## Who is Hispanic? An Evolving Question

In 2009, I attended a local conference hosted by the Hispanic Genealogical Research Center of New Mexico, an organization committed to helping New Mexicans trace their Hispanic genealogies and learn more about their Hispanic ancestors and traditions. At the conference was a presenter who, after introducing himself, said "My family is from Doña Ana in southern New Mexico, and I am here to say *we are hispano too*." I am a white woman of German ancestry from Oregon and this meeting was one of my first entries into the confusing and contradictory world of New Mexican Hispanic identity. Why would people in southern New Mexico not be considered *hispano*? If anything, wouldn't the proximity to the Mexican border make them likely to be *more* hispano? On the tail of these questions came others: how is *hispano* not Hispanic? Why is Hispanic in New Mexico not Hispanic as we used the word in Oregon? Why hadn't I encountered any of this complexity during the years I had lived and worked as an archaeologist in Arizona?

Trying to articulate even partial answers to these questions is challenging. The roots of modern Hispanic identity are tangled up with over four hundred years of successive waves of colonialism, cultural conflict and integration, and the voluntary and involuntary movement of people, products, languages, and culture across oceans and continents. Each region along the Spanish Borderlands—what is now Texas, New Mexico, Arizona, and California—experienced and continues to experience these waves of colonialism differently. In New Mexico, where Spain's settler population was the largest, where the bureaucratic center at Santa Fe endured the longest, and where resources and trade brought a multitude of indigenous, *mestizo*, and European groups into continuous evolving contact, Hispanic identity may have the most tangled roots of all.

Scholars and New Mexican Hispanics consistently set New Mexico and its history apart from that of other Latinos in the U.S., as demonstrated by substantial research on the definition, emergence, and development of New Mexican Hispanic identity in the last fifty years (Brooks 2002; Bustamante 1982; Chavez 1975; Councilor 2009; Gonzales and Lamadrid 2019; Gonzales 1993; Gonzales and Sanchez 2018; Gutiérrez 1991; Horton 2010; Meyer 1978; Mitchell 2005; Montgomery 2002; Mora 2010; Nieto-Phillips 2004; Reséndez 2005; Weber 1982). Academic works examining modern expressions of Hispanic identity, sometimes considered a race, sometimes an ethnicity, have also taken a historical perspective. These works are both rooted in and critical of the impact of early nineteenth century U.S. racial discourse and its effects on Hispanic identity and experiences in New Mexico (Gómez 2008; Rodríguez 1990; Trujillo 2009; Van Ness 1979; Weigle 1989).

Many scholars identify the nineteenth century encounter with U.S. racial systems as key to the development of modern New Mexican Hispanic identity. This encounter began in earnest in 1821 when New Mexico was the northern border of Mexico. The Santa Fe trade, which became legal that year, brought substantial and sustained cultural contact between New Mexicans and European Americans. The early phase of this encounter culminated in 1912 at the end of the 64-year fight for New Mexican statehood. During this time New Mexicans experienced new products and markets, disenfranchisement through land fraud and competition over resources, changes in government, new racial discourses, and prejudice, all of which shaped changes in New Mexican Hispanic identity that continue to affect modern

New Mexican identities today (Bustamante 1982; Clark 2005; Gómez 2008; Meyer 1978; Nieto-Phillips 2004:99; Reséndez 2005; Weber 1982).

Although the Mexican and American Territorial periods are sometimes glossed over in culture history summaries in comparison to the colonial period and the twentieth century, there is no doubt among Latinx scholars that these years were important in the development of modern Hispanic identity.[1] The Territorial periods are not necessarily "the beginning" of a distinct New Mexican Hispanic identity, but they were undoubtedly a turning point during which Hispanic identity underwent profound changes and took on characteristics we recognize as part of modern New Mexican Hispanic identity today. Historian John Nieto-Phillips (2000, 2004) identified New Mexico's long road towards statehood and self-government as a key element in the development of modern Hispanic (Spanish American) identity. During the American Territorial period white U.S. politicians repeatedly used racist justifications to vote against statehood for New Mexico. Politicians argued the mixed-race Spanish and indigenous heritage of New Mexicans made them inferior and incapable of self-government. In response to this and other forms of racialization, an alliance of elite Hispanic New Mexicans and European American boosters with economic interests in New Mexican statehood developed and propagated the idea that New Mexican Hispanic ancestry was primarily Spanish (hence the ethnonym Spanish American), and therefore white European, unlike other Mexican Americans in the country.

Sociologist and law professor Laura E. Gómez (2008) also documented the racialization of Mexican Americans in New Mexico, particularly between U.S. conquest and

[1] In the following discussion my use of various ethnonyms will change between Hispanic, Spanish American, Mexican American, etc. to reflect the primary ethnonyms used by the authors summarized. Their choices reflect the period of writing and their own close consideration of assorted identifiers available, each with their own definitions and historic context.

statehood. Prior to U.S. conquest, New Mexicans had adapted a local social hierarchy that was originally rooted in colonial Spain's elaborate *sistema de castas* and had evolved to better fit local frontier society. This system was very different from the U.S. racial hierarchy that was emerging in eastern states, particularly during the Reconstruction Era. Gómez argues that after the 1846 conquest, the large Hispanic population had to be slotted into the U.S. racial hierarchy, with European American whites at the top, and African American blacks on the bottom.[2] Boosters like L. Bradford Prince and elite Hispanic New Mexicans worked together to claim some whiteness for Hispanics by developing their identity against African Americans, Puebloans, and other indigenous identities. To do this, New Mexican Hispanics emphasized Spanish conquest and victory over Native Americans in their historical narrative, downplaying and erasing periods of cooperation with each other, or conflict against the U.S. Again, it is contact with U.S. racial structures and racialization that is the key part of the development of modern Hispanic identity. In later work, Gómez (2020) goes on to argue that U.S. racist structures are also key to the national development of Latino/a/x identity in the later twentieth century, which she argues functions socially as a racial identity.

Gonzales-Berry and Maciel argue that it is the "length of continuous residency, land ownership, and participation in the public affairs of state" (Gonzales-Berry and Maciel

[2] A multitude of immigrant others were also being integrated into the American racialized hierarchy during this same period. In eastern urban centers, Irish, Syrians, Polish, and Jewish immigrants from a range of nations were classified as not quite "white" but were eventually able to claim some social and civic benefits of whiteness over several generations via different routes of integration. In other parts of the U.S. western frontier, Chinese, German, and Mexican immigrants also strained the U.S. idealized racial binary, forcing it into a multi-level hierarchy. The categories presented in the U.S. racial hierarchy were actually highly fluid in daily social practice, both in the eastern states and on the frontiers. Each of these histories and their present-day consequences is equally complex as that of New Mexican Hispanics. For more information on the construction of race in nineteenth and twentieth century America, see: Bebout 2016; Ignatiev 1995; Park 2011; Roediger 2006; Saxton 1990.

2000:2) that define *nuevomexicanos*' identity and sense of place. These features were already becoming important in the Mexican Territorial period and are apparent, for example, in newspapers printed by Padre José Antonio Martinez, who introduced a printer to Taos in 1834. Martinez's writing emphasized *nuevomexicanos'* unique identity rooted in what he felt were enduring traditions and values (Maciel and Gonzales-Berry 2000:13). Gonzales-Berry and Maciel also describe regional differences between north and south New Mexico, where central and northern New Mexico Hispanic identity was shaped by contact with Pueblos, the long distance from Mexico, and the numeric majority of Hispanic New Mexicans over European Americans. Southern New Mexico was defined by strong and continuous ties maintained with Mexico through geographic proximity and immigration.

Rodríguez (1987) identifies the 1846 U.S. conquest as a key to modern Hispanic identity because it marks the beginning of Hispano resistance against Anglo encroachment and domination. Following Spicer (1967), Rodríguez argued that resistance played an important part in ethnic boundary making and stimulated the crystallization of Hispano ethnic boundaries against Anglo identity. Resistance was materialized over competition for limited resources—in New Mexico these were arable land and water. Scholars have described other periods of resource competition when ethnic boundaries became 'hardened.' One example is boundaries between vecino and indigenous groups in the late eighteenth century, as vecinos sought new agricultural lands to dominate the expanding export markets (Frank 2000), or between Hispano and Puebloan groups as they contest water rights in the Tewa Basin (Baca 2015). In the period Rodríguez describes, the dramatic loss of community and individual land bases spurred a collective sense of injury and resistance to protect what became a symbolic core within Hispano ethnic self-identity. Resistance continues to play a part in additional pivotal moments of twentieth century Hispano and Chicano ethnopolitical mobilization in ongoing struggles over land and water resources.

These scholars tie modern Hispanic ethnogenesis to several social and political processes, geographic, economic, and demographic conditions. This reflects the complexity of Hispanic identity as it is mediated by race, class, place, and gender. However, they agree that there were significant changes in the nature and scale of Hispanic identity in the Mexican and American Territorial periods. During this time U.S. racial structures were brought into contact with New Mexico via white European American merchants and capitalists along the Santa Fe Trail, then via merchants, military men and migrants after the 1846 occupation and eventual annexation. The impact of this U.S. racial discourse was a shift in the perception of Hispanic identity from being a community identity that operated on a primarily local scale to a racial or ethnic identity defined in its relationship to 'whiteness' (Gómez 2008; Mitchell 2005; Nieto-Phillips 2004). Historians have documented in detail how a portion of this transformation occurred as the result of work by European American boosters and upper-class New Mexican Hispanics who benefited economically from a definition of Hispanic that emphasized 'whiteness.' However, the history of elite Hispanic responses to U.S. racialization is a history of five percent of the population, at most (Montgomery 2002). Historical archaeology can provide richness and detail about the other 95 percent of New Mexican Hispanics whose lives and choices were not preserved in archives.

## Hispanic Identity and Archaeology

What does Hispanic identity look like archaeologically between 1821 and 1912? How does it change? Archaeological study of this period is not just an opportunity to examine the material effects of racialization in action. As archaeologist Albert Gonzalez (2015) points out, the archaeological study of Hispanic identity in the nineteenth century serves to connect the deeper Colonial past, which has been thoroughly studied by archaeologists, and the more recent past and contemporary present, which is closely studied by cultural geographers, sociologists, ethnographers, and activists. It is an opportunity to highlight both persistence and change in Hispanic identity. Unfortunately, our current archaeological understanding of Hispanic identity and daily life during this key period is minimal for three main reasons. First, there have been few archaeological excavations conducted for sites that date to the Mexican and American Territorial periods. Some work has been done as a part of cultural resource management activities, particularly in Santa Fe (Barbour 2012; Lentz and Barbour 2011), and some thesis and dissertation work has occurred in the last 15 years (Eiselt 2006; Gonzalez 2015; Jenks 2011; Peles 2010), but the number of Territorial period sites or components that have been identified and excavated is very small in comparison to the prehispanic or colonial periods. As a result, there is a broad understanding that the amounts of imported and manufactured goods in site assemblages increased after the Santa Fe Trail opened, but no detailed knowledge of changes in material culture and daily life that may have occurred between 1821 and 1912.

Second, archaeologists have not used many theoretical frameworks that allowed them to effectively explore ethnicity and colonial identities in New Mexico, although this is beginning to change. Developing effective theory is a challenge in archaeologies of colonialism and identity generally (Cipolla 2014; Dixon 2014; Pauketat 2001; Silliman 2005). In New Mexico, archaeologists often projected modern experiences and definitions of 'Hispanic' as an essentialized ethnic or racial identity into the past, which impacts the questions scholars ask and shapes data archaeologists collect. This complicates attempts at understanding changes in Hispanic identity and material culture of the Late Colonial and Territorial periods, especially during the nineteenth century. The uncritical use of modern racialized Hispanic identity and ethnic essentialism in New Mexico historic archaeology has masked variation in strategies and experiences of Hispanics in the past.

An example of this can be seen in the initial identification of "Hispanic" ceramics in the 1940s. Hispanic plain wares were classified based on observations of distinctive historic ceramics that did not seem to have any clear stylistic correlates with local Pueblo plain wares (Hurt and Dick 1946). Continued debate in the 1980s and 1990s over the existence of a Hispanic ceramic tradition motivated studies of the physical characteristics of New Mexican plainware pottery (Levine 1990; Olinger 1988; D. Snow 1984). However, comparative studies of temper and paste from "Hispanic" and "Pueblo" plain wares were inconclusive in part because archaeologists were operating within an either/or framework that essentialized Pueblo and Hispanic identities. In his review of early historic New Mexican ceramic typologies, Sunseri (2009:131) noted that such studies left no room for the mixed history and polyethnic nature of Hispanic communities or hybridity in ceramic practice.

In the early 2000s, research in New Mexican Hispanic archaeology began to take blurriness for granted and instead focused on the social behaviors surrounding material production and use. For example, Eiselt (2006) examined micaceous pottery in the Chama

Valley, not as a signal of Hispanic identity, but as a truly interethnic class of material that could be analyzed to learn about variation in clay collection and preparation practices by Apache, Hispanic and Tiwa potters, all of whom made, used, and traded micaceous pots. Sunseri's (2009) work at Casitas Viejas examined New Mexican ceramics, faunal evidence, and landscape manipulation as important components of community practice that drew on a range of identities and situational expressions of affinity.

These works are an improvement on the binary models used previously. However, a third challenge to archaeological studies of Hispanic identity relates to scale. Scale is an important element in any archaeology of identity. Some identities operate at multiple scales, and individual actors may utilize a range of identities depending on the scale of entity they are interacting with; other individuals (micro), communities (meso), and national or state institutions (macro). Therefore, it is not realistic to expect behaviors associated with Hispanic identity to look the same at all scales.

Most New Mexicans' daily activities and interactions in the nineteenth century occurred on a local, community scale. In recognition of this, some archaeologists have begun using the term *vecino* to describe the identity of the people they study, to differentiate this local corporate scale of identity from Hispanic ethnic identity (Jenks 2011). The term vecino as it was used in legal and government documents by the Spanish Colonial and Mexican governments had civic connotations, identifying individuals as recognized legal residents within their community, typically a village, town, or barrio (Murillo 2016). Vecino occurred in documents such as censuses, legal proceedings, and marriage documents, marking that individual as a person with legal standing within the state bureaucracy. Vecino, as it has been used by scholars in New Mexico, has ranged from indicating a civic identity (Jenks 2011), to functioning as a label for a regional social identity that operated on a provincial scale and was defined in juxtaposition to Native American ethnicities in the late eighteenth and early nineteenth centuries (Frank 2000, 2005). Scholars have not always been explicit in defining vecino versus Hispanic, however. Often the term Hispanic is exchanged for vecino with little discussion of scale or how the two identities may be different.

A lack of comparative research exacerbates this problem. Dissertation and cultural resource management work on New Mexican Hispanic archaeology has generally been constricted to single sites or small regions with detailed analysis of multiple artifact classes (Atherton 2013; Church 2008; Clark 2012; Eiselt 2006; Jenks 2011; Sunseri 2009). While some (Atherton 2013; Sunseri 2009) explicitly acknowledge the importance of scale, these studies were not comparative. Alternatively, some broad comparative work has been done (Boyer 2004a; Clark 2012; Darling and Eiselt 2017; Jenks 2011), but Hispanic and/or vecino identity often gets extrapolated to a regional scale with little examination of whether or how different scales of identity operated in the past. There is still a tendency to study historic Hispanic archaeology in highly localized contexts, but to discuss Hispanic identity in broad state-wide or racial terms that obscure our ability to understand changes and variation in New Mexican Hispanic identity. To approach the archaeological research question of how Hispanic identity changed during the Mexican and American Territorial periods, we need a theoretical orientation that connects identity and material culture but emphasizes the fluidity and nuances of social identities; a sample of multiple sites across several regions to provide a comparative dataset; and an interpretive model that allows us to understand the scale at which social identities operated in nineteenth century New Mexico.

*Theory*

Understanding the relationships between social identities such as ethnicity, community identity, gender, class, or nationality and material culture continues to be a central issue in archaeological theory, especially for questions of culture contact and colonialism (Bayman 2009; Deagan 1996; Jones 1997; Liebmann 2005; Lucy 2005; Orser 1992; Silliman 2005; Wilkie 2000). This research is based on an understanding that social identities such as ethnicity and community identity are durable orientations and are continuously created, reaffirmed, and modified through social practice and lived experience (Bourdieu 1990; Postone et al. 1993; Stark 1998). A theoretical perspective oriented on practice theory emphasizes the processual nature of identity. Practice theory, as adapted for archaeology, maintains that larger cultural orientations and beliefs, such as social identities, structure the daily practice of individuals (Eckert 2008; Hegmon 2003; Stark 1998). Daily practice includes the ways people produce, consume, discard and otherwise interact with material goods (Bayman 2009; Voss 2008). The meanings and roles of objects are multiple and the contexts of production and consumption of different classes of objects play a key role in interpretations of artifact meanings and how they were used in the articulation of social boundaries (Habicht-Mauche 2006). Such interpretations and the complexities of how different identities intersect and interact, are specific to particular social and historical contexts (Díaz-Andreu 1998; Kalentzidou 2000; Lucy 2005).

This project conceives of material consumption as a practice that is structured by cultural orientations such as social identities. Furthermore, the practice of consumption, particularly the stage of acquisition, also creates and maintains social relationships that highlight and focus group identities including ethnicity and community (Mills 2016; Mullins

2011a; Mullins and Paynter 2000; Scarlett 2010; Trigg 2003). We define ourselves against others and through our relationships with those outside our social groups (Barth 1969; Jenks 2011). I will focus on the consumer relationships New Mexican Hispanics maintained with other Hispanics, Puebloans, Apaches, European Americans, and other ethnic groups on the New Mexican landscape to acquire and use material goods. Examining these relationships helps us to understand how Hispanics themselves sought to integrate with or stand out from other groups on the landscape.

*Site Sample*

In this dissertation, I compare consumer profiles at four Hispanic residential sites dating between 1821 and 1912 to understand which scale of social network—local or regional—was most emphasized by site residents. The four sites in the sample were selected to provide a range of geographic and economic conditions (Table 1.1 and Figure 1.1). Two sites (LA 4968 and LA 160) date to 1830–1870s and are located near present day Pojoaque Pueblo, north of Santa Fe in the Española Basin. They were excavated by the New Mexico Office of Archaeological Studies (OAS) in the early 2000s as part of the U.S. 84/285 Santa Fe to Pojoaque Corridor Project. The excavation and artifact analysis by OAS are reported in two volumes (Boyer 2018a; Moore 2018a, 2018b). LA 160 is a Hispanic residence located along the Highway 84/285 corridor and LA 4968 is a Hispanic rancho located approximately two miles south of LA 160. LA 160 contains a residential structure that dates to approximately the 1830s to 1860s and two unassociated trash scatters that date to 1870–1900. LA 4968 contains several structures and trash scatters. Excavations thoroughly examined one large residential structure (Structure 1), two possible granaries, and several pit and hearth features. The primary occupation was between 1828 and 1868. Both

Table 1.1. Site Sample.

| Site | Period | Site Type | Community Type | Dates | Reports |
|---|---|---|---|---|---|
| LA 160 | Mexican–American Transition | Single family residence | Near Pojoaque Pueblo | c. 1830–1860s c. 1870–1900 | (Haecker 1981; Hohmann et al. 1998; Moore 1989, 2000a) |
| LA 4968 | Mexican–American Transition | Extended or multiple family residence | Near Pojoaque Pueblo | c. 1828–1868 | (Evaskovitch 1991; Hohmann et al. 1998; Moore 2000a; Futch 1995) |
| LA 8671 | Mexican–American Transition | Single family residence | Small town (200 persons) | c. 1830s–1870s | (Brody and Colberg 1966; Ferg 1984) |
| Barela-Reynolds House | Late Mexican Territorial–American Statehood | Multiple family residence /business | Large town (2,000 persons) along Chihuahua Trail | c. 1840–mid 1900s | 1982 excavation by Boone and NMSU field school (Boone n.d.) |

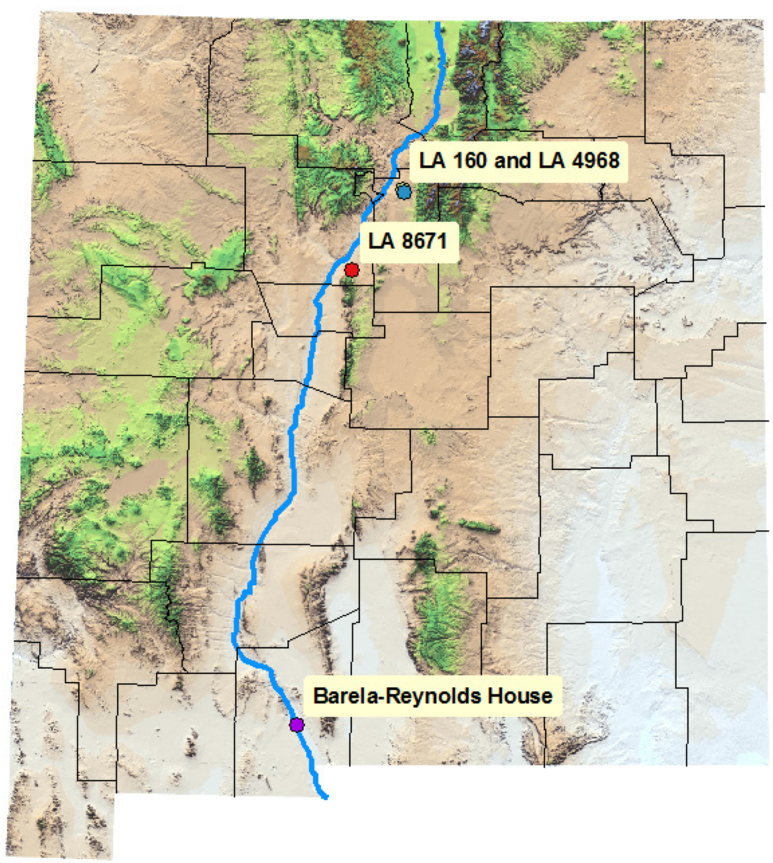



**Figure 1.1. Map of New Mexico showing the project sites and modern county boundaries.**

settlements are within the Cuyamungue Land Grant and at one time both properties were owned by Vicente Valdez in mid-nineteenth century. Because of their similarities, these sites are often discussed together and referred to as “the Cuyamungue Sites” in the following chapters.

The Ideal Site (LA 8671) dates to the 1830s–1870s and is located near present day Placitas. The site consists of a three-room residential structure, an outdoor kitchen area, an animal pen, and two trash features. The structure, outdoor kitchen, animal pen and one trash area were excavated in 1963–1964 by a University of New Mexico field school led by Dr. J. J. Brody and Ann Colberg. The excavations and preliminary analysis of the collected artifacts were published in *El Palacio* in 1966 (Brody and Colberg 1966). A second trash area was excavated by Alan Ferg in 1983 (Ferg 1984).

The fourth site is the Taylor-Romero-Barela-Reynolds House in Mesilla, near present day Las Cruces. The Barela-Reynolds house itself was probably built in the mid-1850s (Baxter 1977), although excavation materials also demonstrate an earlier 1840s context on the property, pre-dating construction of the main house (Boone n.d.). The Barela-Reynolds house is still standing and is listed on the New Mexico State Historic Register. It has a prime location on the northwest side of Mesilla’s central plaza and different merchant occupants of the house played central roles in the development of Mesilla as an important commercial center along the U.S.-Mexico border. Test excavations were conducted in the *zaguan* and backyard of the Barela-Reynolds house in 1983 by a New Mexico State University field school led by Dr. James Boone. While preliminary analysis of the artifacts was conducted probably in the 1980s, the excavations and analysis have not been previously published. The assemblage dates from the 1840s to the mid-1900s, and so this site provides a view of consumption throughout the entire period of study.

The sites in this project represent a variety of production and use contexts within the historic New Mexico Territory. LA 160 and LA 4968 were likely owned by upper-class families who had long-term connections to the surrounding land grant and to Santa Fe, but potentially only intermittently occupied the structures at the sites. LA 8671 is a somewhat remote residence near a village with only 200 occupants in 1848, but it was well situated along a network of roads and travel corridors to reach several different pueblos and settlements around Albuquerque. Finally, the Barela-Reynolds house is a residence and business located on the main plaza of a town with thousands of residents in the second half of the nineteenth century, but its location in southern New Mexico offers different social and economic alternatives than the other three sites. The variety in this sample is an opportunity to understand how different social and economic factors such as proximity to Pueblo population centers, proximity to urban Santa Fe, and proximity to the Santa Fe Trail and Camino Real/Chihuahua Trail affected strategies New Mexican communities used in their consumer relationships and how this related to Hispanic social identity.

*Model*

Earlier in this introduction I discussed the ways that archaeologists have used the term vecino as an attempt to understand how community identities operated in historic New Mexico, and the challenges that this strategy creates, particularly regarding scale. In this dissertation I use the term vecino to refer to a local community identity and the term Hispanic to refer to an ethnic identity operating on a regional scale. These identities exist on a spectrum from local to regional and the consumer practices of site residents can be characterized and placed relative to each other along this spectrum (symbolized throughout this dissertation as “local→regional spectrum”). This comparison allows us to understand whether local or regional identity strategies were prioritized by New Mexican Hispanics during the nineteenth century. I say ‘prioritized’ because it is unlikely that consumer practices would have been entirely local or entirely regional at all times. While the model places vecino and Hispanic on a spectrum, these two strategies probably often existed simultaneously and in tension with one another within single communities or households.

I propose that social and economic entanglements with European American immigrants and changes in the racial discourse in New Mexico during the Mexican and American Territorial periods also may have manifested as changes in consumer relationships that Hispanics maintained with surrounding Pueblo and European American communities in order to acquire material goods. This research investigates and compares consumer relationships maintained by Hispanics at the four sites in the project sample and the ways these relationships may have related to vecino (local) and Hispanic (regional) identities.

The model presented here provides a framework to develop consumer profiles that are qualitative characterizations of consumer practices in terms of the number and location of procurement sources and the social relationships that Hispanic residents maintained to acquire the material goods they considered necessary in their lives (Figure 1.2). Overall, the expectation is that there will be some blurriness and inconsistencies between strategies utilized by the different communities represented in this study. One consumer relationship may suggest local priorities while another indicates impersonal regional ties. Purser (1999:137) notes that the pluralistic and nonlinear nature of material culture within modern capitalism requires interpretive flexibility and creative methodology. While this model provides a framework for interpreting the material artifacts at each site in the sample, it is not predictive nor a fully explanatory model of Hispanic consumer behavior. The results of this research will be contextual and to some extent particularistic, which are necessary considerations when understanding frontier identity relationships (Jones 1997; Kalentzidou 2000; Lucy 2005).

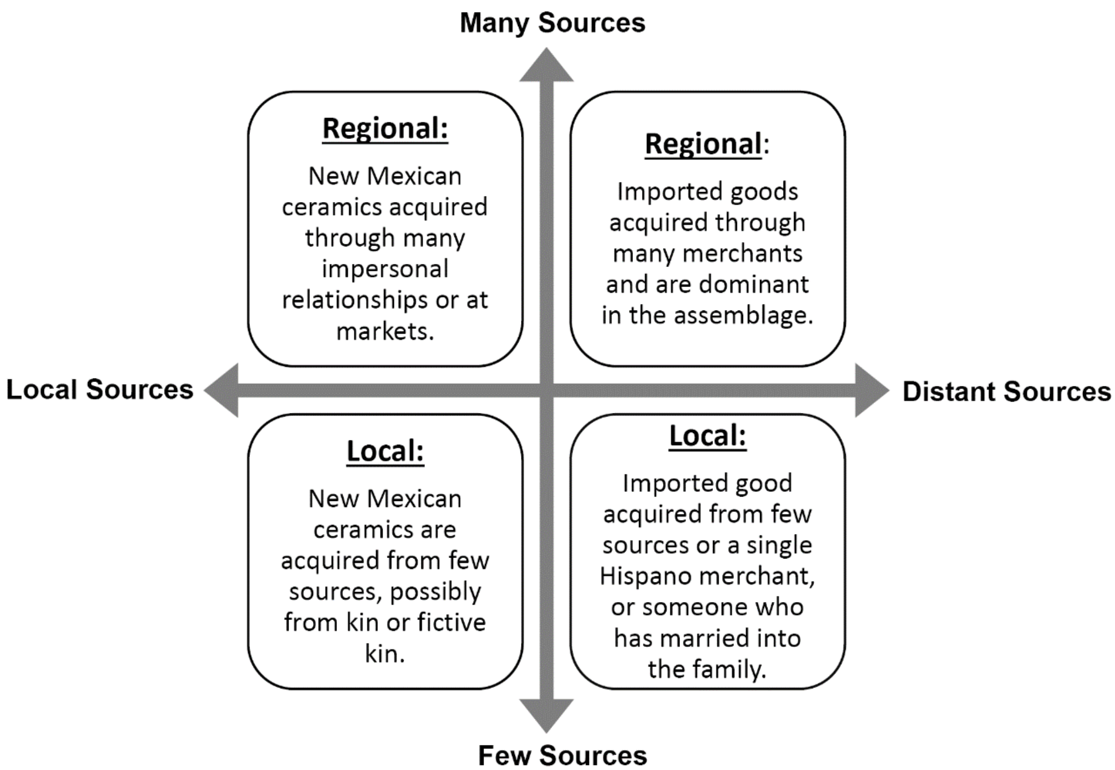



**Figure 1.2. Characterizing consumer profiles.**

*Methodology*

I characterize the consumption practices at each site by analyzing New Mexican ceramics and imported ceramic, glass, and metal artifacts and examining the number and type of social relationships they represent (Figure 1.3).

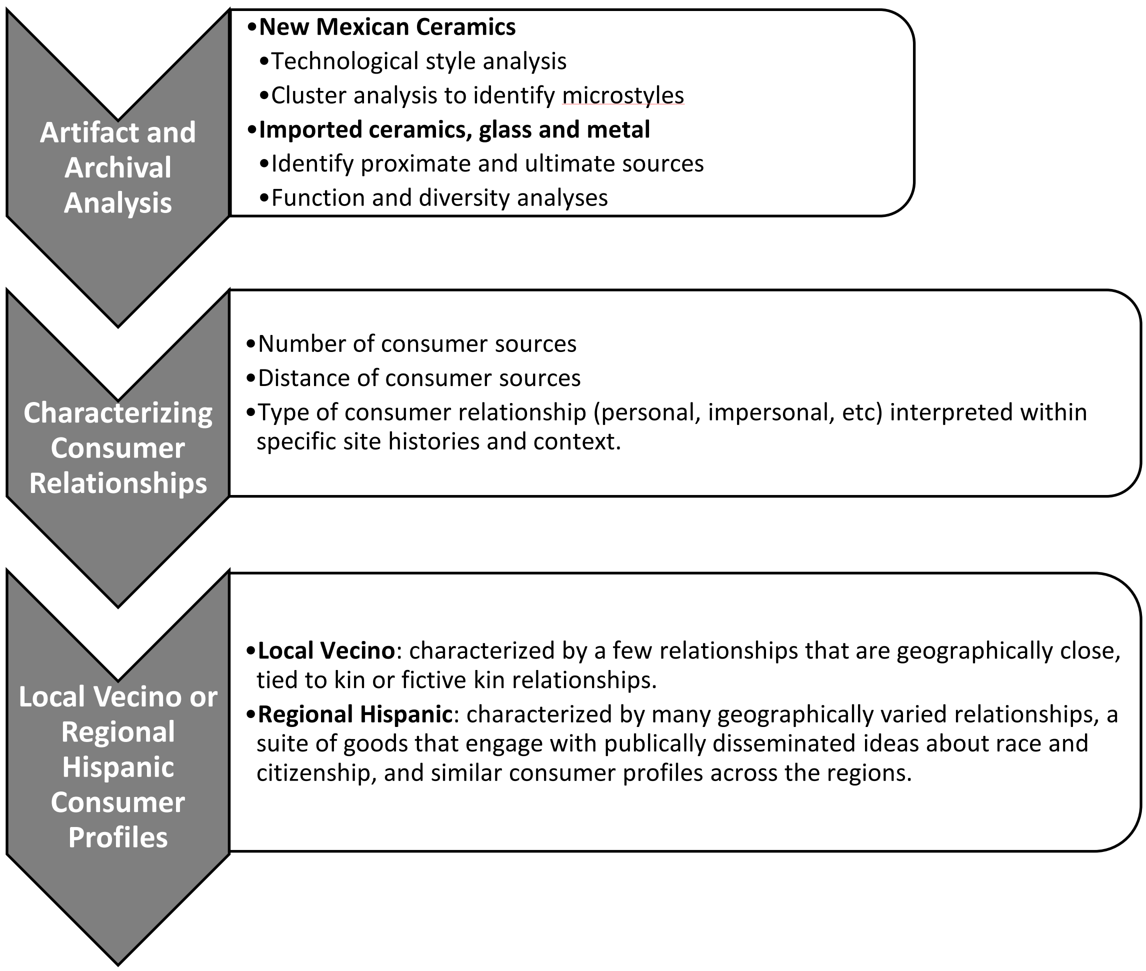



**Figure 1.3. Methodology for developing consumer profiles.**

For New Mexican ceramics, their technological style and identified microstyles are used to represent the number of potting communities that site residents tapped to meet their ceramic needs. Technological style is characterized by identifying production techniques used at four stages of production: clay acquisition and preparation, vessel forming, vessel finishing and decoration, and vessel firing (Table 1.2). Microstyles are identified using cluster analyses to explore possible patterns among ceramic traits documented in the technological analysis.

Table 1.2. New Mexican Ceramic Analysis and Data Collection Methods.

| Stage of Production | Method | Information |
|---|---|---|
| Clay processing | 1. Petrography<br>2. Visual inspection | Percentage of voids and temper<br>Mineral identification of temper |
| Vessel Forming | 1. Manual inspection<br>2. X-ray fluoroscopy | Coil, slab, paddle and anvil, mold-formed, composite techniques, rim diameter, vessel thickness, vessel form, vessel part |
| Decoration/Surface Treatment | Visual inspection | Polished, striated, decorated, smudged, incised, slipped, etc. |
| Vessel Firing | 1. Firing core visual analysis<br>2. Refiring | Maximum firing temperature, firing atmosphere, relative firing duration |

Consumer relationships for imported ceramic, glass, and metal artifacts are measured according to the number and location of consumer sources represented in the site assemblage and how much the goods were incorporated into daily life. The consumption of imported goods from a wide array of non-local Mexican and American sources—purchased in Santa Fe, from merchants on the Santa Fe/Chihuahua Trail, through Native American traders, or by seasonal laborers while away from home—may indicate emphasis on more impersonal regional or national consumer relationships. Additionally, the consumption of non-local goods for different kinds of public display, such as clothing, tablewares, or alcohol for drinking on social occasions, is an indicator of prioritizing Mexican or American status systems and racial relationships rather than personal and localized consumer relationships.

However, imported goods may still indicate maintenance of local relationships. The acquisition of imported goods for local manufacturing, such as purchasing cloth to make clothing (Jenks 2011), or repurposing metal or tin to produce goods for local markets (Eiselt 2006), also suggests prioritizing local community relationships.

The diversity of imported artifacts can tell us more about how imported material was incorporated into the daily lives of Hispanic residents. Diversity is measured as the number of functional categories and specific artifact functions identified in the assemblage, and the evenness of how artifacts were distributed within categories. Low evenness suggests that artifacts were mostly used for a small number of tasks, whereas high evenness suggests imported materials were incorporated into many aspects of daily life.

Finally, the assessment of consumer profile characterizations requires a return to the fine-grained details of particular artifact types and the narratives of individual artifacts. This recursive dialog between broadly-defined consumer profiles and specific artifact narratives provides additional nuance in understanding the particular forces influencing consumer behaviors at each site. The interpretation of a particular consumer strategy must also be understood within the context of external factors such as economic class and market access.

## Dissertation Overview

Chapter 2 provides a historical overview of the New Mexico Territory in the Late Colonial, Mexican Territorial, and American Territorial periods. This chapter tacks back and forth between historical summaries of each period, and archaeological research, which provides detailed local information regarding material culture and potentially identity. For each period I provide a historical summary of the basic events and conditions of the New Mexico Territory, a presentation of the ethnic labels and social identities that appear to be active within the territory at the time, and the economic conditions and markets that shaped the material culture available to residents.

Chapter 3 provides an overview of practice theory, the theoretical framework of my research. Practice theory and the subset of communities of practice, are particularly well-suited to material culture studies in polyethnic colonial societies such as Chapter 2 shows New Mexico to be. Chapter 3 also lays out the essentials of my interpretive model for understanding how the material culture at each of the four sites in the sample inform us about identity in the nineteenth century.

Chapter 4 describes each of the four sites in the dissertation sample: the Barela-Reynolds house in Mesilla, at the southern end of the territory, LA 8671, a small Hispanic household at the northern edge of the Sandia Mountains, near Albuquerque, and LA 160 and LA 4968, two sites near Pojoaque Pueblo, north of Santa Fe.

Chapter 5 is an in-depth study of the historic New Mexican ceramics recovered from each site. This is the dominant material class of any historic site in New Mexico prior to the railroad, and simultaneously possibly the most understudied. New Mexican plain ware forms have proven to be particularly difficult to sort into meaningful types that convey chronological or cultural information about their producers. Chapter 5 presents the results of detailed technological analyses of the ceramics from each site, with an examination of each stage of ceramic production—clay selection and preparation, vessel formation, surface treatments, and firing techniques. These data form the foundation of statistical analyses presented in Chapter 6, as well as important datasets for qualitative analysis of the variation represented in each decorative type, and comparison among the four sample sites.

Chapter 6 takes the raw data gathered and summarized in Chapter 5 and uses the ceramic traits as variables for cluster analyses of pottery at each site. These analyses are designed to identify constellations of technological traits that likely indicate communities of practice that produced each type of pottery. Cluster analyses are exploratory statistics rather than definitive identification of cultural production groups, but they also provide quantitative estimates of the variation present at each site. The communities of practice represented by clusters of traits are proxies for the groups that provided pottery to each of the sample sites. Site residents needed to maintain relationships with these producers. The number of relationships is an important component of the larger consumer profile at each site and is numerically comparable between sites.

Chapter 7 addresses the imported European American goods at each of the four sites. The chapter discusses the assemblages, how they differ, and addresses variations in market access at each site. Often market access is measured by physical proximity to market centers or trading routes, but this equation is simplistic and incomplete. Instead, Chapter 7 presents an archival analysis of merchant licenses for the three counties where the sample sites are located: Doña Ana, Bernalillo, and Santa Fe, to assess the number of active merchants circulating within each region, how their number varied over time, and the ethnicity—Hispanic or European American—of merchants from whom site residents could have acquired goods. Additionally, a study of a sample of merchant manifests, debt books, and ledger books from the nineteenth century provides an understanding of the costs and availability of common goods not necessarily found in archaeological sites. This sample study provides an archival window into the material and commercial ecosystem of New Mexico during the study period, and how these forces may have impacted consumer choices and profiles at each sample site.

Finally, Chapter 8 pulls together information from Chapters 5 through 7 to build consumer profiles for each site in the sample. This chapter takes the material data from each site to position each site within the theoretical model with regards to more local or more regional on the spectrum of consumer practices and interpret what this might mean for Hispanic or vecino identity in New Mexico during the nineteenth century.

## Another Thread

Nationally, the question 'who is Hispanic?' is rooted in the ties between the racialized history of the United States and the diaspora of people from over a dozen nations who have come to the country over the last 170 years. No other government feels compelled to group people with such a broad range of cultural, linguistic, historic, and racial experiences under a single umbrella. The United States' particular history of racialization makes this designation culturally necessary and consistently ambiguous—is Hispanic a racial identifier or an ethnicity? Who is Hispanic and what does it mean to be Hispanic in the United States? The answers are not merely academic, because of the definition of Hispanic and organization of demographic data collection like the U. S. census, they have real-world consequences for the health and happiness of millions of people.

Regions in the Spanish Borderlands have an additional layer of complexity around this question because there is a substantial portion of the Hispanic population here that does not consider diaspora and immigration as part of their cultural history. Rather, they were absorbed into the country in 1848 when the U.S. seized over 1.3 million square kilometers of Mexico. For many New Mexicans, the term Hispanic has a different history and meaning than it does for other Latinos in the United States. But then, every region has its own particular history of what it is to be Hispanic, and variations of Hispanic identities are continuously being created, layered, contested, and reclaimed. Academics have a role to play in this process as well, as each storyline must be fit in to the national historic narrative so that many people can connect to and engage with a broader conversation of what it means to be Hispanic in the United States.

This dissertation looks at what it means to be Hispanic in four households in New Mexico over one short 91-year period, using primarily pottery, glass, and metal. In some ways it is a small slice of a slice of the answer to 'who is Hispanic?' However, it is a slice of the story that has not been told and it addresses several gaps in New Mexican historical archaeology. It presents excavation research that has not yet been published and re-examines legacy excavation data that have not been addressed since the 1960s. It is a comparison of several Territorial period Hispanic sites at a level of detail that has not been approached before. It presents one of the largest collections of petrographic analyses for historic New Mexican plain ware ceramics that has yet been conducted.

The goal of this dissertation is not to 'tell people how Hispanic identity was' in the nineteenth century, or to show that what some people have embraced as New Mexican Hispanic or indigenous, wasn't. Instead, I present an interpretation of how some communities expressed identities in the nineteenth century, based on evidence from the material record, rather than the archival or even ethnohistorical record. This interpretation, and the data it is based on, can then be taken and integrated, dismantled, re-cast or discarded, by those who are researching their own identities, and who are frustrated by gaps and silences in the historical record, or who wish to have even more messiness and contradictions added to their tapestries of New Mexico history.

# Chapter 2: Historical and Archaeological Background

This chapter presents a historical overview organized in chronological order from the Late Colonial period (1692–1821), through the Mexican Territorial period (1821–1846) and ending with the American Territorial period (1846–1912). It tacks back and forth between documentary history, which provides the most detailed information on regional and national identities in nineteenth century New Mexico, and archaeology, which provides the best understanding of material consumption (and potentially local identities) during the periods of study.

Borderlands historians Reséndez (2005) and Frank (2000) emphasize the importance of the state and the market in shaping the social worlds in which New Mexicans operated between the eighteenth and twentieth centuries. Therefore, in between historical and archaeological accounts of period, I also discuss ethnicity, or identity labels, and the period economy. This means that I include an in-depth discussion of the most important identity label options available for each period (*genízaro, vecino, español, indio, mexicano, Hispano)*, exploring how identity labels occurred in the historic documentation and how they are defined and utilized by archaeologists in the literature. Some labels, such as *español, vecino*, and *genízaro*, were used during multiple historic periods, but their meanings changed through time. This has important implications when archaeologists adopt historical labels and apply them to material culture in new ways.

This chapter operates as part culture history and part historiographical critique. Some sections, particularly the Late Colonial period section and individual Economy sections serve to summarize previous historical research and contextualize what is currently understood about trade and market relationships operating in New Mexico during the study period. The Archaeology sections serve as critical assessments of previous theoretical approaches to research in Hispanic archaeology that are particularly pertinent to this research, rather than complete summaries of the extensive amount of work that has been completed to date. The Archaeology sections also serve to emphasize current data gaps regarding archaeological understanding of the 1821–1912 period generally, and how local and regional identities existed and overlapped in historic New Mexico.

While the effect may be somewhat diffuse, my goal is to use secondary historical resources to richly contextualize the research period, with an emphasis on the range and variety of identities and ethnicities that New Mexicans could draw upon during the nineteenth century, and the particular challenges this presents to archaeologists and studies of material culture.

## Late Colonial Period and Bourbon Reforms (1692–1821)

The *provincia* of Nuevo México underwent substantial changes in last decades of the eighteenth century, setting the stage for a growing market economy that expanded dramatically during the Mexican Territorial period with open access to the Santa Fe Trail. However, prior to the Comanche Peace in 1786, cultural and economic circumstances in New Mexico were almost entirely shaped by raiding and trading patterns. Violent relationships with nomadic Native American groups impacted settlement patterns, trade routes and how often caravans could travel, livestock and agriculture choices, and even marriage and family structures. Overall, the economic and ethnic landscape of New Mexico during the Late

Colonial period was defined by and completely integrated with relationships with the tribes who surrounded the small colonial settlements.

*History*

When Spanish colonists returned to the New Mexico region in 1692, they developed a very different colonial enterprise than had existed prior to the Pueblo Revolt. The new colonial endeavor was defined by a more heterogeneous population, and was more oriented towards population settlement and a defensive border with other empires, rather than exclusively exploitation and extraction of resources from Pueblo groups, though substantial colonial exploitation of native groups certainly continued throughout the nineteenth century (Gutiérrez 1991:146). Resettlement began in Santa Fe, and another settlement, Santa Cruz de la Cañada was quickly founded to the north in 1695, as more colonists and families arrived from parts of Mexico. Settlement also expanded south along the Rio Grande and Albuquerque was founded in 1706. Santa Cruz, Santa Fe, Albuquerque, and El Paso became the four core centers for Hispanic settler occupation of New Mexico, while other attempts at expansion remained small-scale and precarious through the eighteenth century (Gauthier and Brown 2016; Simmons 1969; D. Snow 1979; Swadesh 1974).

However, broader regional changes among Native American tribes meant that Hispanic colonists encountered a different political and economic world than the one they had fled in 1680. A splinter of the Shoshone cultural group had been pushed south along the Rocky Mountains by smallpox epidemics and re-emerged as the Comanche people around 1700. The Comanche fully integrated horses into their hunting and trading culture and were using this advantage to become a powerful expansionist force in the American plains (Hämäläinen 2010). By 1750 they were able to push Apache tribes off the southern Plains, further south and west into New Mexico territory (Eiselt 2006; Gunnerson 1969; Hämäläinen 2010). In the 1700s, the territory of New Mexico was surrounded by the Comanchería to the north and east, the Navajo and Ute to the north and west, and Apache groups to the south (Brooks 2002). Relationships with surrounding nomadic tribes were a complex balance of raiding and trading as each side sought to meet substance needs as well as gain economic or military advantage.

Further changes came to the frontier colony in the mid-1700s, as Spain imposed a series of bureaucratic, economic, and administrative reforms throughout New Spain. Known as the Bourbon Reforms, these changes reflect different management on the part of the King Charles III (ruled 1759–1788), the last of the Bourbon dynasty, and his strong departure from the previous economic and bureaucratic practices of the Habsburg rulers. Under Charles III, the Spanish Crown sought greater bureaucratic and administrative control over the colonies; their governance, defense, and most especially their monetary and raw resources via an export economy and taxation (for a broader discussion of the effects of the Bourbon Reforms on the Spanish Colonies, see Fisher 2012; Frank 2000; Stein and Stein 2004; Weber 1982).

Comanche raiding practices served as a powerful counterpoint to the colony's own expansionist agenda. The contours of Hispanic New Mexico ebbed and flowed throughout the eighteenth century as new settlements were founded on community grants along river drainages, and were later abandoned due to intense raiding pressure, only to be re-occupied again. Settlements at Tomé were established in 1740, only to be abandoned in 1760, and re-settled again five years later (Akins 2001). Ojo Caliente was initially granted in approximately 1730 and gradually populated, only to be abandoned again by 1747 due to raiding and re-occupied in 1751 (Ebright 2014). Especially frequent raids in 1747 emptied out most settlements along the Chama, as colonists fled south and east to Santa Cruz and Santa Fe (Sunseri 2009).

In the northern edges of New Mexico, there was special emphasis on improving defense and increasing settlement along the empire's borders. Beginning with Governor Cachupín in 1749, New Mexico initiated a defense strategy that relied on buffer communities on communal land grants located at the edge of colonial control. The communities were placed at strategic locations along raiding routes and populated by a combination of Hispanic, lower class *genízaro* (often defined as "detribalized Indians," this uniquely New Mexican socially class will be discussed further in the Ethnicity section, below), and *castas* settlers who were tasked with their own defense, in hopes of also providing protection for more populated Hispanic centers. Living on the frontier entailed high risk and villages were frequently abandoned during periods of heavy raiding, although kinship and fictive kinship relationships that *genízaros* could maintain with nomadic tribes may have aided their survival in the otherwise hostile frontier zone (Brooks 2002; Magnaghi 1990; Swadesh 1974). *Genízaros* and other lower-class settlers were willing to risk living on the frontier in exchange for the opportunity to own land and social mobility (Ebright 2014; Gonzales 2014; Magnaghi 1990).

Under Bourbon and local New Mexican reforms, changes in military policy and the eventual Comanche Peace in 1786 paved the way for dramatic changes in the region's economy, production, and settlement patterns. Colonial officials were especially interested in re-settling abandoned areas and expanding the boundaries of Spanish military and cultural control in New Mexico. The territory was experiencing considerable population growth, and more New Mexicans wanted access to land and water resources. Peaceful relations with the

Comanche meant that colonial settlement could expand (or return) along river valleys such as the Puerco, Chama, and Mora rivers. New territory and greater amounts of land came under cultivation, increasing the agricultural output of the province (Frank 2000). Gifts made by the Spanish government to nomadic tribes as part of negotiated peace agreements, also stimulated the New Mexico economy, providing contracts for the purchase and delivery of wheat, sheep, and metal goods (Frank 2000; Weber 1982). These were important conditions for the growth of New Mexico's economy and therefore its ability to participate in the broader Mexican economy and global system.

*Economy*

Trade along the old Camino Real was re-established shortly after colonial re-occupation of New Mexico in 1692. However, regional trade was sporadic and stuttering. The long distance to Chihuahua was dangerous and expensive because the routes were not secure and the caravans were targets for raiding. Once in Chihuahua, New Mexicans rarely received fair pay for their merchandise, largely due to the trade monopoly Chihuahuan merchants had established by the mid-eighteenth century (Moorhead 1995). While both Puebloans and colonists participated, it was primarily government officials such as governors and well-positioned alcaldes who were able to leverage enough labor, capital, and surplus product to make the trip worthwhile (Frank 2000). Internally, however, the mid-century colonial economy was dependent on relationships with surrounding tribes and exploiting Puebloan labor. Near-crisis conditions in the territory made it difficult for settlers to raise any surplus livestock or agricultural products for much of the eighteenth century because of disease and violence from raiding and reprisals.

The 1786 Comanche Peace was vital to the developing frontier economy and establishing a period of economic growth for the New Mexico Territory (Frank 2000). There was high demand in Chihuahua, which had become a major mining and supply center by the 1750s, as well Parral, Zacatecas and Mexico City for raw materials such as mutton, wool and woven wool products, hides, and tallow. New Mexican elites were eager to meet this demand, particularly because it provided them the means to purchase imported and manufactured items otherwise unavailable in New Mexico. Contracted wagons and muleteers who had brought supplies from Chihuahua to the New Mexico missions were often co-opted by New Mexico governors and other elites to carry materials on the return trip for sale in Chihuahua (D. Snow 1993). As stability after the Comanche Peace allowed more agricultural and livestock production and surplus, more and more New Mexicans participated in trade along the Camino Real/Chihuahua Trail throughout the eighteenth and early nineteenth centuries, travelling together as an annual caravan for safety.

Originally the Camino Real de la Tierra Adentro had been a travel route for governmental supply trains between Santa Fe and central Mexico during the pre-revolt period, and it followed earlier Native American trade and travel routes that had connected Rio Grande pueblos with Manso, Suma, and Jumano groups to the south (Riley 1993). Materials transported into the territory in the pre-Revolt period were intended to supply the missions but also to aid in assimilation and Hispanicization of native groups in New Mexico, through material goods and displays of Hispanic culture (Staski 1998).

In the Late Colonial period the trade route now occupied a more narrowly economic rather than nationalistic role, and it was part of a three-pronged trading network that connected nomadic plains tribes, New Mexican Hispanics and Puebloans, and Mexican

Hispanics in growing mining towns and cities. New Mexicans desired manufactured tools, metals, fabrics, and luxuries from cities in Mexico. Mining towns and cities in Mexico desired agricultural goods, livestock, furs and skins, and enslaved workers. Nomadic tribes desired manufactured goods and some agricultural products. Guns, horses, and captives flowed in both directions along the three prongs and changed hands between colonists and tribes via both raiding and trading mechanisms (Brooks 2002; Hämäläinen 2010).

This three-pronged trade also had a vital social component. Lindsay Montgomery (2019:334) notes that for Comanche and Plains participants, trade and exchange underscored concepts of reciprocity, cooperation, and generosity, and reinforced an important social relationship between trading partners. By the late 1700s New Mexican Hispanics (especially Governor Cachupín) had realized the role that exchange had in maintaining peaceful interactions with Comanche and the government organized a fund for regular gifts of cloth, hats, shoes, clothing, soap, mirrors, beads, cigarettes, and sugar (Cunningham and Miller 1999). This arrangement can also be interpreted as a tribute given by the colonists (Hämäläinen 2008).

Goods purchased by New Mexican merchants in Chihuahua and Parral were expensive and included both utilitarian products such as metal tools for agriculture, metal smithing, mining, and other production (such as sewing); and luxury items, such as ceramics imported from China and Europe, chocolate, sugar, face powder, and jewelry. Majolica may have occupied an intermediate position: D. Snow (1986) and Fournier (1999) demonstrated that Mexican-made majolica was less expensive than imported Chinese and European porcelains, but several archaeologists have also argued that majolica played an important role as a symbol of class status and Spanish ethnicity in colonial contexts (C. Snow 1993; C. Snow 2005; Williamson 2001; though see Voss 2012 for counter-example).

New Mexican merchants often paid for these purchases on credit, or using raw materials exported from the territory: maize, wheat, sheep, and small amounts of cattle raised in New Mexico; and captives, buffalo skins and meat, and furs acquired at trade fairs. As the mining towns grew, so did the demand for wool and mutton in the nineteenth century (Cunningham and Miller 1999). Some woven wool goods were also exported from New Mexico, as well as wines and distilled liquors from near El Paso (Moorhead 1995; Reséndez 2002). Frank (2000) argues that Puebloans also sent goods south on consignment or traveled the Camino Real/Chihuahua Trail themselves to make sales prior to 1780.

Trade fairs were the alternate side of New Mexico's trading-raiding relationship with the Comanche, and an important avenue for interregional trade. Fairs occurred at Taos, Pecos, and San Miguel del Vado throughout the Late Colonial and Mexican Territorial periods. They were regulated to some degree; colonial officials attempted to set exchange rates for goods traded to Native American participants, and Governor Cachupín encouraged the practice of "ransoming" captives from Comanches (Gutiérrez 1991). As part of their extensive territorial control, the Comanche nation had access to a wide range of products from eastern plains tribes, French colonists, and Americans. They served as middlemen between the competing imperial powers and a multitude of trade partners (Hämäläinen 1998). Additionally, the Comanche had become equestrian specialists with highly mobile lifestyles focused on horse rearing, bison hunting, and raiding. After inserting themselves into previously Apache-Pueblo-Spanish trade networks, they used access to trade fairs to acquire agricultural goods which they did not themselves produce in great quantity, metal products such as knives, and horse bridles and tack. In return they supplied New Mexico and other trading partners with horses and mules, bison meat and pelts, and young persons captured from raids on Hispanic settlements and from a range of other nomadic tribes.

Trade in guns and ammunition varied through the eighteenth century. Spain had strict rules regarding the sale of firearms or weapons to nomadic tribes. All of these restrictions were frequently bypassed or ignored in the early part of the century, often by New Mexico governors themselves, in favor of slim profit margins, and guns were traded to the Apache, Ute and Comanche (Frank 2000). As the Comanche came to dominate the southern plains, they also had regular access to guns from the French via the Wichita. By the late eighteenth century, the Comanche had better access to guns and ammunition than New Mexican colonists, and they became the suppliers (Hämäläinen 2010:186).

The Camino Real/Chihuahua Trail and Comanche trade fairs were also integrated lines of external trade. Prior to the Comanche Peace, New Mexicans had little opportunity to grow surplus wheat or corn to send south to Mexico, and raiding kept their sheep livestock at a bare minimum. By using goods acquired through trade with surrounding nomadic tribes, New Mexican colonists were able to offer a small range of products to larger markets in Chihuahua: buffalo, elk and deer hides, and slaves. These were purchased by colonial elites from nomadic groups at trade fairs and sent south. At the Taos and Pecos trade fairs, those Hispanics who could afford to engage in trade (generally the governor and only a few of the territory's richest) paid for these goods in horses, mules, knives, awls, clothing, and beads. Exchanging materials acquired from Comanche at trade fairs was, at times, the only means New Mexicans had for purchasing imported materials in Chihuahua (Cunningham and Miller 1999; Frank 2000).

Internally, goods were distributed through personal bartering relationships, or a system Frank (2000) described as a form of semi-legal *repartimiento*, where redistribution was controlled by elites who could afford to import goods and control trade relationships to their benefit. In the mid-1700s New Mexico governors and authorities extorted maize, cotton, cotton or wool textiles, and sheep from Pueblos as "payment" for the imported goods that they traded to Pueblos and towns at high cost, on credit. Franciscan friars also accused the governors and alcaldes of taking the wool tithe collected throughout the territory and giving it to Pueblos to weave into blankets and other textiles, which the governors then sent south to be sold in Mexico (Frank 2000:27). By the early 1800s Hispanic settlements were also drawn into this system, where settlers purchased imported supplies such as iron hoes, broad knives, or axes, on credit, often promising multiple years of crops or sheep in advance (Frank 2000). Those who went into debt were obligated to commit themselves, or their wives or children to indentured servitude (Richards 1994). While highly exploitative on many levels (e.g., Chihuahua merchants exploiting New Mexican merchants, New Mexican elites exploiting Puebloan and un-landed individuals), this system circulated imported goods throughout the territory.

The New Mexico economy continued to grow throughout the Late Colonial period, especially after 1786 and when raiding activities diminished. Growing numbers of New Mexicans participated in external or internal trade by the end of the eighteenth century. However, trade was in no way a primary or full-time activity. Instead, participants concentrated on agricultural or stock-raising pursuits for much of the year, and only traveled seasonally for long-distance trade. Only a few landed elites could accumulate enough surplus to participate year after year. So, only a small fraction of these individuals identified themselves as “merchants” in censuses and other types of official documents, making it difficult to trace the full extent of inter-regional trade, the exact number of “merchants” and the scale of their material distribution. However, it seems likely that different forms of trade and barter were widespread and occurred on both large and small scales.

*Ethnicity*

Individuals living in Late Colonial New Mexico navigated the world with a wide range of legally and socially recognized identities. Through much of the period, social class and racial heritage were interwoven in a complex network known as the *sistema de castas*. Through time, the Spanish authorities developed a proliferation of ‘racial types,’ or available bureaucratic identities in attempts to cope with the increasing ambiguity caused by interracial marriages and children in the Spanish colonies. European Spaniards, at the top of the caste system, created new ethnic groups to prevent their own from becoming ‘less relevant’ as racial boundaries grew increasingly blurred (Bustamante 1991). Labels applied in censuses and marriage documents had tangible economic and social influence in people’s lives, and new ethnic groups were formed. Castas identities left the realm of ascribed labels and became ethnic identities that could be manipulated and negotiated. For example, *castizo* and *morisco* were added to the sistema in the seventeenth century. They were considered higher on the racial scale than *mestizo* and *mulatto*, respectively, and there was an impetus for groups to self-identify with the new labels as a strategy for social mobility. Eventually the *sistema de castas* contained 16 different categories, and in some regions up to 22. According to Patricia Seed, “The introduction of the terms castizo and morisco…has been seen as an attempt to preserve white exclusivity and to maintain the boundary between white and -mixed bloods” (Seed 1982:574). These bureaucratic and social labels came to encompass implications about racial (genetic) history in addition to settlement and lifestyle, language, and economic standing.

However, archival evidence also demonstrates the malleability of the caste system. Through her work with the 1753 census in Mexico City, Seed was able to trace changes in the documented race of 108 individuals between parish records and the census. She also demonstrated how a person's race was sometimes modified in circumstances such as marriage documents, to downplay racial differences between two partners, or in other cases to fit certain social expectations of the behavior of the different groups. Her study shows not only the fluidity of documented identity, but also the social nature of race/caste in the Spanish colonies in the second half of the eighteenth century. Seed (1982) demonstrated strong patterning between race and occupation for people recorded on the census as Spanish, *mestizo*, *mulatto*, black, or Indian.

The complex *sistema de castas* was the ethnic "vocabulary" that was imported, though not wholesale, into New Mexico after the Pueblo Revolt. Following Diego de Vargas' 1692 re-entrada into New Mexico, both Native and non-Native people, especially Mexican-born persons, began immigrating back into the northern Rio Grande basin. Based on eighteenth century census documents, many residents identified themselves as "*español*," though only a small fraction listed peninsular birthplaces (Gutiérrez 1991). As we have seen, "Spanish" was the highest racial category in the colonies, and immigration to the northern New Mexican frontier may have given people an opportunity to upgrade their ethnic classification, as it did for soldiers at Californian presidios (Voss 2005). Nieto-Phillips (2004) notes that in the 1790 census, *españoles* made up 50 percent of the population in Santa Fe, versus approximately 20 percent elsewhere in New Spain. This suggests that the status benefits of the class were substantial on the New Mexico frontier, and residents took advantage of social mobility to claim an identity they may not have been able to achieve elsewhere.

Gutierrez (1991) argues that between 1693 and approximately 1760, *calidad* (social status) was primarily civic, or class based, rooted in land ownership and place of residence, rather than race or genealogical heritage. After 1760, race and phenotype became the dominant determinants of *calidad*. In New Mexico, the use of a wide range of *castas* labels was common in bureaucratic documents and *diligencias matrimoniales* (church paperwork prior to a marriage, which often included documentation of at least three generations of each partner's family) between 1760 and approximately 1790 (Frank 2000; Gutiérrez 1991). Marriage documents also suggest that between 1770 and 1790, there was a higher percentage exogamous marriage between those who identified as Spanish, and those who did not. The concern with racial nuances in the *sistema de castas* may have been a response by high status *españoles* to increased intermarriage and racial admixture.

The period between 1760 and 1790 was also directly after the height of violence between Hispanic settlers and surrounding tribal nations. Raiding on all sides introduced higher numbers of non-Hispanic women and children into communities as slaves. The result may have been higher numbers of illegitimate and mixed-race individuals within communities because of sexual abuses by (mostly upper class) Hispanic slave owners (Frank 2000; Gutiérrez 1991:202). As racial boundaries became more visually and economically blurred during the Late Colonial period, Gutierrez (1991) argues members of the upper class became more interested in establishing lines of difference between themselves and others, in order to maintain their class dominance.

However, our understanding of identity nuances for this period comes primarily through bureaucratic documentation, which represents only a small, predominantly upper class (and therefore class conscious) portion of the population, which may give a skewed picture of how crystallized social boundaries were in Late Colonial New Mexico. From historical documentation, it is clear New Mexican communities were often multiethnic, with individuals who identified as Spanish, *mestizo, genízaro*, and Puebloan living in the same settlements. It is likely there were even higher numbers of undocumented exogamous unions throughout the Late Colonial period, among individuals who did not have the means or the economic impetus to pursue church-sanctioned (and documented) marriages and were not concerned with defending class status or property rights through legitimacy or racial purity. Thus, the racial and cultural environment in Hispanic settlements may have been even more blurred than documents suggest.

On the edges of the New Mexico settlement, another ethnic/social class came to play an important role in the colony's defenses and settlement organization. The group designated *genízaro* was composed of persons who had been born into Native American tribes, most often Kiowa, Pawnee, Apache, Comanche, Navajo, or Crow, who had been captured and raised in Hispanic colonial households. Upon their release, they were "detribalized Indians" who continued to practice Catholicism, speak, dress, and live like Hispanic colonists (Chavez 1979; Swadesh 1974). While *genízaro* identity is most often associated with nomadic tribes captured through slavery, *genízaro* scholar Gilberto Benito Cordoba (1973; see also Swadesh 1974) emphasizes that *genízaros* could come from Puebloan groups as well, if they had been expelled or choose to leave and join Hispanic settlements, such as a Hopi population that settled at Abiquiú.

*Genízaros* existed outside the larger caste system but were broadly considered indigenous during the Late Colonial period. When Governor Cachupín granted *genízaro* community land grants at places like Abiquiú and Ojo Caliente, they operated bureaucratically as indigenous grants, which could not be sold to non-indigenous persons (Ebright 2014). The grants also provided *genízaro* people with a means to become landowners, a crucial step in upward mobility in the cash-poor Late Colonial social world. It appears that *genízaros* did have access to limited amounts of social mobility, in part in return for their militia service on the frontier; inter-marriages and blended terminology such as "genízaro vecino" occur in bureaucratic records (Swadesh 1974:43). The ethnic category of *genízaro* took on characteristics that are unique to New Mexico and were not well understood by officials in Mexico City. However, because of its association with captivity and slavery, it is unclear how large a proportion of the population was *genízaro* at any given time. Using census data, Maghanghi (1990) estimated that those labeled *genízaro* and servant made up 13.2 percent of the population in 1750, but Schroeder (1972) estimated as much as a third of the population could have been *genízaro* by the late 1700s. Later, Mexican and American officials would use the high proportions of *genízaros* in census and other record-keeping documents to argue that *genízaro* New Mexicans had been fully assimilated into the broader culture, that they were all 'vecinos' or Mexicans rather than indigenous and denied them indigenous protections in land rights cases (Ebright 2014; Swadesh 1974). The term dropped out of bureaucratic use during the Mexican Territorial period, as part of the young republic's attempt to include all peoples under the blanket of citizenship.

After 1790 the complex terminology of the *sistema de castas* also began to be less common in documentation in New Mexico. Beginning in the late eighteenth century, and becoming more prevalent in the early nineteenth century, ethnic labels across much of Spain's colonies coalesced into two broader categories—*vecino* (literally 'neighbor,' often translated as 'citizen') and *indio*. This was in part a response to more liberal ideals that were developing in New Spain as part of its fight for independence and in part because the complex *sistema de castas* was no longer tenable given the broader demographics of Mexico, where 80 percent of the population lay somewhere between *español* and *indio* (Gómez 2008). Using the 1790 census, Gutiérrez (1991:292) demonstrated that at the same time, upper-class *españoles* and Puebloans both began to prefer racially endogamous marriages (*españoles* married *españoles* and Puebloans married Puebloans), and exogamous marriages dropped from approximately 13 to 7 percent. Alternatively, persons classified as mixed-race continued to marry outside their race approximately 40 percent of the time. This may be because *españoles* were more likely to be landowners who wished to keep property intact through cycles of inheritance, whereas mixed-race persons were more likely to be landless. For Puebloans the motivation may have been to retain cultural integrity, but property ownership could also have played an important role, as Puebloans were forbidden to sell portions of their land grants.

*Archaeology*

Archaeological work on Late Colonial Hispanic sites in New Mexico is more extensive than on Mexican or American Territorial period sites. Several large salvage projects in the 1970s, most notably work for the Cochiti Dam Reservoir and at the Palace of the Governors, have established rural and urban datasets for eighteenth century colonial occupations (Biella and Chapman 1979; Seifert 1979; D. Snow 1979; C. Snow 1974, 1992). Ongoing CRM work in Santa Fe has expanded the urban dataset to include comparisons between assemblages from historically known households and different economic classes (Badner et al. 2014; Lentz and Barbour 2011). More recent work done by Atherton (2013) and Sunseri (2009) has improved our understanding of buffer settlements on the edges of the New Mexico colony. Both Atherton and Sunseri worked within Borderlands frameworks that emphasized the multiethnic nature of such buffer settlements. In southern New Mexico archaeological work has focused on the El Paso area and Spanish missions and presidios as population centers. Research there has emphasized center-periphery models and understanding the relationship of El Paso to the larger colonial empire (Miller and O'Leary 1992; Peterson and Brown 1994).

Archaeological evidence has generally supported historical assessments of Late Colonial New Mexican society: the territory had little currency and minimal external trade. Instead, most colonists lived in rural conditions and engaged in subsistence agriculture and sheep-raising, sometimes with seasonal transhumance (C. Snow 1979). Rural sites in New Mexico are especially important because they reflect the settlement pattern of most of the region in the eighteenth and into the early twentieth century. For example, excavation and survey for the Cochiti Reservoir Dam Project demonstrated that eighteenth century settlements in and around White Rock Canyon were often very small and self-sufficient. Artifact density was thin at many of the Cochiti Dam sites, reflecting the transitory use of some of the structures excavated and recorded (C. Snow 1979). Based on these sites, C. Snow (1979:19) identified rural New Mexico as a "micro-frontier" where settlers far from Santa Fe had little access to imported material goods, and where there was little archaeological differentiation between "Spanish" and "Native" material culture and lifeways. Late Colonial period archaeological work in the 1970s through 1990s focused on finding ethnic identifiers for Hispanic and Pueblo material culture, but instead results largely demonstrated the degree of similarity in lifeways and frontier adaptations among different ethnic groups during this period. Archaeological interpretation through the 1990s was that different castes and ethnic groups had access to the same resources and due to barriers to long-distance trade, the palette of material consumption was fairly homogenous across rural frontier ethnic groups and classes during the Late Colonial period (Pratt and Snow 1988).

More recent work using different research perspectives has begun to expose variation in frontier strategies, however. Sunseri (2009) conducted work at Las Casitas Viejas (LA 917), a multiethnic buffer community near Rito Colorado and Abiquiú. This site was occupied in the second half of the eighteenth century and was originally excavated by Herbert Dick in 1959. Sunseri examined New Mexican plain wares and faunal evidence from three different loci in the site, possibly representing different household disposal areas, as well as large-scale manipulation of the grant landscape. He considered ceramic and faunal consumption, and landscape development as important components of community practice that drew on a range of identities and situational expressions of affinity. Sunseri found that ceramic wares demonstrated variability in clay sources and temper across the site, with no single technological style being associated with one ware type. Furthermore, ceramic consumption and disposal practices at Las Casitas indicated variation and flexibility in kinship and 'hearthscape' negotiations. Sunseri interpreted this to mean that the ability to access a range of identities was a more important strategy than community homogenization in this frontier settlement; each disposal locus demonstrated that families had their own social networks and practices for acquiring and using New Mexican plain ware pottery and meat products (Sunseri 2009). Sunseri's research suggests that while the elaborate *sistema de* *castas* may have been a useful tool for elites in Late Colonial New Mexico, in northern buffer communities, settlers continued to engage situationally with a fluid range of identities in their consumption practices.

Alternatively, work by Atherton (2013) at another late eighteenth century multiethnic buffer community near Albuquerque and Alameda found that villagers at San José de las Huertas sought more homogenous consumption practices, possibly as a strategy to heighten community identity and cooperation. Atherton's work examined archaeological assemblages from six residential structures within the walled village, as well as remote sensing and ethnohistoric data for the site. She found that the households had relatively similar material assemblages, including indigenous and imported majolica ceramics, very small amounts of metal, and lithic materials. Atherton interpreted this to mean that bureaucratic identities such as *genízaro* applied to the settlers in the original grant documentation and colonial census were not as important in daily life and material consumption practices as age, gender, and kinship (Atherton 2013).

Archaeological sites in more densely populated urban settings offer a different picture of class, market economy, and ethnicity in eighteenth century New Mexico. During most of the eighteenth century, only four core Spanish population areas existed in the territory: Santa Cruz, Santa Fe, Albuquerque, and El Paso. These population centers were continuously occupied throughout the Late Colonial period, often receiving influxes of population from younger neighboring settlements during periods of particularly intense raiding. The four towns also served as centers for New Mexico's small population of elite colonists, generally military and political leaders who also controlled the territory's minimal access to imported and manufactured goods.

Archaeological excavations of Late Colonial features at the upper-class Baca-Garvisu House in Santa Fe (occupied between approximately 1750 and 1791) indicate that wealthier colonists also utilized primarily Puebloan ceramics and material culture, much like rural or lower-class sites. However, a comparison of the Baca-Garvisu assemblage with another Santa Fe residential site, LA 146402 at the Santa Fe Railyard, suggests that upper-class colonists consumed more porcelain and majolica ceramics, and more imported prestige items such as jewelry (Barbour 2011). Another important class difference between the two sites was the range of economic activities represented. The residents at LA 146402 primarily engaged in subsistence agriculture and livestock raising, whereas the Baca-Garvisu House contained a smelter, and evidence of wool working and leather working, indicating more diverse production, possibly for market exchange (Lentz and Barbour 2011). The economic diversity demonstrated at the Baca-Garvisu House supports historic interpretations of the Late Colonial period as an important threshold period for economic growth and development. Trends in increasing class stratification and economic diversification continued into the Mexican Territorial period when market access was dramatically changed after the opening of the Santa Fe Trail.

*Summary*

Late Colonial New Mexico was growing demographically and economically, especially after the Comanche Peace in 1786. Changing markets, demographics, and dynamics of violence and warfare continually impacted characterizations of identity along class, race, and gender lines, but the territory's overall momentum going into the Mexican nationalist movements in 1810–1821 and eventual succession, was one of growth. The history and archaeology of the Late Colonial period suggest that New Mexicans were adapting to high levels of intercultural and biological contact and integration. They did so through close concern with differentiating racial and class status. The economic and demographic growth that the territory experienced in the late eighteenth century provided opportunities to lower status residents for upward mobility as well as new ways for elites to exert control and exploit the populace. The survival and growth of the returned colony was also deeply dependent on closely integrated relationships with surrounding Puebloan and nomadic Native American nations. The majority of the material goods and lifeways adopted by settlers across the ethnic and class spectrum were derived from neighboring Pueblos and tribes. *Genízaros* needed intimate, individualized relationships with nomadic tribes and pueblos to stay safe, even temporarily on the frontier, and have access to basic pottery and lithic materials necessary for daily life. Small pastoralist groups living in scattered *ranchos* along the middle Rio Grande needed the safety of their neighbors and relationships with Puebloan potters for their material possessions.

Because of the high levels of cultural integration and inter-group reliance during the Late Colonial period, archaeological research in the 1970s through 1990s that was focused on identifying specific ethnic markers within material culture was largely unsuccessful and masked the nuanced, individualized strategies that New Mexico communities and families utilized on the frontier. More recent research that draws on Borderlands literature and uses practice theory as a framework to understand material culture and identity, has been more effective at illuminating lifeways and social relationships in individual multiethnic frontier settlements such as Las Casitas and San José de las Huertas. Work by Sunseri and Atherton also demonstrates the variety of highly local and individualized strategies used in different settlements in the territory.

## Mexican Territorial Period (1821–1846)

On February 24, 1821, General Agustín de Iturbide declared Mexico's independence from the Kingdom of Spain, ending an 11-year movement. The territories along the northern border followed slowly after, with Texas residents declaring their allegiance to the new nation in July, Santa Fe and Tucson in September, and California in April of 1822, underscoring their remoteness from the center of government. The 25-year Mexican Territorial period in New Mexico history is marked by contradictions, which are apparent in the differing pictures of life in the territory offered by historians and archaeologists. Some archaeologists observe that after an initial flood of manufactured goods from Europe and the eastern U.S. was made available via the Santa Fe trade, most aspects of daily life in New Mexico experienced almost no change during the Mexican Territorial period. Instead, some argue that New Mexico remained economically stable (or stagnant, according to some sources) until 1880 and the railroad (C. Snow 1979). Alternatively, historians note the political instability of this period, as leaders in Mexico City oscillated between ineffective policies and generally failed to account for the unique military and defensive needs of the frontier territories, leading to a breakdown of negotiated peace with Comanche, Navajo, and Ute tribes (Delay 2007; Weber 1982).

Economically and socially the period was defined by the opening of the Santa Fe Trail and legalized trade with American markets. The new international market economy quickly unbalanced existing power dynamics in the territory, which had largely been based on the Spanish government providing goods to nomadic tribes as diplomatic gifts and limiting access to certain materials, such as firearms. These combined changes led to a return to the devastating pattern of raiding that had characterized the early eighteenth century. The social and economic environment of nation-building, raiding, and trading patterns shaped new options for ethnic identities, including *vecino* identity (Frank 2000). Weber considers the period to have contained more dramatic changes than any previous 25-year span (Weber 1982:207).

*History*

Weber (2005) estimates that approximately 30,000 non-Puebloan and 10,000 Puebloan people lived in the New Mexico territory at the time of Mexican Independence. The population was clustered closely along the Rio Grande, with at least 8,000 persons living in and around the El Paso region. While under Spanish rule, New Mexico had pushed for more local autonomy and the ability to quickly respond to its unique frontier needs for defense, economic development, and managing relationships with neighboring empires such as the United States and France. During the Mexican Territorial period, New Mexico often had a great deal of autonomy due to limited national resources, its territorial status, and its position on a distant northern frontier. While this may have provided greater personal and social freedoms, New Mexico also suffered from the lack of financial and military support. Generally, Mexico exercised poor oversight over the territory and New Mexico continued to define its own autonomy as the gap between law and practice widened (Weber 1982:41).

Mexican policies that had real-life impacts on New Mexicans included liberal tenets from the Spanish *cortes* and parts of the *Plan de Iguala* imported into the constitution of the young republic. In 1810–1814, during part of Mexico's own revolutionary war, a group of nobles met in Cádiz without the approval or support of the Spanish monarchy (held by French occupiers). The parliamentary *cortes* developed a highly liberal constitution and series of laws. The constitution was not adopted, but the 1812 Cortes was influential for early Mexico and many of the principles were adopted as law within the young republic under Mexico's 1824 constitution. These laws also remained foundational for the New Mexico Territory, which was under the direct control of the Mexican congress, unlike the surrounding states. The *Plan de Iguala*, released by Agustín de Iturbide in February 1821, functioned as a declaration of independence of Mexico from Spain and laid the foundations for the new Mexican government. Three main guarantees of the Plan were independence from Spain, establishment of Catholicism as the religion of Mexico, and the equality of all Mexicans, regardless of race or class (Weber 1982:7).

Drawing on the *Plan* and the *cortes*, the new 1824 constitution granted citizenship to all male occupants of the territories, regardless of racial status, including *genízaros* and Puebloan peoples (though apparently not nomadic tribes, who constituted their own nations). This had consequences regarding land grants, as more persons qualified for individual land grants now that they were citizens, and particularly regarding *genízaro* and Puebloan land. Previously under Spanish laws, Puebloan land had a separate status and some protections against Spanish settlement. As 'citizens' however, Pueblos had fewer legal protections against incursions by individual Mexican settlers on their land (Baca 2015; Ebright 2014).

The new republican prioritization of broad citizenship had other bureaucratic impacts. Clergy and government officials were encouraged to abandon any remaining use of *castas* labels in official documents (Gutiérrez 1991; Hall 1987). As a result, ethnic and/or civic labels tended to collapse into fewer categories, generally *vecino* and *indio.* Historians note that the term *genízaro* tends to diminish in frequency, then drops out of common in the Mexican Territorial period, partly due to the government's attempts to equalize everyone as

Mexican citizens (Piatt and Gonzales 2019). At this point other euphemisms for enslaved persons became more common, such as peon (McCleary 2020). However, the circumstances that defined the *genízaro* experience and identity in the eighteenth century—capture, slavery and servitude, and a profound break with natal culture, i.e., detribalization—continued in the nineteenth and early twentieth centuries. Mexico had officially outlawed slavery in 1829, although this had little direct effect on New Mexico's practices of indentured servitude. The number of individuals captured, baptized, and circulated as slaves through New Mexican society was higher between 1800 and 1830 than it had been since the 1750s (data used in Brooks 2002; Brugge 1968; Frank 2000; Gutiérrez 1991).

A break-down in settler-tribal relations in the territory contributed in large part to New Mexicans' sense of immediacy and need for autonomy. In the context of rapid and sporadic raids, military defense and retaliatory actions required faster movements and response times to mobilize and pay militias or military units. However, the diplomatic policies put in place during the Bourbon reforms quickly broke down due to lack of funding during the Mexican period and New Mexico soon had active conflicts on multiple fronts (Brooks 2002; Weber 1982). The Navajo resumed raiding in 1818 and their primary targets within New Mexico were central, along Albuquerque and the Sandia Mountains, as well as south via the Rio Puerco to Socorro. In the upper Rio Grande and along the Rio Chama drainage, Abiquiú and Jemez reported consistent damages from Ute attackers. Comanche and Apache raiding restarted in the 1820–1840s and reached well south of the New Mexico territory, into Sonora, Chihuahua, Coahuila, and Durango, as different bands harried the southeast (Gila Apache), southwest (Lipan and Chiricahua Apache), and northeast (Yamparika Comanche and Kiowa Apache) (Brooks 2002; Delay 2007).

The increase in raiding can be attributed in part to the continuing economic presence of Americans in New Mexico. Mexico was more open to international trade than Spain had been and the prospect of a cheaper overland route via the Santa Fe Trail, in addition to new markets and resource opportunities in New Mexico, drew American traders and trappers. This had a destabilizing effect, even when trade was not directly with Hispanic settlers. Like the French before them, Americans sold guns and ammunition to Comanches and Ute in exchange for horses and mules stolen from Texas, New Mexico, and California (Brooks 2002; Weber 1982). The better armed tribes now had alternative sources for products previously only provided through Spanish treaties, as well as increased access to superior weaponry. There was no longer any deterrent to raiding, and, in fact, there was considerable market demand for the goods and slaves that raiders could now provide. New Mexicans were also active participants in this raiding economy. As a result, raiding and reprisals increased throughout the territory, and peace arrangements were broken among many cultural groups.

Frontier violence and military support were major components of New Mexico's relationship with the Mexican Republic. Mexico kept its own central state military, but New Mexico was consistently underserved. The territory was not authorized to maintain its own militia until 1834, and then mandatory unpaid militia service was a continual source of resentment. On some campaigns the regular army made up less than 10 percent of the fighting force and New Mexicans reportedly often fought with arrows rather than guns (Weber 1982:119–120). Alternately, even though New Mexican officials complained bitterly about their hardships due to raids, the raiding economy was quite profitable for New Mexicans as well. Brooks (2002:256) tabulates 51,688 sheep, 696 cattle and oxen, 2,034 horses and mules, and 243 captives were taken during raids on Navajo groups alone during the Mexican Territorial period. New Mexicans negotiated their own peace terms with Comanche bands, sometimes on a settlement-by-settlement basis, with little concern for negotiating protections for other Mexican states. Lack of official government involvement allowed New Mexican settlements to continue those aspects of the raiding economy they found beneficial and to negotiate their own relationships with nomadic bands based on personal relationships and local dynamics.

Seeing the advantages of the Santa Fe Trail and economic ties with the United States, New Mexico's government encouraged integration and settlement of foreign traders for the first time. Large land grants were given to individuals, including foreigners with New Mexican partners or front men, particularly in the northern and eastern parts of the territory. These grants were meant to encourage settlement along the important trade routes, and investment in the area. Examples include 1,714,764 acres to Charles Beaubien, a Canadian, and Guadalupe Miranda in 1841, and the Sangre de Cristo grant (1,038,195 acres) to Narsico Beaubien (Charles Beaubien's grandson) and Stephen Lee in 1844. New Mexico was clearly amenable to a permeable border to the north, as it related to American and French merchants, and overland trade (Reséndez 2005:37).

Wealthier individuals in other regions of the territory also sought to expand and monopolize access to grazing lands and agricultural lands through individual land grants. New Mexican officials during the Mexican Territorial period granted more individual grants, with far higher acreage than during the Late Colonial period. David Snow (1979) notes that during the Mexican period, requests for land grants increased to nearly 50 in a ten-year period between 1820 and 1830, up from less than 10 requests between 1775 and 1819. Many of the large individual grants directly benefited the granting governors or their economic and political allies. These early forms of land speculation patterns continued into the American Territorial period (Hall 1980, 1987).

As Hispanic population and settlement expanded, access to productive farming and ranching land improved and New Mexico's agricultural surplus for export increased. However, the most common forms of land-use during the Mexican Territorial period were related to seasonal sheep herding and some subsistence farming. New Mexican Territorial period settlements were often occupied only seasonally, or abandoned after short periods, in part due to the high levels of raiding violence in the territory. When settlements were abandoned, refugees fled to nearby population centers where they had kin or other close personal relationships. When U.S. troops marched through New Mexico towards Mexico City in 1846, they described abandoned fields, grave sites, and towns with over-crowded homes as effects of intense raiding (Delay 2007:58).

Mexican Territorial period expansion in population and settlements carried into the American Territorial period. Most villages occupied during the American period had been occupied during the previous Mexican Territorial period, *but* at the time of American conquest, most of these villages were quite young—a generation old at most—and had not necessarily developed the deep cultural traditions that people associate with heritage Hispanic villages today, making questions about ethnicity and assimilation during the American Territorial period even more difficult (D. Snow 1979).

The Mexican Republic during the 1821–1846 period is often characterized as being disorganized, ineffectual, and as having very little effect on New Mexicans, especially regarding national identity or loyalties. However, Reséndez (2005) argues that the state actually embarked on a fairly substantial campaign to draw New Mexico into its bureaucratic and cultural orbit. Mexico used state and cultural institutions such as the Catholic Church, taxation, and commercial control over materials coming in on the Santa Fe Trail, in an attempt to balance the territory's need for the economic stimulus of the Santa Fe trade, against the cultural infiltration by Americans. The Catholic Church re-exerted its hierarchy over the frontier territory by sending additional priests and curates, trained in Durango and answerable to Durango Bishop Zubiría, who had visited the territory in 1833. Additionally, New Mexicans sought to incorporate American and French merchants through requirements of citizenship, encouraging intermarriage and, consequently, Catholic conversion. In Mexico's gulf coast borderlands, new holidays, events and rituals were added in an (not always successful) attempt to add a Mexican nationalist identity layered over regional and kin-based identity relationships (Valerio-Jimenez 2013).

The Mexican Territorial period, while only twenty-five years long, was not entirely detrimental to the population of the New Mexico territory. The population continued to grow and both permanent and seasonal settlements expanded out from the Rio Grande along major river drainages such as the Chama and the Pecos, as well as farther north from El Paso and south from Albuquerque to the edges of the Jornada del Muerto. New Mexicans continued to capitalize on their new access to international markets by increasing sheep production and settlements along trail routes, and broadly participating in overland trade along the Santa Fe and Chihuahua Trails.

*Economy*

Opportunities regarding American trade and settlement in Mexico led to the most dramatic changes in the territory in terms of the economy and ideas of race and ethnicity. As soon as New Mexico had joined in Mexico's independence, merchants from St. Louis arrived in Santa Fe, ready to sell American and European goods where previously American merchants had been arrested. This was the culmination of at least twenty years of commercial overtures by the United States eager to gain access to Mexico’s large silver reserves and a more affordable overland option for trade (O’Brien 2014). Although trade along the trails only represented a small fraction of Mexico’s international trade overall, there were substantial impacts on the economy and culture of New Mexico and for St. Louis merchants who grew rich from overland trade (O’Brien 2014; Weber 1982).

The first 1821 trading expedition from the United States was modest, consisting of perhaps $200 in merchandise per merchant, primarily of cloth and manufactured goods. Trade on the Santa Fe Trail grew exponentially, however. In 1823 there were approximately 30 traders, and by 1824, there were 83. In 1825, there were approximately 146 American traders, and the materials they brought back from Mexico and New Mexico were valued in the range of $40,000, consisting primarily of fur pelts, mules, jacks and jennettes, horses, and most importantly gold and silver specie (coin). That same year, the United States sponsored a military survey to formalize the route (O’Brien 2014).

By 1826, the bulk of the economic activity related to the trails only passed through New Mexico en route to larger mining centers in Chihuahua, Zacatecas, and points farther south. O’Brien’s (2014:63) account of the Santa Fe and Mexican trade, written from the perspective of Independence, Missouri and primarily American traders, is that specie was the most important product returning from Mexico. The gold and silver bars and coinage travelling across the trail were vital to growth in the U.S. economy and global networks. It is not clear how much of this currency may have been integrated into New Mexico’s economy through the participation of New Mexico merchants selling sheep, wool, and hides to both

Mexican and American consumers. The economic image of New Mexico presented in primary sources by New Mexican politicians was an isolated frontier poor in manufactured goods and poor in currency, especially during the Late Colonial period (Frank 2000; O'Brien 2014). However, political elites may have continued to overemphasize New Mexico's poverty in order to gain continued tax relief from the Mexican government.

Caught between the two nations, New Mexican merchants were able to carve out niches as middlemen, freighters, and commission merchants who moved the enormous annual caravans of materials across the plains. Caravans could range in size anywhere from five to over 100 wagons owned by several merchants. In 1859 a total of 956 wagons were recorded moving through Council Grove that year (Calafate Boyle 1997:58). New Mexicans participated in long-distance trade at multiple scales, reflecting the growing economic stratification in New Mexico society. Upper class *ricos* operated much like Chihuahua merchants and moved tens of thousands of dollars of merchandise along the trails. In doing so, they developed their own international networks that reached to New York and into England as well as south into central Mexico and across the Pacific (Calafate Boyle 1997; O'Brien 2014). Rich New Mexican merchant families also married into Chihuahuan merchant families *and* sent their children to schools in New York and St. Louis, strengthening ties at both ends of the trail (Calafate Boyle 1997; Sisneros 2013).

Merchants quickly found ways to move items such as fabrics, brass and iron tools, and tin dishware into even the most rural markets in the territory through systems of wholesalers, barter, and credit, to accommodate the cash poor region. New Mexicans also used agents, regional family networks, and mobile peddlers to move products without being dependent on stationary stores or moving large amounts of merchandise over poor roads

(Gonzalez 2001). José and Mariano Chávez were large-scale New Mexican merchants who managed stores in Belén, Santa Fe and San Miguel del Vado. Their agent at San Miguel del Vado, Pablo Delgado (and his brothers, Simón and Felipe), also managed sales, credit, and debt with surrounding smaller communities. Rural New Mexicans bartered with Chávez agents to exchange sheep, wool, grains, and minerals for fabric, coffee, flour, and metal tools (Calafate Boyle 1997:70–71). There is some evidence that credit systems, often promising corn, wheat, or wool crops several years in advance, led to increased indebtedness and higher rates of indentured servitude during the Mexican Territorial period, as New Mexican *ricos* secured their own monopolies over land and labor in rural New Mexico (Alarid 2012; Gutiérrez 1991; Swadesh 1974). New Mexican products, as well as American manufactured goods, were then sold to mining centers in central Mexico for gold and silver specie, which was used to purchase more manufactured goods from U.S. markets.

Boyle's study of *guias*, inventory lists collected by New Mexican customs to assess taxes on goods, shows that products from the United States, especially fabrics, were imported by small and middle scale New Mexican merchants as well as *ricos*. These merchants operated as a smaller scale than the southern Mexican and American traders who moved wagon trains worth tens of thousands of dollars in goods, but they specialized in the small-scale rural New Mexican and Comanche markets, also supplying these areas in exchange for sheep, grains, commodities, and promissory notes while American merchants and top tier New Mexican merchants began to focus more exclusively on selling directly to Chihuahua markets (Calafate Boyle 1997). Small-scale merchants may have only sent one caravan a year, or only in sporadic years.

By the 1840s Mexican merchants and *arrieros* (muleteers) dominated the traffic crossing the plains (Calafate Boyle 1997; Sandoval 1989). Sandoval argues that it was the tastes and demands of central Mexico that actually drove what materials were acquired by merchants and brought overland (1989). New Mexican merchants began to pull away from Chihuahua suppliers for manufactured goods by 1837, and in the 1840s New Mexico was purchasing substantially more of their products from the U.S. than from Mexico (Calafate Boyle 1997:63). Nevertheless, the trail continued through the New Mexico territory and Mexican and American merchants maintained their relationships through networks of waystations at New Mexican homes and *parajes* (stopping areas, camp sites) (Sandoval 1989). Towns began to prosper along the trail, making many opportunities for goods to enter the New Mexican economy. By participating in a market largely driven by consumer demand and fashion in central Mexico, New Mexico may have maintained a cultural link with the larger republic, but it became more and more economically entangled with the United States (Reséndez 2005).

Economic success for New Mexicans was not wholly centered on movement of goods between St. Louis and Chihuahua markets, though this certainly fostered the growing inequality between *ricos* and the rest of the population. New Mexican communities also engaged in what is often called a secondary or marginal economy, through non-capitalist trade with the surrounding Native American tribes ("neighboring nations") (Brooks 2002) (Figure 2.1). This secondary economy consisted of long-distance networks of trade relationships that reached out onto the plains in the east and into Cañon Largo in the northwest. Sheep and bison were the major components of this trade as the booming sheep economy also led to the tandem development of Navajo pastoral culture and their own class


**Figure 2.1. Map showing approximate locations of active nomadic tribes, 1821–1846. Map adapted from Weber 1982: 90 Map 5.**

of *ricos* invested in growing their flocks (Brooks 2002). On the east side of the territory, *cibolero* and Comanchero specialists also flourished, hunting bison on the plains in spring and late fall, for meat, hides and skins. They also brought manufactured goods with them to trade with Comanche and Plains tribes for more skins and hides to send south to Chihuahua.

According to analysis by Brooks (2002), secondary economies with neighboring tribal nations were, in fact, the primary subsistence economy for the majority of the territory's population. It was made possible through the tightly bound relationships created through raiding and human captives. People raided from neighboring nations and raised or married into Hispanic culture served as brokers or foundations for kin relations necessary for trade relationships in many nomadic cultures. The benefits that early French and American fur trappers saw in having native or *nuevomexicano* wives (the most famous case being Charles Bent of Bent's Fort, who married Cheyenne women) also extended to exploited *genízaros, criados*, and those who could exchange captives across cultural boundaries. Brooks (2002) argues that endemic raiding served to bring communities into close and continuous contact and was the basis of common understandings among male traders about honor, kinship, and power that facilitated communication and common understandings for trade as well. These relationships were substantive, and mutually beneficial for communities (but probably not individuals, especially the women and young people most often targeted for seizure and trade).

*Ethnicity*

While the Mexican Territorial period was violent, and at times the flow from trading to raiding was rapid and unpredictable, it also continued to be a period with substantial economic and demographic growth, especially for the non-Puebloan population. Gutiérrez (1991:168) notes that during this period, the non-Puebloan population—which he defines as "New Mexico's nobility and landed peasantry, referred to here as the Spanish population" but that Frank (2000:198) defines as the "vecino population"—grew at a rate of approximately 2.66 percent per year, while the Pueblo population had minimal growth at a rate of 0.382 percent. Some of the growth differential likely reflects the collapse of multiple mestizo groups into a single cultural category and the absorption of persons leaving or expelled from Pueblos.

*Vecino*, which is generally directly translated as neighbor or citizen, had been present as an identifier in Spanish historic records since the medieval era. However, during the early nineteenth century it came into more frequent usage in Mexico, supplanting *español, mestizo*, and *genízaro* on bureaucratic and church documentation. The term occurs in historic documentation across other territories in Mexico, however Ross Frank (2000:176) has argued that the genesis of a uniquely New Mexcian civic and cultural vecino identity in late eighteenth century was a vital response to the economic development of the region, laying the foundations for a unique regional *nuevomexicano* identity. Frank does not extend his analysis into the Mexican Territorial period, however, when the label was most often used in historical documentation.

In analyses of the appearance and social practices relating to the term in New Mexican historic records, some historians and archaeologists have argued that '*vecino*' served as a civic label, rather than racial or ethnic identity (Bustamante 1982; Eiselt and Darling 2012; Frank 2000; Jenks 2011). Instead, vecino was used to identify insiders and allegiances within communities, especially in cases where ethnic labels might be useless due to overwhelming heterogeneity. It indicated that the individual was recognized as living within a Hispanic settled community, and participated in community practices and obligations, such as defense and Catholicism. Within this framework, Jenks (2011) argues, not all Hispanics were vecinos and not all vecinos were Hispanic, but all those who lived in a Hispanic settlement were vecino. However, under most definitions, *vecino* identity is part of a binary and is juxtaposed against *'los indios barbaros'* and thus cannot help but have racial and cultural connotations (Frank 2000; Jenks 2011; Valerio-Jimenez 2013).

The increase in the term's use in archival documents during the Mexican Territorial period also cannot be separated from the larger nationalist goals of the Mexican republic. As Mora (2010:77) notes: "…nationalism necessarily involves the obscuring of divisions within a population to maintain the fiction of community."[3] The Mexican state wished to move away from colonial stratification based on race or parentage and embrace broad ideas of citizenship. The range of *castas* terminology was replaced with more generic terms like vecino throughout the new republic. For example, Valerio-Jiménez (2013:107) notes that in the region Texas along the mouth of the Rio Grande, previous racial designations became civic designations, with regards to the law. However, stratification and divisions within communities remained within social practices as border communities continued to use the term vecino to define themselves *against* nomadic Indians, rather than employ it to identify *with* a nation. Gregorio Gonzalez (2017) also cautions historians and archaeologists against taking the collapse in terminology at face-value, while recognizing the continuing experiences of slavery and social stratification experienced in New Mexico communities by individuals previously identified as *genízaros*.

The use of the term *mexicano* during the Mexican Territorial period does not receive much attention from historians or archaeologists. American historians frequently argue that New Mexicans did not have any strong sense of nationalist allegiance towards Mexico during the period—that it was too short for any such identity to mature, or that the priorities and

[3] Mora makes this statement in relation to Mexico's response to the United States' annexation in 1846, but the processes of nationalism are still relevant here.

ideals of Mexico City and the republic were too far away or too poorly articulated during the chaotic period to have any impact in the development of New Mexican Hispanic identity (Nieto-Phillips 1997). However, Mexican national identity does appear to have been invoked instrumentally by borderlands settlers, in certain circumstances, such as court cases (Gonzalez 2001), or interactions with representatives of the state (Valerio-Jimenez 2013), especially to contrast themselves with Americans and other non-nationals. While it may not have frequently had salience in the New Mexico borderlands, *mexicano* in the sense of a national citizenship was certainly part of the arsenal of identities that settlers could employ. Self-identification as *mexicano* also continued into the American Territorial period in Spanish-language newspapers and private discourse, although as we shall see, the term took on racial and ethnic connotations rather than a national definition (Clark 2005; Gómez 2008; Nieto-Phillips 2004).

*Archaeology*

Archaeological research in the Mexican Territorial period suffers from three major issues that contribute to the relative visibility of certain social processes within the period: the challenge of dating sites or features to the relatively short 25-year period, the lack of a coherent research program to examine the economic and social changes within the period, and use of the term 'vecino' in nineteenth century New Mexican archaeology.

Archaeological research is thinnest for the Mexican Territorial period. The same is generally true for historical research in this period, as American historians often treat the period as a footnote on the way to the inevitable American seizure of the Southwest Borderlands (Delay 2007; Reséndez 2005). The problem of archaeological coverage is in part related to poor dating resolution and a lack of excavated sites or features with absolute dates falling during the 1821–1848 period. First, sites are often classified as post-1821 based on the quantity of manufactured and imported goods present, which indicate access to Santa Fe Trail markets and merchants. However, many of the ceramic and glass items available during this period had long production ranges that span the Late Colonial through American Territorial periods, so this method generally only places sites within an 1821–1880 window. For example, pearlwares were popular between 1775 and 1840, and whitewares were produced from 1820 onwards (Samford and Miller 2002), a range of Puebla blue-on-white majolica was produced between 1598 and 1850, and New Mexican polished black ware types such as Kapo Black, are thought to have been produced between 1650 and 1920 (Dick 1968; Frank and Harlow 1997; D. Snow 1965). Second, there is currently no good archaeological understanding of differential market access within the territory, or how consumption patterns may have changed within the Mexican and American Territorial periods, making it difficult to use larger assemblage patterns to date sites. Jenks (2011, 2017) notes the challenges of this circularity: a higher occurrence of American goods at sites is used to date them as chronologically later in time, but this may obscure accurate interpretation of changes in market access and consumption patterns.

Boyer (2004b:50) indicates one way to improve chronological resolution in his discussion of settlement patterns along the Rio Chama in the nineteenth century. He states, "…while most upper Rio Chama and adjacent highland sites from the Mexican period should be herding camps, sites from the American Territorial period should include villages, isolated homesteads, commercial establishments along the toll road, lumber mills and camps, and seasonal herding camps." (Boyer 2004b:50). Essentially, he advocates using the known historical record of settlement patterns and economic activities to place sites in time. Boyer's observation emphasizes that dating sites in the Mexican Territorial period cannot rely on diagnostic artifacts, and must use broader cultural patterns from the period, relating to settlement patterns, land-use, and market access, rather than the presence or absence of a particular pottery type.

However, Boyer's suggestion relates to the second major challenge in Mexican Territorial period archaeology, which also affects historical archaeology in New Mexico more generally: the lack of a coherent research program that pursues questions of market access, economic relationships, and change over time. In the 1970s through 1990s, archaeologists working with eighteenth and nineteenth century materials were primarily interested in questions of ethnic identity and assimilation or acculturation. To answer these questions, researchers looked for archaeological materials that could be sourced to particular cultural groups. Within this research context, the question of identifying a Hispanic ceramic tradition, and differentiating Hispanic and Puebloan plain ware pottery in particular, became important. To this end, Olinger (1988, 2004) and Levine (1990) conducted extensive technological analyses of plain ware ceramics from several eighteenth and nineteenth century sites from the Cochiti Dam project as well as other CRM projects around the state. Olinger used XRF to understand the clay chemistry and sources used in supposedly Hispanic and Puebloan pottery but could find little difference between the two. Levine conducted petrographic analyses and concluded that Hispanic pottery was more likely to be sand-tempered, while Tewa pottery was more likely to have ash and tuff temper. David Snow (1984) closely considered the cultural and economic environments necessary to induce pottery-making by Hispanic people. Based on ethnohistorical evidence, he suggested it was a low-status activity, and generally rejected the idea of a Hispanic ceramic tradition in New

Mexico. At the same time, other archaeologists vehemently argued for the existence of such a tradition (Carrillo 1997).

These academic pursuits quickly encountered the challenges of defining and identifying “Hispanic” or “Spanish” as distinguished from “Native American” in the historic period generally. As we saw in the Late Colonial section, New Mexico was an intensely integrated polyethnic society in the eighteenth and nineteenth centuries. Essentialist frameworks for identity used by archaeologists pursuing debates surrounding New Mexican plain wares were particularly ill-suited for addressing New Mexican material culture produced and used in the Late Colonial through American Territorial periods.

More recently, renewed interest in nineteenth century New Mexico focuses on vecino identity and archaeology, rather than Hispanic or Spanish identity. Recent strategies to study plain ware ceramics or Hispanic sites in New Mexico acknowledge and emphasize the multiethnic (and polyethnic) nature of society in the Spanish borderlands, and archaeological approaches focus more on cultural practices (Eiselt and Darling 2012; Jenks 2011; Peelo (Ginn) 2011; Sunseri 2009). Despite the more nuanced theoretical frameworks, however, recent analyses of vecino archaeology encounter many of the same challenges as the previous era of Hispanic archaeology.

Eiselt and Darling approach vecino archaeology not as an ethnic category, but as a cultural phase with distinct material culture and settlement patterns (Darling and Eiselt 2017; Eiselt and Darling 2012). Eiselt’s work, primarily in northern New Mexico near the Chama River Basin (Eiselt 2006) and more recently near Taos (Eiselt 2018), emphasizes the multiethnic ceramic traditions that operated in tandem during the period, and uses technological attributes and INAA paste analysis to identify clay sources and differentiate different micaceous pottery traditions (Eiselt 2006; Eiselt and Darling 2012; Eiselt and Ford 2007). However, Eiselt also largely imports wholesale the ethnic divisions applied to ceramics in the 1990s at face-value, and attributes specific ceramic types to specific ethnic producers, despite the highly problematic nature of these ethnic attributions (Boyer 2018b; Carrillo 1997; Eiselt 2006:225). Furthermore, while Eiselt (following Frank 2000) places the emergence of the vecino cultural pattern in the Late Colonial period, particularly around 1790, her own research and dataset are primarily from a Mexican Territorial and early American period settlement within the Rio del Oso valley. Other comparative analyses of ceramics relating to vecino economy draw on materials from sites ranging from the Late Colonial to American Territorial periods, with little consideration of the effects of economic changes through the nineteenth century on social relationships and ceramic production (Eiselt and Darling 2012; Jenks 2011). Eiselt and Darling, while identifying vecino as a civic and legal identity related to community membership and land holding status, use the terms 'vecino' and 'Hispanic' interchangeably in their analyses, blurring the potential utility of vecino as an analytical category.

Jenks (2011, 2013) also emphasizes that understanding vecino civic identity might be more productive than Hispanic archaeology for nineteenth century New Mexico. According to Jenks, vecino identity was defined by the cultural practices of shared residence in a Hispanic community rather than genealogical heritage. Thus all non-native sites in nineteenth century New Mexico potentially become "vecino" and as Jenks states, "If acting like a vecino means being Vecino, then archaeological deposits within a village—generally reflecting the accumulation of shared practices by the villagers—become the signifiers of Vecino identity." (Jenks 2011:30). The use of the label in writing often simply replaces

Hispanic, in form and function, or is used interchangeably (Darling and Eiselt 2017; Eiselt and Darling 2012, 2016; Jenks 2011). From this standpoint, the important research agenda becomes essentially culture historical in nature, as baseline descriptive work to understand those cultural patterns and practices that might define vecino life and culture. Although Jenks' dissertation work largely deals with American Territorial period materials, she also extends the use of the vecino nomenclature, and potentially associated material patterns, into the Late Colonial and Mexican Territorial periods (Jenks 2011, 2017).

This trend in the use of the term vecino rather than Hispanic may be due to archaeologists' continuing frustration with identifying or locating material evidence of ethnicity in a society as fluid and genetically mixed as historic New Mexico (Healy et al. 2018; Torrez 2019). 'Hispanic' is often treated by scholars as one of many ethnic identities active in Late Colonial and Territorial period New Mexico, and while it is frequently considered different from vecino identity, what those differences are and what they mean for material culture is largely unclear or left undefined in analyses. However, Jenks' circular definition of vecino is similar to Carrillo's definition of Hispanic as "A traditional New Mexican Hispanic was a person who chose to live in a Hispanic manner by residing in a Hispanic village or settlement." (Carrillo 1997:25), and Carrillo also explicitly separates Hispanic identity from genetic history or biology. This suggests that Jenks' theoretical approach to identity and work at San Miguel del Vado may not be conceptually so different from work in the 1990s that current archaeologists have found to be so problematic. Chapter 3 will detail how this study uses both comparative analysis and an interpretive framework that explicitly defines scalar differences between vecino and Hispanic identities as a way out of this circularity.

*Summary*

The Mexican Territorial period was defined by demographic and economic growth in New Mexico. Hispanic settlers were able to expand and develop new settlements along river corridors to the east along the Pecos and west along the Rio Puerco, as well as filling in areas south along the Rio Grande from Albuquerque. Identities such as vecino and *mexicano* came to the forefront of bureaucratic and official state documentation, while individual and community relationships among settlers and between settlers and tribes continued to operate on highly local levels, in part due to a general power vacuum left by the cash-strapped and distant Republican government.

The development of the Santa Fe Trail was a major component of the area's economic growth during the Mexican Territorial period, as well as New Mexican's increasing economic and cultural entanglement with the United States via European American traders and merchants. Economic opportunities and growth due to trail trade contributed to growing class inequality among New Mexicans, however, as elite Hispanic merchants increased their economic and political power over the populace through local networks of peonage and debts (Alarid 2012). Hispanic traders developed hierarchical networks of merchants even in rural parts of New Mexico, to barter imported materials for agricultural products, wool and sheep that could be sold in growing markets in Mexico, California, and St. Louis.

These historical understandings of rapid change within the Mexican Territorial period are difficult to discern archaeologically, however. There is often poor chronological resolution within the period and between the Mexican and American Territorial periods. Furthermore, recent theoretical frameworks for understanding identity in the historic period vacillate between using the terms 'Hispanic' and 'vecino' to describe social identity from the Late Colonial through American Territorial periods but make little effort to differentiate the two. Poor chronological resolution tends to obscure changes through time in material culture and market access. Uncritical use of the term vecino by archaeologists also tends to obscure profound ethnic and class differences and tensions throughout the period, despite rising inequality and increased numbers of indigenous captives circulating within the territory.

## American Territorial Period (1846–1912)

In 1846 the U.S. initiated the Mexican-American War as part of a larger program of expansion across the western continent. Troops marched into Santa Fe in August 1846 and by 1848 the Treaty of Guadalupe Hidalgo had been signed by both governments, ceding the territories of Texas, New Mexico, and California (over 1.3 square kilometers of land covering parts of present-day Colorado, Nevada, Utah, Wyoming, Texas, New Mexico, Arizona and California) to the U.S. The U.S. conquest of New Mexico marked an end to the relative independence the territory had enjoyed under Late Colonial and Mexican Territorial regimes. New Mexico was no longer the furthest frontier, it was an important middle point between eastern markets, growing mining towns in California, and silver-rich Mexican mining towns. It was also contested territory. Along with the territory, the United States annexed approximately 60,000 new non-Puebloan citizens, many of whom did not speak English, who were neither white nor black, and whom American politicians deeply mistrusted for their "mixed race" heritage and questionable national loyalties. The question of how race, class, and ethnicity were part of the definition of American citizenship within the New Mexico borderlands played out again and again during the American Territorial period. Americans brought with them beliefs about race and identity that were rooted in erroneous ideas about blood and biology, bringing ethnic and racial identity back into a central arena as New Mexicans navigated a changing social world.

*History*

Beginning with H. Bancroft, and propagated through progressive politicians such as L. Bradford Prince, it was not uncommon to see historical descriptions of the 1846 American conquest as “bloodless” and “welcomed” (Bancroft 1888; Gómez 2008; Herrera 2000; Prince 2009). While the initial occupation of New Mexico and General Kearny’s proclamation in Santa Fe was not accompanied by military actions or significant battles on either side, it was the beginning of a period that Maciel and Gonzalez-Berry describe as an “unfolding subordinated condition in the second half of the nineteenth century” (Maciel and Gonzales-Berry 2000:14), to which *nuevomexicanos* did not passively acquiesce. In 1846 and 1847, armed uprisings in Taos and Mora succeeded in killing Charles Bent, the interim governor appointed by Kearny. The U.S. responded with troops who eventually bombarded churches in Taos and Mora with howitzer canons, killing several hundred rebels before fully subduing the rebellions (Gómez 2008; Herrera 2000). New Mexico remained under military rule until 1850. Sustained cultural and economic resistance to assimilation or subordination came to define many aspects of New Mexico Hispanic culture and identity as it is understood in the twentieth and twenty-first centuries.

Summarizing Rosenbaum (1981), Herrera (2000) characterizes four main types of responses which he identifies as forms of resistance that occurred within New Mexico after the Mexican-American War: 1) armed resistance, such as the rebellions described above; 2) accommodation, primarily practiced by New Mexican elites who hoped to maintain their class status within the new racial hierarchy; 3) assimilation; and 4) withdrawal and/or ignoring the political change in the nation-state by avoiding European American immigrants and cultural presence altogether. Herrera argues that this fourth strategy was most often employed in rural areas. However, the emigration of many New Mexicans to found settlements on the Mexican side of the contested border in the early 1850s, funded in part by the Mexican government, may also be considered a form withdrawal (Gonzalez de la Vara 2000).

Withdrawal may have been a very effective and easily enacted resistance strategy for most of the New Mexican population. For the first twenty years of the American Territorial period, most European Americans in the territory were soldiers, with small numbers of merchants and appointed government officials (who were also often military or businessmen). The actual number of European Americans within the territory was quite small, and outside of military and elite circles, face-to-face personal relationships between *nuevomexicanos* and European Americans were probably uncommon. However, the actions of the small group, in cooperation with Hispanic elites, directly impacted substantial numbers of lower class *nuevomexicanos* regarding land access and ownership, and subsequent economic opportunities in the territory.

During the American Territorial period, *nuevomexicanos* experienced dramatic dispossession and the loss of approximately 80 percent of community land grants within the territory (Garcia y Griego 2008). American frameworks for land use and ownership were centered on the idea of private ownership by individuals as a means to maximize the market value of the land and its products for individual economic advancement (Dunbar-Ortiz 2007).

This was not compatible with many Spanish and Mexican period land grants, which, while frequently granted to individuals, were actually vast expanses of hundreds of thousands of acres that were settled and operated as de-facto community grants (Baca 2015). American concepts of land tenure were especially incompatible with Spanish and Mexican community land grants and land use practices that depended on *ejidos* (common lands) to support livestock, wood-cutting and other gathering activities. Additionally, individually owned farming plots were utilized for subsistence, rather than market capitalist production, a pattern interpreted by Americans as reflecting a lazy and potentially subversive lack of entrepreneurial spirit (Gómez 2008).

As a result of these incompatibilities and others, American law was frequently unfavorable towards confirming community land grants or claims based on previous occupancy, despite the belief of many New Mexicans that their land claims were protected under the Treaty of Guadalupe Hidalgo. Through recommendations to Congress by the New Mexico Surveyor General (an appointed position) and the Court of Private Land Claims, during the American Territorial period community-held land resources were often parceled out to individuals who could then sell the land, use it for payment to lawyers, and/or eject previous occupants. These characteristics were exploited by a small number of elite Hispanic and European American land speculators who succeeded in acquiring enormous tracts of land for profit through sale, ranching, or development schemes (Ebright 1999; Turo 2015).

Land-loss and conflict between European American and Hispanic political and economic interests was not due to a massive influx of new settlers that demanded new land, however. European American immigration into the new territory was only a trickle. In 1850 there were fewer than 2,000 European Americans living in the territory (Lamar 1966; Miller

1982). The earliest homestead claim in the territory was filed in 1866, and afterwards most immigrant homesteading occurred in the eastern part of the state. Both New Mexican Hispanics and European American immigrants used homestead claims in roughly equal numbers. The preponderance of immigrants came from Kansas, Illinois, Ohio, and Pennsylvania (Merlan 2008). Still, the pace of European American immigration was very slow, with no substantial population increases until after the railroad reached across the state in 1880, when the territory population jumped by another 70,000–80,000 persons, largely due to immigration on the railroad (Lamar 1966:154). Because of the consistently low numbers, some historians have suggested that previously analyses have over-stated the influence that European American merchants, homesteaders, and politicians had during the period, and that greater involvement and agency should be ascribed to Hispanic elites who also participated in land grabs, economic development, and political machinations (Baca 2015).

Nieto-Phillips (2004) and others (Gómez 2008) characterize the New Mexico statehood process as central in the development of modern New Mexican racial consciousness. While debates internal to the territory were ongoing in the form of constitutional conventions, referendums, and public debate throughout the American Territorial period, there were three primary stages when statehood was at the forefront of New Mexican and U.S. Congressional attention: 1848–1850, when New Mexico was first designated a territory, rather than a state; 1872–1876, when a series of statehood bids were rejected by Congress on the basis of primarily racial arguments; and 1888–1912 which was the final push and major period of development for Spanish-American re-branding in New Mexico (Nieto-Phillips 2004).

During each major period, New Mexican residents and political elites responded to Congressional rejection and American racial and political discourse in concrete ways. The initial volley for statehood was immediately prior to the Civil War, when the U.S. was coping with integrating a newly acquired land mass larger than the Louisiana Purchase. New Mexican politicians at the time were stridently against becoming a slave state—in direct opposition to the interests of powerful Texans, who wished to expand their slave holdings into New Mexico, and who already had claimed those parts of New Mexico east of the Rio Grande. The issue of slavery became the turning point for this first attempt at statehood, and New Mexico remained a territory in exchange for California entering the union as a free state in the Compromise of 1850.

In response to this rejection, New Mexican politicians pivoted on the issue of slavery, and introduced a series of largely symbolic laws limiting the movement and freedom of free African Americans (1857) and introducing a slave code in 1859. However, it was widely understood that these laws referred to persons considered racially black, and not enslaved Native Americans. Native American slavery institutions continued in New Mexico in many forms throughout the nineteenth century, well past the Emancipation Proclamation, and became another arena for European American politicians to attempt to exert power over New Mexican elites (Gómez 2008; Rael-Gálvez 2002; Reséndez 2005, 2016). After the second major statehood rejection in 1872, on largely racial grounds, New Mexican elites (Hispanic and European American) again responded to counter the national narratives about the territory, by developing a "progressive" racial narrative about the Spanish-American, *not* Mexican, ancestry of the state. This movement, spear-headed by L. Bradford Prince, is further discussed in the Ethnicity section.

These large-scale forces operating in New Mexico during the American period—the loss of communally-held lands and sustainability, and the broader political conversation regarding New Mexico's territory status and ability to self-govern—created the social and economic context in which New Mexicans defined themselves and responded to their changing circumstances.

*Economy*

The political and economic strength of international merchants in New Mexico was firmly established by 1846. As a Mexican territory, New Mexico had already been coping with rumors (and reality) of a Texas invasion or an American invasion in the early 1840s and was struggling to balance the economic benefit and dependence on American trade with the national vulnerabilities such dependence introduced (Chavez 1978). Furthermore, American, Mexican, and New Mexican merchants came to play a major (if still contested) role in the eventual surrender of New Mexico (Herrera 2000; Lamar 1966).

As the U.S. steadily increased tensions with Mexico, it was clear that continuing overland trade to major Mexican cities was an important American priority within broader expansionist goals. The Santa Fe Trail trade and U.S. military expansion were intertwined from the start. When the United States army began its march towards Santa Fe, California, and eventually Mexico City, General Kearney's men launched from St. Louis and travelled the Santa Fe Trail. They were both preceded and accompanied by a train of New Mexican and Mexican merchants who were returning from a purchasing trip. Military correspondence shows that the Secretary of War prioritized "protection" of these merchants and continuation of trade despite the declaration of war (Sandoval 2001).

Merchants occupied a full range of positions regarding the U.S conquest of New Mexico. Some supported and welcomed U.S. annexation. These individuals often had familial or permanent business ties with the U.S., such as James Magoffin, who arrived ahead of the American army and worked to persuade Governor Armijo to abandon armed resistance. Manuel Alvarez, who also at times advocated for U.S. annexation, served as a U.S. consul. Others staunchly supported the Mexican Republic, and contributed funds to military efforts, while still other merchants broadcast their allegiances less clearly (Sandoval 2001). Despite considerable barriers to American trade during the short war, the amount and value of merchandise crossing the plains did not drop significantly during or after the Mexican-American War, and many American and Mexican merchants endeavored to continue their practice and relationships in spite of national changes (Calafate Boyle 1997; Moorhead 1995). However, after the American annexation and the 1854 Gadsden Purchase, El Paso became the primary port of entry and a much shorter route through Texas became more popular with overland merchants headed to Chihuahua, and the role of the Santa Fe Trail diminished (Moorhead 1995).

Military occupation of the New Mexico territory began with troops stationed within various key towns, such as Santa Fe, Taos, and Doña Ana. This caused immediate friction with New Mexicans, however, who repeatedly wrote of abuses by the troops, both in terms of property and violence. By 1851 the U.S. army had realized that stationing troops within towns created problems with troop discipline as well as relations with New Mexicans and decided to build a series of forts along the frontier. Many of these forts were reactionary and short-lived, as the army responded to shifting threats from different Native American tribes and the advance and retreat of the U.S. controlled territory. In the 1860s many forts were emptied or decommissioned as the U.S. army withdrew resources to fight in the Civil War. In the late 1860s there was another surge in fort building and military activity in the region as the U.S. government became more committed to reducing nomadic tribes onto reservations or concentration camps (C. Wilson et al. 1989).

The forts served as important economic incubators for newly settled regions. First, soldiers were paid cash wages by the government, which provided an important infusion of hard cash into New Mexico circulation. Second, forts were the primary consumers of agricultural products from surrounding areas and a sutler contract to a fort was very lucrative for wealthy merchants. More successful merchants could compete successfully for military contracts, which they usually supplied by buying products from smaller-scale merchants and producers in the immediate region. In 1867, the U.S. army ended the practice of appointed fort sutlers and opened the process to competing merchants. At Fort Union, a row of seven competing stores opened between 1867 and 1889, providing not just goods and supplies to soldiers, but also running saloons, hotels, services, and even a photography studio (Ivey 1995). While serving on a frontier fort was often a lonely miserable business, many soldiers also elected to stay in the region after discharge. They married, settled, and began their own frontier business ventures (Blackshear 2016; Miller 1982).

The U.S. (including the military) also continued to be an important mutton and wool market for the growing sheep industry in New Mexico. By 1850 New Mexico produced the largest quantity of sheep in the United States, and by 1880 upwards of 2–4 million sheep were raised, grazed, and exported from the New Mexico territory (Baxter 1987; Merlan 2008). Boyle estimates that in 1860, 20 percent of merchants controlled 76 percent of the declared wealth, which was largely sheep, in the territory (1997:101). However, lower class

New Mexicans participated via the *partido* system wherein individuals contracted with large owners to care for a flock in return for a percentage of lambs and the annual increase. This was very occasionally an avenue for social mobility and for poor individuals to build flocks of their own but it was generally highly risky and more likely to result in increased debt and indenture (Wallace 2013).

Other important shifts occurred within New Mexico's economy during the American Territorial period as it moved more and more towards merchant-capitalism and was drawn into the national wage-economy. In his analysis of Jewish merchants from Germany in New Mexico and their effects on the economy, Parish (1960, 1961) described three major stages in capitalist development in the territory: 1) the shift from travelling to stationary merchants, with stores and reliable delivery of stock for sale; 2) the infusion of cash into the territory's economy, primarily through wages paid to soldiers stationed at forts; and 3) the development of a consumer culture wherein even those in rural communities desired products from the national market, leading to the proliferation of stationary stores beyond the major urban centers. While Parish's research focused exclusively on immigrant German Jews and their family networks, Boyle (1997) has also shown that New Mexican merchant systems followed a similar series of stages, and in fact, developed their urban and stationary networks earlier than immigrant merchants (who did not begin to be major players in the territorial economy until the 1870s).

The growing trend through the American Territorial period was of increasing numbers of mercantile stores and outlets, often organized in a hierarchical network managed by major merchant families. For example, Jewish immigrant Jacob Solomon Spiegelberg started as a merchant in Santa Fe in the late 1840s and came to manage or fund over a dozen other merchant enterprises across the state (Parish 1960:13). Hispanic merchant families also managed multiple stores, building on systems initiated during the Mexican Territorial period. Looking at merchants with German surnames alone, Parish identified at least 366 individual proprietors between 1850 and 1900, with 514 individual establishments in 87 different towns and villages. This sample indicates that by the end of the American Territorial period, purchases—with cash currency or barter—of local and imported items from stationary merchants operating stores had become common among nearly all New Mexicans.

In addition to the developing consumer demand, as discussed by Parish (1961), separating New Mexican Hispanics from their land base also served to draw them deeper into the American capitalist system of wage labor. Whether the land loss was from community land grants or through eviction from private land grants that had previously tolerated or supported small Hispanic communities, more and more New Mexicans lacked land for subsistence farming. Deena Gonzalez has charted how this specifically affected women in Santa Fe, showing that each decade an increasing percentage of women was involved in low-paying wage labor within the city, reaching 88 percent of adult women in 1880 (Gonzalez 2001:45).

This may have also had concrete material consequences in New Mexican Hispanic settlements. For example, Boyer (2018b), recently assessed Carrillo (1997) and David Snow's (1984) conflicting arguments regarding the development of a Hispanic ceramic tradition. He looks closely at economic factors that may have motivated Hispanic peoples to manufacture their own pottery rather than continue to acquire it through Puebloan sources as they had during most of the seventeenth and eighteenth centuries. Boyer argues that the market conditions that pushed Hispanics toward ceramic production and exchange did not fully develop until the early American Territorial period, when the majority of rural New Mexicans were disenfranchised by economic stratification and loss of community land grants as part of fraud and wealth consolidation in the territory.

Pottery production may have been an alternative subsistence strategy, along with wage labor in coal mines and along railroads, domestic labor, ranch labor, and other crafts and production. This economic trend may have started earlier in the Mexican Territorial period—Gutiérrez (1991:322) documented sharp drops in persons documented as farmers in New Mexico censuses between 1790 and 1827, with concomitant increases in persons listed as day laborers and craftsmen. Alarid (2012:52) followed the trend into the 1850 census, where the proportion of laborers and craftsmen (here 'craftsmen' is a combined category that may include census labels such as tinworker, musician, carpenter, etc.) had grown even more, and farmers continued to decline as land ownership became more consolidated among the rich. Further evidence of the proliferation of crafts and independent farmers can be seen in David Snow's (2019) recent work looking at Puebloan surnames in baptismal records and censuses during the Colonial and Territorial periods. A small number of surnames and titles have their roots in occupations, such as Hortelán (gardener), el Pintor (painter), and Losero (possibly rooted in *lozero*, or one who makes fine majolica pottery) (D. Snow 2019:405).

Sarah Deutsch (1989) charts the increase in episodic and seasonal wage labor by men from New Mexican Hispanic communities, and how this affected gender relations and extended community networks between 1880 and 1940. Deutsch argues that at first small Hispanic villages and communities were able to use enclavement as a survival strategy to manage their involvement and confrontations with hostile European American culture and economy. However, by 1914 regional economic patterns had largely moved outside of village control, and villages needed to extend their small local networks to a more regional scale, to maintain connections with members who migrated seasonally to northern Colorado for agricultural work, or along railroad lines. Deutsch presents a model of how local identity was expanded to regional levels as part of cultural resilience at the end of the American Territorial period and into the larger challenges of the 1930s and Great Depression. This model has also been used by archaeologists to assess material responses to racialization during the American Territorial period (Clark 2012).

*Ethnicity*

American social hierarchies were deeply invested in ideas about race, partially shaped by the African slave economy. During the American Territorial period in New Mexico, the nation overall went through a series of vitally important events that continued to shape racialized forms of social structure, including most importantly the Civil War, and the Indian Wars. The doctrine of Manifest Destiny itself was fully rooted in racism and a sense of racial superiority of white Americans over less white Mexicans, Native Americans, and African Americans (Gómez 2008).

Americans brought a range of new ethnic labels with them to New Mexico that were often racially charged and derogatory. Greaser, mongrel, half-breed, and most often, simply "Mexican" were used to refer to persons who were now American citizens, but in the eyes of American victors did not have the requisite culture, language, or skin color to fully qualify for citizenship. Additionally, 'Mexican' took on a racial, rather than national, meaning, and was used to describe persons in newspapers, federal censuses, and other official documents (Clark 2005). During the American Territorial period, race once again became a highly salient part of New Mexican identities, but it was viewed through the lens of nationalism and citizenship. These identities also continued to play out along axes of class and gender.

Gómez (2008) argues that during the American Territorial period, “Mexican” or “Mexican-American” took on racial (which she defines as applied or ascribed identity from outside the group) and ethnic (identity asserted by the group) meanings. This non-linear process, Gómez argues, was part of New Mexican and American responses to the two racial hierarchies operating within the “double colonization” of the territory—the Spanish-Mexican regime, in which Hispanics had been at the top, and the American regime, which placed Hispanics somewhere in the middle, above Native Americans and African Americans, but below European Americans. Hispanics were legally granted “white” status, especially in environments like the judicial system, but socially were considered off-white or not-white and subject to constant pervasive racism.

Many scholars argue that the American racial hierarchy put pressure on Hispanic elites to define and defend their whiteness, particularly by separating themselves socially and racially from Native American and African American persons, to emphasize placement of those groups at the bottom of the three-tiered hierarchy (Baca 2015; Gómez 2008; Mitchell 2005). Increased social distance between Hispanic and Native peoples, which Frank (2000) argues began as part of the fundamental definition of vecino identity in the Late Colonial period, was articulated several ways during the American Territorial period. Court battles over Pueblo land and voting rights in the late 1800s emphasized a binary between Hispanic and Native peoples. Conflict between the groups was exacerbated by limited land and water resources, as Hispanics benefited from Pueblos’ loss of protections by being able to purchase or inhabit coveted Pueblo lands (Baca 2015). However, in less charged daily contexts, Hispanic and Native interrelationships continued into the early American Territorial period, where material remains show considerable economic interdependence between rural settlements and neighboring native communities (Darling and Eiselt 2017; Jenks 2017).

Mitchell (2005) strongly argues that New Mexico's racial heterogeneity and the legal "whiteness" of Hispanics meant that the American racial regime, which was idealized as a white and not-white binary, could not be imported wholesale into New Mexico, and social accommodations were made along class and gender lines to grant elite Hispanics social "whiteness" as well. While they only made up less than 10 percent of the population at any given time, upper-class New Mexicans claimed this space through legal partnerships with European American land speculators and appointed officials (Alarid 2012; Turo 2015), through consumption and advertisement practices (Mitchell 2005), and through limited marriage and economic partnerships (Gonzalez 2001). Other versions of these accommodations and provisional social whiteness played out in other heterogenous areas of the U.S., showing again and again that the black-white binary was more often constructed and fragile white supremacist narrative than a social reality.

Consumer culture was another U.S. national trend imported into New Mexico with broader economic changes and as part of its increased integration in national markets and mercantile-capitalism. During the Mexican Territorial period, Eiselt and Darling (2012) identified barter as a generally feminine activity within vecino-gendered economies, and wage-earning and cash exchanges as male. However, by the 1870s, in urban areas, the practice of shopping made female consumer practices public arenas for articulating gender and racial status (Mitchell 2005). These new practices suggest that in some parts of New

Mexico in the American Territorial period, there were important changes in gender roles and divisions among economic activities of Hispanic men and women.

As we have seen, the racialized context of the debate for New Mexico statehood spurred New Mexican elites to organize a response the broader anti-Mexican racism that existed in American politics, especially in the last quarter of the nineteenth century. LeBaron Bradford Prince, often called the 'father of New Mexican statehood' was also the architect of an identity "re-branding" campaign for New Mexicans, casting them as Spanish-Americans (Nieto-Phillips 2000). Prince served as a New Mexico chief justice (1879–1882), governor (1889–1893), and as a member of the territorial council (1909–1912). He was in a powerful position to push his re-branding agenda through meetings, newspaper columns and editorials, and as president of the New Mexico Historical Society. He was also an elite European American in the territory, who would make substantial profits from statehood. The campaign emphasized and elevated the European Spanish component of New Mexican history, casting New Mexicans as conquistadors and white Europeans. In his re-branding, Prince also emphasized the racial purity of Spanish-Americans, claiming that racial mixture had never occurred or was very minimal in New Mexico, unlike the rest of Mexico (Prince, in a letter in the New York Times, February 28, 1882, quoted in Nieto-Phillips 2000:117). While this conception of Spanish-American identity—utilized by both European American and Hispanic elites—could be viewed as "progressive" in relationship to the dominant racial views of the rest of the United States at this time (Gómez 2008), the re-branding still relied on emphasizing racial and cultural separation from Native Americans and Puebloans, politicizing and solidifying the binary relationship that had been growing since at least the Late Colonial period (Baca 2015; Frank 2000).

There were several important aspects of historical erasure in Prince's rebranding campaign that continue to affect research in New Mexico history and archaeology today. First, Prince effectively removed the Mexican Territorial period from New Mexico's historical narrative by downplaying the cultural influence of Mexican nationality and characterizing the Mexican Territorial government as too weak to effect any real change. Second, Prince created the foundations for the ideal of "tri-cultural harmony," which is remarkably similar to the concept of *convivencia* in Iberian historiography (Castro 1971; Mann et al. 1992). The tri-cultural narrative, which was used by Prince in his own boosterism and is still used in New Mexican tourism material today, essentializes historical identities, freezes Puebloan identity in a timeless frame, and erases effective public platforms to discuss historical or current racial or ethnic conflict within the state (Fairbrother 2000; Rodríguez 1998). As historians and anthropologists continue to study nineteenth century New Mexican history, they are also interrogating the effects of Prince's re-branding campaign on modern New Mexican Hispanic identity and the recursive dialog that developed as New Mexicans co-opted the Spanish-American ideal and used it as their own tool to confront racism in state and national institutions (Montgomery 2002; Nieto-Phillips 2004; Trujillo 2005).

*Archaeology*

Substantially more work has been conducted at American Territorial period sites than at Mexican Territorial period sites. Additionally, at sites whose occupation extended from the Mexican Territorial period into the American Territorial and Statehood period, often the material assemblage from the latter overwhelms the Mexican Territorial period signature. Archaeological work at a range of American Territorial period sites demonstrates that Hispanic material consumption patterns differed from region to region and changed substantively throughout the period. Proportions of New Mexican ceramics, including decorated Puebloan polychromes, Athabaskan wares, and other plain wares dropped throughout the period, especially after the arrival of the railroad in 1880. Alternatively, imported manufactured goods increased, as market access and transportation corridors improved. During the 1980s and 1990s many projects used world systems theory or acculturation theory to address market access and the level of New Mexico's integration in the national market (Boyd 1986; Heffington 1992; Williams 1992).

Dissertation work by Sunday Eiselt (2006), discussed from a theoretical perspective in the Mexican Territorial period section above, was conducted at Hispanic and Apache sites dating to the early American Territorial period in the Rio del Oso river valley. Eiselt examined micaceous pottery, not as a signal of Hispanic or indigenous identity, but as a truly interethnic or transcultural class of material that could be analyzed to learn about variation in clay collection and preparation practices by Apache, Hispanic, Tewa, and Tiwa potters, all of whom made, used, and traded micaceous pots during the Late Colonial and Territorial periods. Eiselt used typological analyses and INAA to understand how ceramics from different clay sources were produced and distributed in northern New Mexico. She also examined evidence of ceramic production and tin working at Hispanic and Apache sites near the Hispanic settlement of San Lorenzo. While Eiselt's later theoretical frameworks regarding vecino identity are problematic, her original work at San Lorenzo provides a detailed picture of how interethnic barter economy, especially of ceramics, operated in rural New Mexico in the early American Territorial period.

Other work by OAS in nearby Abiquiú offers a rare opportunity to directly compare Mexican Territorial, early American Territorial sites, and post-railroad occupations in the same region, excavated with compatible methodologies. OAS excavated a series of five sites along the Chama River in 1987 and 1988 (Moore 2004). The La Puente site (LA 54313) contained a shallow midden dating the Late Colonial period, three Mexican Territorial community trash pit features, one of which may include a blacksmith's dump, and two American Territorial period trash pit features. The Mexican Territorial features contained generally fewer New Mexican-made ceramics and fewer imported materials from the Personal Items functional category than either the Late Colonial or American Territorial features. The percentage of unidentified metal artifacts increased from 11.2 percent in the Late Colonial period to 30 percent in the Mexican Territorial assemblage, whereas Personal Items decreased from 12.9 to 3.3 percent. This may suggest that although a greater range of materials was available after the Santa Fe Trail opened, the types of items purchased were different during the Mexican Territorial period and the initial years of American market access. There was also a substantial drop in imported ceramics from Mexico during this period—Mexican-made majolicas made up 50 percent of the imported ceramics in the Late Colonial assemblage, and only 8 percent of the imported ceramics in the Mexican Territorial assemblage. Changes in American import tariffs in 1845 substantially dropped the cost of importing materials from China and Europe, which may have overwhelmed the ability of Mexican imports and Mexican-made majolicas to compete (Moorhead 1995; Williamson 2001). Meanwhile, hand-painted American and European ceramic types increased in both the Mexican and American Territorial assemblages. Boyer (2004a:271) suggests that this may be due to a preference (possibly ethnic) for hand-painted designs, even over cheaper transfer print wares.

The number of American Territorial period excavated sites has allowed for some attempts at comparative analyses, often to better understand differences between Hispanic and European American consumption, changes in consumption through time, or inter-regional differences (Akins 1995; Boyer 2004a; Maxwell 1983; Oakes 1983, 1990; Williamson 2000). Most recently, Boyer (2004a) compared 11 American Territorial period sites from the eastern Plains and Rio Chama regions, and Jenks (2011, 2017) compared 25 sites from throughout New Mexico ranging between 1700 and the early 1900s in occupation. However, such comparisons have often been hampered by incompatibilities in data collection, especially regarding the treatment of faunal remains, and do not control well for geographic region or pre- and post-railroad occupations. For example, the eastern Plains sites in Boyer's comparison all post-date 1900, but the Rio Chama sites do not. However, the data aggregated by Boyer and Jenks make it possible to offer some broad comments on trends through the period. For instance, the percentage of New Mexican-made ceramics within site assemblages generally decreases gradually with time, such that they are uncommon or not present in sites that post-date the railroad. Boyer's comparisons seemed to show the effects of market and railroad access, with post-railroad sites showing an immediate increase in the quantity and variety of Personal Items, such as jewelry and cosmetics, and post-1900 sites on the eastern plains tended to have a greater proportion and much more variety in Construction/Maintenance items, suggesting a shift in construction techniques.

Other archaeological work at remote rural sites in the later American Territorial period further demonstrates the range of strategies utilized at Hispanic settlements to cope with economic and political changes during the period. Test excavations at two Hispanic sites in southeast Colorado by Bonnie Clark (2012), in combination with large scale surveys and site documentation at the Pinyon Canyon Maneuver Site (Carrillo et al. 2011; Church 2001; Corbett 2003), provide a range of Hispanic and European American sites for comparison. Las Placitas and the Wild Plum site were settlements on public land (neither claimed homestead allotments nor land grants) occupied for approximately a decade, around 1890. Based on low numbers of cup and saucer vessels but higher numbers of plates and serving vessels, Clark (2012) noted that Hispanic occupants at Las Placitas may have preferred feasting and large social occasions rather than Victorian tea practices generally exhibited by white or European American settlers in the west. Clark also noted mixed economies that relied on both wage labor and localized subsistence practices that incorporated wild plants and non-domestic animals like rabbits that could be collected through women and children's labor.

*Summary*

Historical and archaeological research in the American Territorial period underscores the variety of economic and cultural choices that New Mexicans made to adjust to dramatic changes in land ownership, wealth distribution, and gender roles that impacted the entire populace. In some cases, European American and Hispanic settlements appear to be sharply distinct in material culture and consumption practices, with European American homesteaders importing almost entirely manufactured goods and canned or bottled foods, while Hispanic settlers utilized more wild resources to supplement small-scale agricultural practices (Boyer 2004a; Oakes 1983). In other cases early in the period, some European Americans who settled within Hispanic communities adopted similar practices to their neighbors (Weber 1982). Alternately, in Santa Fe, soldiers at Fort Marcy were well-provisioned by imported supplies, and it was the surrounding Santa Fe populace that appears to have adopted many of the soldiers' traditions in meat consumption and other material goods (Lentz and Barbour 2011).

## Conclusion

This chapter is a survey, using both documentary and archaeological analyses, of the rich, multiethnic, complex New Mexico borderlands social environment throughout the Late Colonial to American Territorial periods. It demonstrates how the range of ethnic and racial identities utilized by New Mexicans have changed through time, within the context of the twin pulls of the market and the state. The mid-nineteenth century cultural encounter with European American immigrants and capitalism occurred during a period marking the shift in social strategies used by New Mexican Hispanics regarding their identities. Analysis of historic documents makes it clear that in the years between Mexican Independence (1821) and U.S. Statehood (1912), Hispanic identity in New Mexico changed in response to political, social, and economic changes. These changes occurred within the context of, and in response to, new products and markets, disenfranchisement for Hispanics through land fraud and competition over resources, changes in government, new racial discourses, and prejudice (Bustamante 1982; Clark 2005; Gómez 2008; Meyer 1978; Nieto-Phillips 2004:99; Reséndez 2005; Weber 1982).

However, archaeological work pertaining to nineteenth century New Mexico has generally failed to address the rich arenas of racial or class conflict, resistance, or developing national identities to the same degree as historical research in the state. This is largely due to inadequate theoretical models for interrogating questions regarding Hispanic identity within such a heterogeneous context. The uncritical acceptance of ethnic essentialism that was pervasive in earlier archaeological practice masked the variation in strategies and experiences of Hispanics in historic New Mexico and greatly complicated attempts at understanding the material culture of this period.

More recent borderlands work that emphasizes the active, processual nature of identity, and examines how identity is demonstrated in cultural practice rather than individual artifact types, hold more promise. However, recently archaeologists have begun using 'vecino' alongside and as an alternative to the term 'Hispanic.' While both identities are often treated by scholars as just some of many ethnic identities active in nineteenth century New Mexico, how the two terms differ and what they mean for material culture is still largely unclear.

Thus far, New Mexico Hispanic archaeology has generally been constricted to single sites or small regions with detailed analysis of multiple artifact classes (Atherton 2013; Church 2008; Clark 2005; Eiselt 2007; Jenks 2011; Sunseri 2009). While such projects are extremely valuable, broad comparative analysis has yet to be done effectively. Attempts at conducting comparisons of existing data are frustrated by incompatible sample and analysis methodologies or inconsistent documentation, poor chronological control, and a lack of a clear theoretical framework to interpret differences among sites (Boyer 2004a; Jenks 2017). There is still the tendency to study historic Hispanic (or vecino) archaeology in highly localized contexts but discuss Hispanic identity in very broad state-wide or racial terms.

If archaeologists are going to interrogate a 'vecino archaeology' and examine Hispanic identity in the eighteenth and nineteenth centuries, they must do so with a clear model of how Hispanic and vecino identity relate to each other and to material culture at multiple scales. Because of this, the comparative archaeological work in this dissertation is especially necessary for the nineteenth century, a period when Hispanic identity may have undergone state or region-wide changes. The next chapter will lay the theoretical groundwork and present an archaeological model for examining changes in vecino and Hispanic identity between 1821 and 1912.

# Chapter 3: Theory and Model

As the previous chapter shows, the New Mexico territory was a tumultuous, occasionally violent, multiethnic cultural environment. In the nineteenth century the region experienced significant population growth, the movement and expansion of settlements with diverse populations, and a wide increase in the availability of different forms of material culture (imported American and European goods on the Santa Fe Trail). These changes pushed shifts in economic patterns and social boundaries and were likely part of changes in social identities used by New Mexicans. This research will distinguish variation in how people developed local and regional consumer relationships and situationally prioritized local vecino community relationships or broader regional social networks, in ways that carefully articulated with incoming American national and capitalist narratives. In frontier New Mexico consumer relationships were charged with more than just economic convenience and reflected important networks that were essential to the survival of Hispanic settlements. They may have played a vital role in the creation and maintenance of modern Hispanic identity as New Mexico was drawn into larger American capitalist systems (Deutsch 1989; Eiselt 2006; Eiselt and Darling 2012; Gómez 2008; Jenks 2011; Reséndez 2005; Trigg 2003).

Understanding the definition, boundaries, and development of Hispanic identity in New Mexico has attracted extensive study within the disciplines of history or ethnohistory, political science, sociology, and biology under a range of related but not equivalent ethnonyms, including Mexican, Mexican American, Spanish American, Hispanic, *hispano*, *nuevomexicano* and more recently *genízaro* and *vecino* (Brooks 2002; Bustamante 1982; Chavez 1975; Gómez 2008; G. Gonzalez 2017; see Kutsche 1979a preface for a summary of earlier ethnographic works; Meyers 2009 for a more recent review; Mitchell 2005; Nieto-

Phillips 2004; Nostrand 1975; Reséndez 2005; Salgado 2018). Work by Hunley and colleagues (Hunley et al. 2017), and Healy and colleagues (Healy et al. 2018) looking at the relationship between self-ascribed social identity nomenclatures such as *nuevomexicano* and Spanish indicates there are genetic differences between these groups and those that self-identify as Mexican or Mexican American. Their research also shows how complex the interactions between regional histories, social identity, genomics, and present-day bureaucratic uses of ethnic nomenclature can be. Furthermore, there continue to be real impacts to economic and health outcomes because of these interactions.

Research on the history and culture of New Mexico's Spanish-speaking population has not been neutral and, over time, has directly impacted New Mexican discourse and how New Mexicans engage with their own perceptions of their identity (Carrillo 1997; Gonzalez 1997; Healy et al. 2018; Rodríguez 1990; Trujillo 2009; Weigle 1989). Hispanic identity in New Mexico and the United States more broadly is both historically rooted and continuously changing. In addition to ways that other social identities like class, age, and gender can mediate ethnic identity, New Mexicans of Spanish-speaking descent (a term used by Hunley et al. 2017 and Healy et al. 2018) are continuously constructing and adapting their identities in conversation with applied ethnonyms, personal historic or family research, media, personal experiences and in response to particular social circumstances and interactions. They do so today and they did so in the mid-nineteenth century (Bustamante 1991; Fonseca-Chávez et al. 2020; Zavella 1993).

As discussed in Chapter 2, archaeological work regarding Hispanic and vecino identity and its relationship to material culture has benefited in the last decade by a shift towards theoretical models that perceive identity as a process that can be observed archaeologically through daily practice, rather than individual artifact types. However, systematic comparative analysis among sites or regions, and a broader understanding of differences between Hispanic and vecino identities and how they may operate at different scales are still needed. This is the question I directly engage with in this study. Here, I define vecino and Hispanic identities as existing along a spectrum from local to regional, wherein vecino refers to local community, civic, and personal relationships and interactions, and Hispanic refers to an identity operating on a regional or territorial scale that is less personal, but potentially more political and engages with ideas of citizenship, nationality, and the state. These social identities are related but not mutually exclusive. Persons living in New Mexico 1821–1912 may have engaged with these two identities separately, sequentially, or simultaneously in different historical contexts. Furthermore, these identities did not exist in a vacuum and were mediated by other social identities and circumstances, such as class, gender, market access, and relationships with surrounding ethnic groups.

Barth (1969) argued that we define ourselves against others and through our relationships with those outside our social groups. This project focuses primarily on consumer relationships, the relationships we develop and maintain to gain access to material goods, as an avenue to understand archaeologically the changing social boundaries and scales of Hispanic and vecino identities. Examining consumer relationships that New Mexican Hispanics maintained with Puebloans, Apache, Mexican Hispanics, and European Americans helps us understand how New Mexican Hispanics sought to integrate with or define themselves against other groups on the landscape.

Archaeologists are continuously working on questions relating to ethnicity, ethnogenesis, identity, or race. To approach a question like the changes in nineteenth century

Hispanic ethnicity requires a body of theory that serves to link material culture with enduring social dispositions, specifically identity. In this research, I use the broad theoretical umbrella of practice theory as this bridge.

Social identities operate at multiple scales. To understand the scale of social identity strategies prioritized in different communities in New Mexico—local vecino or regional Hispanic—requires a framework for comparison. Within practice theory, I utilize the concept of communities of practice developed by Lave and Wenger (1991; Wenger 1998) as a unit of analysis. Communities of practice are often small intimate groups linked by a common practice and 'way of doing.' Wenger (1998) further developed this concept at a larger scale with constellations of practice. A constellation of practice, also sometimes called a 'network' (Knappett 2011), is a group of communities of practice connected within broader institutions (Joyce 2012; Roddick and Stahl 2016).

I am interested in two types of communities of practice: pottery producing communities of practice and consumer communities of practice. Communities of potters are those who made the New Mexican plain wares and painted wares that were consumed at each site in my sample. Consumer communities of practice are the communities of site residents themselves, who are linked through their practices and relationships of material acquisition and consumption. Mills (2016:247) calls these 'communities of consumption' and notes that they can vary in spatial and temporal scales, including regional constellations of practice linked by shared consumption of objects or shared consumption practices. Information about the communities of potters, who are recognized through distinctive technological styles identified through ceramic analysis, will tell me more about the consumer relationships maintained by residents at each site in my analysis. Archival research into market and merchant access, and analysis of the diversity and use of imported glass, metal, and ceramic artifacts will demonstrate additional consumer relationships and help complete a consumer profile—a picture of the community of consumption—at each site.

I posit that each site's consumer profile can be situated along a local-to-regional spectrum, wherein local relationships are more closely associated with vecino identity and regional relationships suggest a greater affinity for broader Hispanic identity strategies. The consumer profile of each site will be characterized based on the number and types of relationships identified to access New Mexican pottery, represented by the identified pottery producing communities of practice; and the number and types of sources for imported goods, the range of imported materials, and the roles these goods played in everyday life at each site (see Figure 1.2). The consumer relationships each household maintained to acquire New Mexican-made ceramics and imported materials tie them into social exchange networks around the territory and globe and tell me more about how they defined their social identities.

In this chapter I will discuss the role of practice theory within archaeology, particularly its utility regarding social identities and contexts of colonialism or culture contact. Next, I will lay out Lave and Wenger's concepts of 'community of practice' and 'constellations of practice,' which have become particularly popular in archaeological research regarding craft production and are only just beginning to be used in studies examining consumption. Because consumption is relatively infrequent territory for the concept of communities of practice, especially within historical periods, I will also have a discussion of theories surrounding consumption in historical archaeology, particularly relating to capitalism, identity, and agency, which have helped prepare the ground for this work looking at consumption as daily practice. At the end of this chapter, I will present a model that outlines how communities of practice will be identified in this project, and how consumer profiles will be used to define and interpret communities of consumption in terms of local vecino and regional Hispanic social identity in nineteenth century New Mexico.

## Practice Theory

This research uses practice theory as a broad theoretical framework (Bourdieu 1977; Giddens 1984; Ortner 1984). Practice theory maintains that society, which includes cultural orientations and beliefs such as social identities, both structures and is structured by the daily practice of individuals. Theorists such as Bourdieu and Giddens developed elements of this social theory largely in response to structuralism in an attempt to bypass the dichotomy between subjectivist explanations of social thought and action (focused on the individual agent, their judgments, motivations, beliefs and desires), and objectivist explanations (structure explaining action and change, based on material and economic conditions) (Postone et al. 1993). Those who embraced 'practice theory' approaches hoped to elucidate the relationship and tension between structure and agency.

After *Outline of a Theory of Practice* (Bourdieu 1977) was translated into English, practice theory was quickly integrated into American social sciences, albeit in a piecemeal fashion (Postone et al. 1993). Ortner (1984) summarizes elements of practice theory within American anthropology in the 1980s. Two core ideas are most frequently appropriated by American anthropologists (including archaeologists) when they discuss practice theory: *habitus* and *daily practice*. Habitus refers to dispositions which guide or shape practice. Habitus is both shaped by social structures and holds capacity for structured improvisation by actors. The full range of dispositions of a habitus are not always rational or consciously understood by actors. Bourdieu referred to these unconscious dispositions as being *doxic*, or nondiscursive (Bourdieu 1977:168 cited in Joyce 2012). According to Postone and colleagues (1993:4) "It [habitus] is meant to capture the practical mastery that people have of their social situation, while grounding that mastery itself socially." However, as it has been translated into American anthropology and archaeology, habitus is also often described as loosely analogous to culture (Ortner 1984), which can lack both specificity and scale.

Practice, and especially daily practice, refers to the actions of individuals, which are situated within particular cultural and historical contexts and are shaped by different habitus. Definitions of practice in American anthropology can become as broad as "anything people do" (Ortner 1984: 149) and encompass actions by individual actors/participants, and actions by groups, such as communities or social types (i.e. 'workers' or 'women'). Daily practice may include repeated behaviors more likely to leave cumulative evidence observed by archaeologists. Practice is the medium for negotiation between structure and agency. These negotiations are shaped by power but also include improvisation and individual agency and motivation. Thus, practice can be a vehicle for both change and reproduction of habitus, or durable social dispositions. Pauketat (2001) argues that practice is always creative and generative, and that it is inherently historical, because practices must be interpreted and understood within their particular context of what came before and what comes after, rather than broadly generalized as cultural processes or behaviors.

Within archaeology, daily practice includes the ways people make, use, discard and otherwise interact with material goods (Bayman 2009; Voss 2008). Therefore, through their production and use, material objects are part of the construction and reconstruction of cultural ideas such as social identities like class, race, ethnicity, or gender, in both conscious and unconscious ways (Appadurai 1988; Habicht-Mauche 2006). In his overview of practice theory, Cipolla (2014) describes how widespread this body of theory has become within archaeology—both prehistoric and historical. This may be because practice theory provides a framework to link material objects, what archaeologists recover as artifacts, and culture or society. The two are intertwined: "humans and objects are dialectically bound and thus inseparable in terms of social analysis" (Cipolla 2014: 5).

Practice theory has been particularly attractive to archaeologists working with questions regarding social identities and culture contact, as an opportunity to move away from strategies that focus on directly linking artifact types with ethnic groups and towards looking at the roles of artifacts in daily lives (Dietler and Herbich 1998; Dobres 2005; Eckert 2008; Hegmon et al. 2000; Stark 2006). Stark (1998) points out that practice theory is a distinct methodological advantage that allows us to approach complex cultural phenomena such as social boundaries based on what people *do* rather than trying to infer what they think (Stark 1998, 2006:22). Cipolla (2014) identifies social identity as one of four major themes among archaeologists who use practice theory. Secondly, the tension between structure and agency within practice theory can be helpful to understand moments of rapid or tumultuous change as well as resilience, which are both common (and simultaneous) characteristics in colonial encounters. Those working in contexts of colonialism or cultural contact especially have found it fruitful for identifying and understanding shifting social boundaries using material assemblages and archaeological remains (Jenks 2011; Lightfoot et al. 1998; Sunseri 2009; Voss 2008). As Silliman (2001:195) notes, the power inequities of colonial environments may mean that small, mundane daily practices become hyper-politicized, either as arenas of control and domination, or as forms of resistance or exerting social agency. Daily practice becomes the context for examining, reinforcing, or reworking social identities that have become heterodoxic through contact. Thus, daily practices such as pottery making or acquisition, that were previously structured by cultural tradition (habitus) and unconscious behaviors that Bourdieu defined as *orthodoxic*, can become avenues for agency, experimentation, and reworking identities.

## Communities of Practice

The very broadness of habitus and practice can make them difficult for archaeologists to utilize when examining material remains, particularly when trying to address questions of social identity. However, an additional concept, a community of practice, as a form of "groupness" provides a unit of analysis that is accessible to archaeological inquiry (Blair 2016:97; Joyce 2012). Building on practice theory in another sociological context, Lave and Wenger (1991) developed the concept of communities of practice as part of their study of apprenticeships, and their attempts to understand learning as a social practice. A community of practice is defined as a group with a common domain, a level of interaction that allows the group to learn together, and a shared competence surrounding a practice—an activity or way of doing (Wenger 1998). Learning occurs through embodied practice, or physical doing, situated within the community, and progresses from periphery to center as the practitioner gains mastery and recognized competence. These are avenues for persons, whether apprentices, immigrants, new workers, or children being socialized, to be incorporated into a community and to develop belonging through learning, participating, and gaining competency in the practices of a habitus. Lave and Wenger again emphasized the recursive relationships in practice theory, because learners both reinforce and alter the habitus of the community through their practice and participation.

Constellations of practice are a way to think about how multiple communities of practice are integrated on a larger scale (Roddick and Stahl 2016; Wenger 1998). The connections within a constellation may be complex, dynamic, and rooted in a shared historical context. These connections can be formed or maintained through boundary objects, which may have multiple meanings across the communities within the constellation; or boundary members, identified as brokers or individuals with enough connections to move through and potentially introduce change among multiple communities of practice. In the multiethnic environment of New Mexico, both New Mexican-made plain ware ceramics and imported materials may be seen as boundary objects, which connect consumer communities to different constellations of practice—with Puebloan, Athabaskan, or other local New Mexican producers, or with larger national and global trade networks and market systems. Alternatively, multiracial persons, multilingual persons, captives, *genízaros,* and travelling merchants may have operated as brokers within constellations of practice (Brooks 2002).

With further development and refinement for archaeology, communities of practice and constellations of practice became a powerful theoretical tool in studies involving social networks (Blair 2015; Knappett 2011; Mills 2016, 2017; Peeples 2018), cultural change (Silliman 2009), consumption (Blair 2015, 2016; Mills 2016) and, in historical colonial contexts, ethnicity and identity (Peelo (Ginn) 2011; Sunseri 2009). It is important to note, however, that a community of practice is *not* the same as an ethnic or racial group, or class, or other social identities, though in some cases they may be closely aligned. Communities of practice can crosscut each of these other forms of identity and *vis a versa* (Eckert 2008; Stark 2006). The activities of a community of practice may be oriented towards production, such as craft production, or consumption, such as the acquisition and use of material goods related to participation in a social group. This research identifies communities of practice in both realms, and so examples of how such communities have been identified and studied in terms of both production and consumption are discussed here.

*Production*

Archaeologists initially found communities of practice to be very fruitful to examine learning related to craft production, for example with pottery (Cordell and Habicht-Mauche 2012; Eckert 2008; Fenn et al. 2006; Ginn (Peelo) 2009; Huntley 2008; Kohring 2012; Minar and Crown 2001; Sassaman and Rudolphi 2001; Van Keuren 2006). Modified for ceramic analysis, Eckert defines communities of practice as the "social networks in which…potters learn their craft…" (Eckert 2008:2). Lave and Wenger (1991) argue that learning is a process that cannot be separated from daily practice and in order to learn, one must participate and engage with the practice. As the individual is accepted as a learner and moves towards full participation, they are not only learning the craft of ceramic production, they are also developing their identity as members of the potting community. Therefore, to participate in a community of practice is to also participate in a social identity (Peelo (Ginn) 2011).

However, a potting community of practice may be small and intimate in size. This is in part due to aspects of ceramic production which require in-person observation and facilitated learning (Carr 1995; Crown 2001; Minar 2001; Minar and Crown 2001; Wallaert-Petre 2001). Fenn and colleagues (2006) argue that a potting community of practice can be smaller than a pueblo community, and likely provides some intra-community resolution.

While a community of practice is a social identity, it is not an archaeological proxy for an ethnic identity, racial identity, or even necessarily a residential community identity (Eckert 2012; Stark 2006).

*Technological Style.* Community of practice studies oriented towards ceramic or other craft production frequently use technological styles as a material avenue to identify a potting community of practice (Crown 2001; Eckert 2008, 2012; Fenn et al. 2006; Minar 2001; Sassaman and Rudolphi 2001; Van Keuren 2006). Lechtman (1977) proposed that technological style, the patterns produced through repeated techniques in manipulating materials, and the technological performance itself could potentially communicate meanings and ideologies, often in nonverbal ways. She also argued that the cultural context in which an object is made constrains the options available to the producer as much as environmental forces (Arnold 1985; Lechtman 1977; Lemonnier 1986; Sillar and Tite 2000). Different potting practices may be visible at different scales of technological analysis, from the microscopic, where the researcher may identify patterned clay processing strategies, to structural traits such as visual style or vessel forming techniques. Important social relationships are enacted at each stage of pottery production and the learning frameworks, and thus communities of practice, may be different at each stage (Gosselain 1998). With this theoretical orientation all stages of ceramic production are informative, especially in political contexts and social arenas where the study of decorative style or mineral composition alone may not be able to access the full range of behavioral possibilities. Thus, a holistic program of ceramic analysis is especially useful in colonial contexts and when working with a visually or functionally similar class of artifacts, such as historic New Mexican plain wares.

Archaeologists have come to pay close attention to learning environments and ways new craftspeople assimilate knowledge within communities of practice to better understand how these environments affect material culture and technological stability and change (Minar and Crown 2001). Ethnoarchaeological research suggests that learning environments and the social dynamics of potting communities, ranging from marriage patterns to regional identity politics, can have substantial and varied effects on material outcomes (Balfet 1965; Bowser 2000; Deboer 1990; Gosselain 1998; Herbich 1987; Minar and Crown 2001; Wallaert-Petre 2001). However, studies also suggest that certain physical activities eventually develop as motor skills and what we commonly think of as "muscle memory." Some repeated activities, while slow and conscious during the learning process, become more unconscious through mastery. These activities, such as handedness, coil direction, and potentially other aspects of vessel formation, tend to be very conservative and durable, and are more likely to closely reflect the patterns of the teacher rather than innovation (Gosselain 1998; Hegmon et al. 2000; Minar 2001; Sassaman and Rudolphi 2001).

Some archaeologists have had success using pottery producing communities of practice to understand social relations among pluralistic communities in the past. Ginn (Peelo) (2009) used an analysis of different technological styles of plain ware pottery to identify multiple communities of practice at five northern Spanish missions in California between AD 1769 and 1834. These mission environments brought together people from many ethnolinguistic groups across the territory, including Costanoan/Ohlone, Patwin, Coast Miwok, Bay Miwok, Yokuts, Esselen, and Salinan language groups. Some pottery producers in the missions Ginn studied came from indigenous groups with no previous pottery-making tradition. Instead, pottery making techniques were taught by Mexican potters Mariano Tapia and José Antonio Romero, and others brought into the territory to teach neophyte laborers, who reinterpreted the techniques through their native habitus related to other craft production such as basket-making.

Ginn closely analyzed six stages of the ceramic production sequence for plain ware ceramics at five mission sites (acquisition of clay, temper, production technique, vessel form, finishing technique, firing methods). In examining the diversity and patterning of different technological styles at the missions, Ginn noted that the communities of practice related to pottery production did not simply map on to reimagined indigenous identities or newly developed mission identities (Peelo (Ginn) 2011). Instead, mission native identities intersected with gender and possibly class identities through the practice of ceramic production, showing that multiple social identities may be interrelated within a single community of practice, with varying degrees of permanence, and operating at multiple scales. Indigenous people living in mission communities, separated from their previous place-based identities, incorporated additional mission-based identities into their daily lives.

Within New Mexico, Sunseri (2009) examined pottery at Casitas Viejas near Abiquiú. As discussed in Chapter 2, this was part of a larger project examining hearthscapes and village landscapes of the community to understand the process of community identity during the late eighteenth century. Casitas Viejas was also likely a pluralistic community, with *genízaros* from multiple native communities, as well as settlers who identified as *español* and vecino. In his ceramic analysis, Sunseri analyzed the production sequence of pottery found in middens at the site. He was able to identify multiple communities of practice that produced the pottery, and the products of the communities were represented in different proportions in the household middens, suggesting that residents at the site may have had different consumption practices from their neighbors.

Sunseri examined paste and temper types and related these to clay sources on the landscape, construction and finishing of vessels (particularly lip form of rims), vessel forms, and firing temperature. By considering patterns at each stage of production, Sunseri was able to tease out variation in ceramic sources accessed by Casitas Viejas residents and demonstrate the recursive relationship between the traditions and material constraints of pottery producers, and the colonial period consumer demand for vessels with specific form, function, or visual characteristics. He notes that pottery at Casitas Viejas was acquired from multiple production communities who supplied the village with “a small range of similar-looking versions of simple vessels.” (Sunseri 2009: 181). While all households at the site consumed polished black and micaceous wares, for example, Locus B more consistently had access to highly polished ash, tuff and basalt-tempered black and polychrome vessels, suggesting specific social or economic access to a particular potting community.

The work of Ginn (Peelo) and Sunseri are important examples because they each use technological microstyles identified through ceramic analysis to delineate pottery producing communities of practice in the archaeological record and demonstrate that these communities of practice can be used as a unit of analysis to understand visually similar plain wares produced in pluralistic colonial societies. The ceramic analyses of New Mexican plain ware pottery in this study will use a similar methodology and theoretical orientation to understand variation in visually similar pottery consumed at each site in the sample. By identifying the number of pottery-producing communities of practice represented in the New Mexican-made plain wares at each site in my sample, I can understand more about the number and nature of consumer relationships site residents maintained in order to acquire their New Mexican plain ware pottery.

*Consumption*

As noted above, this project also conceives of material consumption as a practice that is structured by cultural orientations such as social identities. While studies using communities of practice as an analytical tool have not focused as extensively on the practices of consumption (but see chapters in Cipolla 2017a; and Mills 2016), studies that emphasize consumption from a range of perspectives have long history within archaeology, and historical archaeology especially, as researchers seek to understand processes of colonialism, capitalism, racialization, and other aspects of modernization through the lens of material culture (Leone 1999; Majewski and Schiffer 2009; Mullins 2011a; Orser 2007; Purser 1992; South 1977; Spencer-Wood 1987a).

Practice theory and the archaeology of consumption are a natural fit, as Bourdieu himself was deeply interested in consumption and material culture. Specifically, Bourdieu was interested in how the practice of consumption creates and maintains social relationships and social boundaries, particularly between classes, through the construction and control of taste (consumer choices) (Allen and Anderson 1994; Bourdieu 1984). Consumption in colonial contexts can sometimes highlight and focus group identities such as ethnicity and community (Mullins 2011b; Mullins and Paynter 2000; Scarlett 2010; Trigg 2003), but it can also be used as a form of resistance against dominant structures or colonial powers (Mullins 2011a; Mullins and Paynter 2000), or as an arena for the construction of new hybridized identities (Silliman 2013 but see also, 2015).

Archaeological studies of consumption encompass a very broad range of theory, scale, and methodologies, but most have come to emphasize the social, rather than purely economic, dimensions of material consumption. Mullins (2011b:134) highlights two elements to this current 'social turn' in research: one is "the structural, material, and ideological processes that deliver goods to consumers." This can include things like the study of trade networks, marketing, or underlying social structures such as identities or ideologies that affect how people come to consume certain things. The other broad school of consumption archaeology focuses on the agency and practices of the consumer "revolving around how people actively define the meaning of things, often in opposition to dominant ideology, the state, or broader economic interests." (Mullins 2011a:134). Mullins' own work is largely of this second variety, as he examines the multifaceted symbolic meanings and aspirations imbued within individual (but mass produced) objects like bric-a-brac, meanings that can only be fully understood within the object's particularistic historical context (Mullins 2012).

Within this social turn of the archaeology of consumption, material goods are treated as more than merely economic indicators or instrumental reflections of identity or status. Instead, the point of interest is the practice of acquiring and consuming material culture that is active participation in and maintenance of social relationships and self-definitions (D. Miller 1995; Mullins 2011b). Objects themselves are imbued with social meanings relating to the consumer relationships that brought them into use and circulation (Appadurai 1988). Under a practice theory approach, to study the circulation and use of material goods is not merely an economic exercise but a study of important social relationships. Consumer choice and consumption practices, which include the process of socializing and giving meaning to materials, can also indicate relationships or desired relationships with ideas of nationalism, status, and citizenship (Bourdieu 1984; D. Miller 1995; Mullins 2011a).

*Consumption and Identity.* Historical archaeologists have always used consumption practices as a vehicle for understanding social identities such as class, race, or ethnicity. Stanley South (1977) advocated for uncovering and describing “cultural patterns” in material assemblages of households—the byproducts of consumption. He felt that different social processes and identities produced different patterns that might be definable by archaeology, such as a “South Carolina plantation” pattern. While this approach and others like it have since been criticized for conflating social identities such as race and class, and failing to have robust theory to connect recognized patterns with behaviors (Boyer et al. 2018; Brandon 2009; Orser 1989; South 1988), many of South’s techniques, such as functional analyses of artifact assemblages, used for imported artifacts in this project, aid in comparative studies of sites.

Material pattern analysis strategies evolved into consumer-choice models under processual archaeology in the 1980s and 1990s, as archaeologists continued trying to identify material patterns associated with specific ethnicities, class levels, or other social identities, often by interpreting specific artifacts or assemblage patterns as instrumentally reflective of predefined identities (Mullins 2011b). Archaeologists attempted to control for intersecting social identities by comparing sites of the same class, but different ethnicities, for example or vice versa (Henry 1987; Spencer-Wood 1987b). In particular, archaeology under consumer choice models relied on ceramic cost indices and economic scaling of the type developed by George Miller (1980, 1991) to examine status and make comparisons between sites (Henry 1987, 1991; Spencer-Wood 1987a). However, these models often resulted in consumer behavior being reduced to merely economic models, where cost was the only socially important (or consistently identifiable) factor (Brandon 2009; Camp 2011; Cook et al. 1996). But like South's functional categories, cost indices remain a widely used methodological tool for assemblage comparisons, especially when linked with more nuanced theoretical frameworks (Cromwell 2017).

In the 1990s historical archaeology became more interested in ethnic and racial minority populations within American history, and studies of the consumer patterns at African American sites and Chinese diaspora sites were common (for summaries see Dale 2016; Fennell 2011; Merritt 2017; Mullins 2011a:116–144; Orser 2007:20–28; Voss 2005). As archaeologists moved away from attempting to identify one-to-one reflective relationships between artifacts and identities (of the 'opium tin' = Chinese consumer variety), and towards understanding the variation in consumer patterns, the primary research questions began to shift towards understanding how race might integrate with other social identities such as class, and how these relationships may be apparent in different archaeological assemblages (Brandon 2009). In these approaches, the specific historical context of consumption at a site is important to interpreting how the consumption patterns and the significance of different material goods might change from site to site. Historical archaeologists began emphasizing the symbolic meaning of material culture and particular artifacts at highly local scales, acknowledging that especially in periods with mass-produced materials, consumption of the same materials may not have the same meaning everywhere (Praetzellis and Praetzellis 2001). While this tended to produce more refined archaeological interpretations, it also makes it more challenging to produce comparative studies across multiple scales, which are vital in understanding large cultural structures such as race and racialization (Camp 2011).

For some time, historical archaeologists have used households, variably defined as social and economic units of production and consumption (Allison 1999; Wilk and Rathje 1982), as the foundation unit for consumption patterns at sites to compare social groups such as class and ethnicity (Beaudry 2015; Brandon and Barile 2004). The archaeology of households grew in popularity and theoretical complexity through the 1980s and 1990s. However, a household is not always an ideal archaeological unit, for several reasons. Archaeologists have pointed out that it can be too easy to import Euro-centric assumptions about nuclear families and power dynamics into historical contexts where households were corporate rather than filial units (Beaudry 2015; Dale 2015). Additionally, using a household as a unit can mask the role of agency, power relations, gender, and age by subsuming the social identity of the household under that of the archivally documented head of the household (usually a single man), which makes the actions of women and children less visible to archaeological analysis (Beaudry 2015; Brandon and Barile 2004; Spencer-Wood 2004). These critiques make it clear that for households to be a useful unit of analysis and comparison in historical archaeology, the specific historical context of the household—what defined it as a social, spatial, and economic unit at each site, must be understood and rooted in archaeological and archival evidence, and this context must be considered in interpretations based on archaeological comparisons.

For archaeologists working within a practice theory framework, households are considered ideal locations to observe the material remains of daily practices (Barbour 2012; Lightfoot et al. 1998; Panich et al. 2014). While not explicitly defining a household as a community of practice vis-à-vis Lave and Wenger (1991), I argue that such studies use a definition of household that is very compatible with Wenger's (1998) definition of a community of practice: a common domain, a level of interaction that allows the group to learn together, and a shared competence surrounding a practice (how to acquire, use, and discard material goods). A practice theory approach using consumer communities of practice anchored in the household as analytical units is a useful method to help develop qualitative comparisons.

In one example, Reeves (2015) compared plantation slave households on three different scales: households among slaves with different economic tasks and roles within the Montpelier plantation, households among different plantations of the Virginia piedmont region, and between households on plantations in Virginia and Jamaica. By using households as consumer units, Reeves was able to look at the role of local, regional and global consumer relationships in relation to consumer practices, as well as a range of market forces and power dynamics.

In circumstances where household units might not be appropriate, archaeologists have begun to develop additional quantitative methods for identifying communities of consumption in material assemblages and consider them at multiple scales. For example, Mills (2016) examined consumption of polychrome ceramics involved in feasting behaviors in the Southwest between AD 1200 and 1450. She identified communities of consumption at a local scale as shared cooking and food service behaviors, visible in household ceramic assemblages, but also consumer communities on a larger spatial scale (and longer temporal scale) as shared feasting practices that led to structured discard and residues, within community archaeological assemblages. At an inter-regional scale, Mills used network analysis to identify multiple constellations of practice distinguished by similar proportions of key wares among community sites within the entire Southwest region. Each constellation may have contained several communities of consumption.

Blair (2015, 2016) identified both ceramic production communities of practice and glass bead consumer communities in their analysis of materials from the Mission Santa Catalina de Guale in seventeenth century Florida. Like Mills, Blair used statistical analyses and social network analyses to help delineate consumer communities of practice. In a series of 431 burials with glass bead assemblages, those assemblages that were grouped as being the most similar using Brainerd-Robinson coefficient were considered 'modules.' Blair further tested these modules as communities of shared practice by checking clusters identified with correspondence analysis and comparing the burial bead assemblages with those from refuse assemblages at residential communities within the mission. The groups proved sufficiently robust to suggest consumer communities among the buried individuals with shared practices, however it appears that these cross-cut residential communities, as there was no spatial patterning of the consumer communities in the cemetery. Blair used the varied ceramic production patterns in combination with the at least four bead consumer communities identified in the mortuary assemblages to argue that the population at Mission Catalina was more diverse, both spatially and through time than previously characterized. Merely studying 'Guale' identity obscured greater nuance in the impacts of aggregation and processes of identity resilience within the mission communities. Rather, new community formations were visible within the archaeological materials recovered from excavations.

Each of these examples approached consumer communities of practice and consumer relationships or networks at a variety of scales, from small groups of burials to multi-regional constellations of practice. By using households and communities of practice as a unit to support multi-scalar analyses and comparisons, Reeves, Mills, and Blair were able to develop models of how social identities shaped past behaviors, and how these were impacted by market access, colonial powers, and ideological change. By focusing their analyses on consumer practices and relationships rather than merely characterizing and comparing artifact assemblages, they were able to examine material culture as more than an instrumental reflection of a single social identity such as class or ethnicity.

## Model of Local and Regional Identity

Thus far this theoretical overview has demonstrated that 1) practice theory approaches center process and behaviors (practice), rather than objects. However, because making, acquiring, using, and discarding material objects is also a part of daily practice, there is a link between material culture and durable social dispositions, such as identity. Practice theory approaches offer archaeologists a way to understand identity without essentializing it into one-to-one object-identity relationships. This approach is particularly useful in pluralistic and colonial contexts. 2) Under the umbrella of practice theory, a community of practice is a useful unit of analysis to understand 'groupness' in the archaeological record, but a community of practice is not a direct proxy for an ethnic group or other social identity. Instead, social identities may crosscut or overlap many communities of practice. Archaeologically, pottery producing communities of practice can be inferred from technological style observed in artifacts. One way to infer consumer communities of practice is through the consumer relationships, consumption, and discard patterns of households. 3) Chapter 2 outlined the dynamic and pluralistic social environment of territorial New Mexico, including many ethnic and racialized identities active across the landscape. Among these are vecino and Hispanic identities. However, archaeologists have not developed a clear operational distinction between the two. Vecino identity is often characterized as being local, or small-scale, rarely extending outside of a community. Hispanic identity, however, has not been considered in terms of its scale, though it is often implicitly presented as being regional or even territorial in its distribution.

I propose a model wherein vecino and Hispanic identity are part of a spectrum of scale, in which 'vecino' reflects emphasis on local, community relationships and identity, and Hispanic reflects identity affiliation with broader regional patterns, ideas, and dispositions. While I describe this as a spectrum to emphasize that these processes are not a separate either/or dichotomy, the two identities can also be simultaneous and overlapping. Furthermore, vecino and Hispanic identity was not only practiced through consuming material culture. Other forms of habitus and daily practice, such as language, religious practices, etiquette and cuisine, economic practices such as agriculture or other crafts production may have provided arenas for negotiating affiliations with vecino or Hispanic identity, as well other social identities such as gender and class.

The years 1846–1912 are a key period in which New Mexican economic systems, demographic make-up, land and wealth distribution, and power dynamics changed as European American immigrants and interests entered the territory and as New Mexicans were drawn into the larger American racialized capitalist system. As nationalistic and racial discourse heated up regarding the citizenship of people living in the Territory of New Mexico, some communities may have strategically shifted from prioritizing local vecino community relationships to emphasizing impersonal relationships and integrating with a broader regional Hispanic ethnic identity narrative championed by progressive politicians. A greater understanding of how New Mexican ethnic identities operated at different scales will help us further understand change during this period.

To do this, consumer profiles that characterize the consumer community of practice are developed for each site in the sample, and these profiles are situated relative to each other along a local (vecino) → regional (Hispanic) spectrum. A consumer profile consists of details of the artifact assemblage *and* the number and type of social relationships consumers maintained in order to acquire the artifacts (see Figure 1.3). By examining not just the items that site residents consumed, but the social relationships used to acquire them, this project moves beyond a one-to-one relationship between objects and identity (Adams 1979; Barth 1969; Hodder 1985; Jones 1997; Maceachern 1998). This approach allows consumer profiles at each site to be interpreted within their social and historical contexts. This section introduces a model of how profiles will be interpreted in terms of how site residents engaged with local (vecino) or regional (Hispanic) forms of identity in the nineteenth century.

Table 3.1 summarizes some kinds of material evidence of local or regional consumer profiles. Consumer profiles at the vecino end of the spectrum are indicated by an emphasis on maintaining close, even personal or kin-based, local consumer relationships. Barter exchanges are often portrayed in this way (Jenks 2011). In comparing the four profiles with each other, it is expected that if local strategies are predominant, they will be shaped by the individual social and historical context of each site and this will produce a unique consumer profile at each site.

Table 3.1. Characteristics of Local Vecino and Regional Hispanic Consumer Profiles.

| Artifact Class | Emphasizing Local Vecino Relationships | Emphasizing Regional Hispanic Relationships |
|---|---|---|
| Consumer Profile | Different consumer profiles in each community in the sample, reflecting particular local relationships. LA 160 and LA 4968 may be similar to one another due to proximity and similar consumer relationship opportunities. | Similar consumer profiles among the four communities sampled. |
| New Mexican Ceramics | New Mexican ceramics show few micro-styles, suggesting regular acquisition from just a few production groups or families.<br><br>New Mexican ceramics are almost entirely from local producers. | New Mexican ceramics show greater variety in micro-styles, suggesting no consistent relationships with producers.<br><br>More ceramics from multiple regions of New Mexico, suggesting emphasis on long distance consumer relationships or a greater disconnect between producer and consumer. |
| Imported Ceramics, Glass, Metal | Fewer imported goods, especially in relation to regional market access.<br><br>Imported goods represent a limited range of functions.<br><br>Local modifications and repurposing of imported goods to fit local needs. | A high proportion of imported goods.<br><br>Imported goods are from a variety of sources.<br><br>High diversity of imported goods.<br><br>Goods used in a public setting are aligned with U.S. or Mexican status and citizenship narratives. |

The prioritization of regional or national relationships and Hispanic ethnic identity is characterized by consuming materials from wide range of regional sources that represent distant consumer relationships. In this scenario consumption patterns may reflect consumer relationships with ideas about citizenship and Mexican or American expectations for Hispanic consumption, whether following expectations or resisting them (Camp 2013; Reséndez 2005). Similarities in some types of material consumption across the four sites are indicative of consumer practices that prioritize a regional or national ethnic identity. If residents prioritized Hispanic ethnic identity, I expect the four sites to show consumption choices that tie the Hispanic communities together through similarity (Voss 2008).

*New Mexican Plain Ware Ceramics*

As discussed in the previous sections, in terms of ceramic production, a constellation of techniques—the technological style—represents a community of practice (Larson 2013; Lave and Wenger 1991; Lechtman 1977; Lemonnier 1986; Sillar and Tite 2000). I expect that different technological styles will be evident even within larger social communities, such as a pueblo, and that these microstyles reflect specific learning lineages and smaller social production units, such as a kin group (Balfet 1965; Deboer 1990; Ginn (Peelo) 2009; Gosselain 1998; Longacre 1992; Peelo (Ginn) 2011; Peeples 2011; Sunseri 2009). Close analysis of technological variation in New Mexican ceramics will indicate how many microstyles are represented within each site assemblage. Low levels of variation and few microstyles might indicate that site residents procured ceramics from only a few potting groups and prioritized relationships with specific groups, such as kin or fictive kin relationships between families. This is expected if the dominant strategy was to emphasize community identity and local relationships at the vecino end of the spectrum.

A strategy that emphasizes Hispanic ethnic identity is expected to show ceramics from a wide range of regional sources and greater variation in technological microstyles even within local sources. Hispanic communities wishing to emphasize their ethnic identity may have continued to acquire ceramics from the nearest producing Native American communities, but from a variety of producers. This suggests that the acquisition of ceramics was not a reflection of close personal relationships (see Figure 3.1).

*Imported Ceramics, Glass, and Metal*

Analysis of imported goods will focus on addressing research questions about consumer relationships with people and with ideas such as race, Mexican and American nationalism, and citizenship. Thus, understanding the contexts of material acquisition (proximate sources) and the role of material goods in larger Mexican and American life are especially important. The consumption of imported goods from a wide array of non-local Mexican and American sources—purchased in Santa Fe, from merchants on the Camino Real and Santa Fe Trail, through Native American traders, goods acquired by seasonal laborers while away from home—may indicate emphasis on more impersonal regional or national consumer relationships.

Since there is no documentary evidence to directly identify merchant sources at the sample sites (with the exception, somewhat of the Barela-Reynolds house, since the property was owned by Hispanic and European American merchants throughout the study period), archival analysis will instead be used to characterize more generally the conditions of market access in the region around each site in the sample, and to assess purchasing patterns and costs of imported items through the 1848–1912 period generally. Merchant licenses from each relevant county will be used to assess regional merchant activity and market access, while a sample of ledger books will be used to characterize typical purchases, credit and debt networks, and material costs during the study period. These data are compared against the assemblages of imported ceramics, glass, and metal at each site to understand the consumer patterns of site residents in the context of market access in their region. For example, a high proportion of imported materials at sites in regions with low market access suggest that the household residents prioritized imported materials and sought out sources even outside their area, which would imply an emphasis on regional Hispanic identity strategies.

However, it is not the mere presence or absence of imported materials that indicate where site residents positioned themselves on the local-regional identity spectrum, but the *use* of these materials must be closely considered. For example, imported goods may still indicate maintenance of local relationships. The acquisition of imported goods for local manufacturing, such as purchasing cloth to make clothing (Jenks 2011), or repurposing metal or tin to produce goods for local markets (Eiselt 2006), suggests prioritizing local community relationships (see Figure 3.1). Additionally, imported materials may be “made familiar” through their use and recontextualization (Cipolla 2017b; Creese 2017). Alternatively, the consumption of non-local goods for different kinds of public display, such as clothing, serving wares, or alcohol for drinking on social occasions, is an indicator of prioritizing Mexican or U.S. status systems and racial relationships rather than personal and localized consumer relationships. Both circumstances may exist within the same site, and it is a close consideration of the use of imported objects within the particular context of each site, which will help navigate these seeming contradictions. Thus, functional analysis of the imported artifact assemblages will help to demonstrate how much imported artifacts were integrated into the daily lives of site residents and how they may have engaged with Mexican or U.S. status systems and racial relationships via material consumption.

Functional analysis consists of placing each artifact within one of eleven functional categories (detailed in Table 7.1): Construction and Maintenance, Arms and Ammunition, Economy and Production, Food, Domestic, Furnishings, Unassignable, Indulgences, Entertainment and Leisure, Personal Effects, and Transportation. In addition to functional categories, a specific function, if possible, was also assigned to each artifact. This is the analysis methodology utilized by OAS (Boyer et al. 2018) and most historic sites archaeology (Haught-Bielmann 2014). By looking at the range and diversity of functional categories and specific functions present in the imported artifact assemblage, we can understand how they were integrated into daily life. Low diversity in the imported artifact assemblage can show that site residents were not incorporating imported goods into many aspects of their daily lives. Imported material may have been preferred to solve specific problems, but was used and consumed in a limited fashion, and caused limited changes in social relationships. High diversity shows that site residents incorporated imported artifacts into many parts of their daily lives and may have prioritized imported rather than local solutions to meet their daily needs.

Diversity is measured in several ways in this analysis. First, richness is a basic count of the number of functional categories and specific functions at each site. However, richness is highly sensitive to sample size and there are wide disparities in size between the four sites in the sample. Evenness is a measure of how artifacts are distributed across categories. It is less sensitive to sample size. I will examine the evenness of artifact distribution across specific functions within the large Construction and Maintenance functional category at each site to compare how much imported artifacts were integrated into this realm of daily life.

A final consideration for imported artifacts is what they may tell us about how site residents were engaging with other national and regional identities that were gaining importance in the nineteenth century. Consumer relationships are not only relationships between producer and consumer or merchant and customer. Consumer relationships can be with cultural narratives or institutions as well. Here, a close consideration of how specific artifacts were used, especially in practices that engaged with U.S. or Mexican status or citizenship narratives, is especially important. I use the word 'engaged' here because it is important to emphasize that the use of materials imbued with ideas or symbolism relating to nationalism, race, or class, does not always mean wholesale acceptance of those ideas. As imported goods were re-socialized into local New Mexican systems of meaning, engagement with larger Mexican or American national or racial structures could have taken the form of acceptance, rejection, or any degree of reworking in between. New Mexican Hispanic consumers also could have created new meanings for the items altogether. A teacup or window glass in one site will not have the same meaning as it does in another site, and their interpretation must be rooted in the particular historic context of the site.

With the opening of the Santa Fe Trail, New Mexicans were brought into the realm of U.S. markets, increasing industrialization, and consumerism. This intensified with the U.S. annexation of New Mexico. Consumption, especially consuming the right goods and using them in the right ways, was a key part of performing U.S. national identity in the mid-nineteenth century. Archaeologists have written extensively about the development of "American consumer culture," Victorian era consumer culture, and "the Gilded Age" (DiZerega Wall 1991, 1999, 1999; Mullins 1999a, 1999b, 2011a; Praetzellis and Praetzellis 2001; Purser 1991). While each term has slightly different connotations, they all generally refer to cultural shifts in the eastern U.S and in the British commonwealth globally, particularly in the second half of the nineteenth century.

In the U.S. structural changes such as increased immigration and the expansion of U.S. boundaries, the Civil War and Emancipation, and dramatic increases in industrial production and standards of living combined to foment cultural changes. The period was defined by growing concern with maintaining social boundaries, particularly class boundaries, which had become tightly intertwined with race; changing gender roles where upper- and middle-class women were more exclusively in the home and had a growing role as guardians of respectability and gentility within the home through proper consumption and behaviors (the "cult of domesticity"); and displaying and communicating class roles, particularly through consumption and material display. The apex of social status in the U.S. social hierarchy was upper- and middle-class White Protestant. Americans began to interpret social status through a material lens, showing much more concern with buying the right things and using them in the right way (etiquette). Deeley (2015:176) summarizes: "By the middle of the 19th century, a distinctive and specific White middle-class lifestyle and world view had developed and most White middle-class households were demonstrating an ability to conform to both the lifestyle and world view through their dining etiquette and by setting their tables with matching dishes." This became the model for social citizenship that Americans exported into the West when they expanded into the former Mexican territories.

Archaeologists have used descriptions from etiquette books, household manuals, newspaper advertisements, and novels to construct a picture of the material ideals for home decoration and table service nineteenth century White American women were expected to uphold (Greenberg 2009; Mullins and Jeffries 2012). A properly civilized and genteel Victorian American home had wooden floors with carpets, glass-paned windows, a designated parlor for entertaining guests, and potentially a designated dining room in the late nineteenth century. The parlor was an especially important room for material display. Mullins (1999a:29) calls it a "showpiece Victorian social space" and it needed to be decorated appropriately with the correct furniture, wall-art, and bric-a-brac figurines. This is where household residents displayed their affluence as consumers and social status and moral worth, using the shared material language of racialized Victorian society. A well-appointed Victorian table was set with matching sets of white granite ironstone dishware, often with Gothic-style molding. Decorated ceramics were matched or complementary sets. A range of dish types and glassware were also present at the table, with up to 20 different forms for serving everything from muffins and small desserts to celery (DiZerega Wall 1991; Fitts 1999).

The requirements of an ideal upper- to middle-class White Victorian household are a useful foil for archaeologists to study how and why consumer behaviors deviated from this ideal. Variations in consumer engagement with Victorian material ideals may be due to race (Mullins 1999a), economic class (DiZerega Wall 1999), resistance, impression management (Praetzellis and Praetzellis 2001), immigration status and nationality (Brighton 2011), market access, or some combination, depending on the particular historic context and circumstances. A similar strategy can be useful in assessing New Mexican Hispanics' engagement with American consumer ideals. Greenburg (2009) shows how women's domesticity and Manifest Destiny expansionism were closely tied to U.S. national identity because Americans framed expansion into the west and into Mexico as a civilizing process, which had specific material expectations. Mitchell (2005) describes how consumption, particularly personal consumption of goods that went on or into the body, such as clothing, medicines, and cosmetics, was a key part of the American imperial project to "transform New Mexicans into Americans" (2005:5) as a necessary condition of statehood. The connection between consumption practices and social citizenship was explicit in western territories and especially New Mexico.

Here I focus on two realms of practice which played a large role in American ideals for social citizenship and proper consume behavior: building and maintaining domestic architecture (the home); and eating/drinking and hospitality. Both practices that were accompanied by specific suites of material goods like those described above. These can include materials related to construction, particularly items that were visible in the complete home, such as window glass, window and door fixtures, or ornamentation, and tableware such as ceramic, glass or metal dishes, cutlery, or containers for food and beverages. Imported materials for these practices came into New Mexican hands pre-loaded with additional symbolic meanings about white American gentility and national identity. Closer examination of the use and integration of imported artifacts within Construction and Maintenance and decorated ceramics from the Domestic category tell us more about how site residents potentially engaged with national identity narratives.

American anxieties about New Mexican's lack of proper consumption and material display are clear in their descriptions of New Mexican homes and meals that they shared, which have been examined (sometimes critically, sometimes not) and summarized by many historians (Bloom 1959; Kenneson 1978; Weber 1982:218–225; see C. Wilson 1997a Chapter 2, note 15 for a summary of sources). John Russell Bartlett, the first American commissioner of the U.S.-Mexico Boundary Commission, was tasked with working with the Mexican commissioner to delineate and map the first U.S-Mexico borderline after 1848. He had serious concerns whether the new territory was worth absorbing and if New Mexicans could be assimilated into the union. He commented on the lack of glass windows and wood floors in New Mexican homes, as well as poor carpets, and lack of furniture, artworks, or books (Greenberg 2009:99).

Boyer (2018c) conducted a survey of early American descriptions pertaining to window glass in New Mexico. These references span from the Zebulon Pike in 1807 through Phillip St. George Cook in 1878. The references seem to indicate that glass windows were rare in New Mexico and the earliest reference is to some glass in the plaza-facing windows of the Palace of the Governors in 1831 (Albert Pike, quoted in Boyer 2018:823). Most of the references in Boyer's survey emphasize the lack of glass glazing observed, and the use of selenite and/or wooden window covers instead. Because Americans associated architecture and specifically domestic architecture with moral upkeep and proper values (Church 2001; Praetzellis and Praetzellis 2001), disparaging New Mexican Hispanic architecture and homes was a way to emphasize difference and racial superiority. "To European Americans even the adobe structures dotting the New Mexico landscape stood out as uncomfortable reminders that Mexicans inhabited an American place. Disparaging their homes as dirty and uninhabitable, therefore, became a standard element in European Americans' complaints about New Mexico." (Mora 2010:79).

New Mexicans, particularly upper-class New Mexicans, wishing to align Hispanic identity with whiteness in the American racialized system needed to meet Victorian material expectations, at least in more public social arenas, in their domestic architecture and when serving meals and entertaining guests. Imported artifacts that reflect these consumption practices, such as matched dishware, are evidence that site residents had developed consumer relationships with American narratives of race and/or nationality and citizenship. The nature of those relationships may have varied considerably among different households, however, and the assemblages must be considered within the historic context of the site. A similar process of interpretation is needed to recognize consumer relationships with narratives of Mexican nationality.

As noted above, matched tableware, particularly teaware, was a part of the ideal suite of material culture in Victorian households. For the site sample, a comparison of evenness in decorated ceramics in each assemblage can be used to assess how many matching vessels may have been present. High evenness is a sign that there were few matched vessels in the assemblage and tableware was acquired through small purchases from many merchants, or many infrequent purchases from a few merchants whose inventory changed over time. Both circumstances potentially suggest low investment in imported ceramic tableware and disengagement from U.S. White Victorian ideals for appropriate matching table settings (Brighton 2011; DiZerega Wall 1999; Fitts 1999; Mullins 1999b). Low evenness across decorated categories suggests that there were many matching sherds of one or a few decorative types. This is an indication that the site residents had more matching vessels, possibly because they purchased them as a set, or intentionally acquired matching or complementary dishes over time. This suggests an engagement with U.S. Victorian ideals for appropriate table settings and that site residents were aware of and in some ways meeting these ideals.

## Conclusion

I expect there to be variation in the strategies operationalized at each site in the sample. Many social identities integrate to affect consumer behaviors and the material record (Henry 1991; Spencer-Wood 1987b). Economic factors such as market access differed over geographic space and through time, which will lead to different artifact assemblages among disparate sites, such as LA 4968 and the Barela-Reynolds house. For this reason, it is important to compare the sites in the sample along many axes to understand the role of identities in consumer practices. Different material classes may have been operationalized to emphasize different identities, depending on the social position of communities of consumption. The sample sites in this project represent a range of geographic and economic conditions. This provides an opportunity to contrast assemblages and tease out the effects of market access, household size and composition on Hispanic consumer practices. The sample sites encompass both the Mexican and American Territorial periods, with an emphasis on the transition between the two. The detailed analyses proposed here are an opportunity to understand material changes within a politically dynamic period. Very little comparative research of this kind has been conducted in New Mexico.

The model presented here provides a framework to develop qualitative characterizations of consumer profiles in terms of the number and location of procurement sources and the social relationships that Hispanic residents maintained in order to acquire the material goods they considered necessary in their lives. Overall, the expectation is that there will be some blurriness and inconsistencies between strategies utilized by the different communities represented in this study. One consumer relationship may suggest local priorities while another indicates impersonal regional ties. Purser (1999:137) notes that the pluralistic and nonlinear nature of material culture within modern capitalism requires interpretive flexibility and creative methodology. While this model provides a framework for interpreting the material artifacts at each site in the sample, it is not predictive nor a fully explanatory model of Hispanic consumer behavior. The results of this research will be contextual and to some extent particularistic, which are necessary considerations when understanding frontier identity relationships (Jones 1997; Kalentzidou 2000; Lucy 2005).

# Chapter 4: The Sites

This project examines four residential sites along the Rio Grande corridor, extending from north of Santa Fe, to Mesilla at the southern end of the state (see Figure 1.1). The four sites provide perspective on each of the three major cultural hearths that developed in territorial New Mexico: Rio Arriba, Rio Abajo, and near El Paso del Norte (Meinig 1971). While there is growing archaeological interest in Late Colonial and Territorial sites within New Mexico, most studies thus far have focused on analyses of single sites, most often in northern or central New Mexico (Atherton 2013; Boyer 2004a; Eiselt 2006; Jenks 2011; Sunseri 2009).

To examine the possibility that residents of different villages had different economic and identity strategies, I selected four previously excavated sites to provide a range of geographic and economic conditions. The variety in the project sample offers an opportunity to understand how factors such as proximity to Pueblo population centers, proximity to urban Santa Fe, and proximity to the Santa Fe Trail/Chihuahua Trail affected consumer relationships in Hispanic communities and how this related to Hispanic social identity. Contrasting very different sites is an opportunity to understand how multiple ingredients of social identity are leveraged in consumer practices. There are no previous comparative analyses for nineteenth century Hispanic sites in New Mexico, which limits our ability to understand how Hispanic identity may have operated on a regional level.

## LA 4968 and LA 160

LA 160 and 4968 are located within 3.2 kilometers of each other along the U.S. Highway 84/285 corridor running north-south between Chamita and Santa Fe. Due to their proximity to the highway, both sites have been extensively and repeatedly documented as part of various transportation projects. The sites are located along the east side of the Rio Tesuque drainage, within the Pueblo of Pojoaque lands. The area is approximately 26 kilometers from Santa Fe, and 16 kilometers from Española. In many ways this location was "central" in Territorial New Mexico with regards to access to population centers, resources, and travel corridors in the early nineteenth century.

After the Pueblo Revolt, when colonists began returning to New Mexico in the 1690s, settlement locations stayed within the Rio Grande corridor and focused on Santa Fe, as they had prior to the Revolt. Land along waterways in the Española Basin quickly began to be doled out to soldiers and government officials. Don Ignacio Roybal received a grant on San Ildefonso lands in 1693 known as Jacona. In 1695, a land grant was approved to found Santa Cruz de la Cañada near present day Española. By 1696, another 140 individual land grants had been made to colonists, and grants were also made to Pueblo communities, defined as a league in each primary direction from the settlement church (Lentz 2005). LA 4968 and LA 160 are located on what is now known as the Cuyamungue Grant, but was originally given as an individual grant to Bernardino de Sena, Tomás de Sena, and Luis López in 1731 (Williamson 2018a:881).

Pojoaque Pueblo, the pueblo nearest to LA 160 and LA 4968, was first mentioned in recordings from the Espejo expedition in 1582 (Spivey and Lentz 2005) and had a Spanish mission by the early 1600s, reflecting how quickly colonists expanded north of Santa Fe through the Española Basin. The pueblo was reported as abandoned when colonists returned in 1692, but by 1706 a few people had returned and in 1712, 79 people were reported living there (Bowden 1969). In 1856, during the American Territorial Period, Pojoaque Pueblo also participated in seeking approval of their land grant, by providing testimony before the Surveyor General, and the Pojoaque Pueblo Grant was patented in 1864 (Bowden 1969; Spivey and Lentz 2005). However, the population at the pueblo was never high, and in the early 1900s travelers and early anthropologists again reported the pueblo to be largely abandoned for formal occupation (Harrington 1916; Hodge 1910), while non-Puebloan settlers continued to encroach on the land grant.

Land near Pojoaque Pueblo was attractive to prominent citizens of Santa Fe in the late eighteenth and early nineteenth centuries. An example of remaining architecture is the Bouquet Ranch, listed on the State Register. This property began as a small rancho inherited by Antonio José Ortiz sometime before 1805. Ortiz was a successful trader with connections in Chihuahua who served as the captain of the Santa Fe militia and Alcalde Mayor of the town in his lifetime. He is known as an important patron of religious arts and architecture in Late Colonial New Mexico (Frank 2000:183–184), including gifts to the mission church at Pojoaque and building a chapel at his Pojoaque rancho. The property was within Pojoaque Pueblo lands, which was not technically legal for Spanish or Mexican land grants, but such overlap was also not uncommon (later owners were granted an exception by the Land Office of Santa Fe for their private claim of 1.04 acres in 1937) (Boyd 1971). The built property consisted of at least two large houses, and several smaller residences for servants. Eventually a mill was also built (Boyd 1971). Properties like the Bouquet Ranch and archival documents related to LA 160 suggest that in the late eighteenth and early nineteenth centuries it was not uncommon for prominent Santa Fe residents to own and manage additional property in the Cuyamungue area (Williamson 2018b:649). Water from the Tesuque and Pojoaque drainages may have made this area attractive for additional ranchos.

Williamson (2018a, 2018b) conducted an extensive archival history of the Cuyamungue Grant and genealogical history of the major Hispanic colonial families living in the Village of Cuyamungue, including the ownership histories of the properties at LA 4968 and LA 160. The grant land in this area was occupied, bought, sold, subdivided, and inherited by members of the Sena, Ortiz, Valdez, Trujillo, and Archuleta families since the 1730s. During the time the structures at LA 160 and LA 4968 were occupied, LA 4968 was owned by the wealthy farmer Vicente Valdez, and LA 160 was most likely acquired by Manuel Sena in 1821 and eventually also passed via a mortgage to Vicente Valdez in 1854.

Artifact samples from LA 160 and LA 4968 come from excavations in the early 2000s by the Office of Archaeological Studies as part of modifications to U.S. Highway 84/285, along the portion of highway between Santa Fe and Pojoaque. Therefore, much of the site descriptions and summaries of the sites here are based directly on reports by OAS from site evaluation testing (Moore 1989, 2000a, 2000b) and final excavation reports (Boyer 2018a; Moore 2018b). Much more detailed descriptions of the sites, structures, and excavation procedures can be found in those documents. Testing and excavation activities at both sites were restricted within or directly adjacent to the construction right-of-way, and so not all structures or features at each site were sampled.

Both LA 160 and LA 4968 have long documentation histories, due to their proximity to the highway. Both were first documented by H.P. Mera in the 1930s and Stewart Peckham in the 1960s (Moore 2018c, 2018d). Each site was re-documented more than five times between the 1930s and present day, leading to a range of site boundaries, chronological interpretations, and incongruities. Both LA 160 and LA 4968 have been confused with other sites at different points in time, and LA 4968 is associated with multiple other Laboratory of Anthropology numbers. Both sites are bisected by the highway and have likely experienced substantial impacts from construction over time. All of LA 160 and portions of LA 4968 are within Pueblo of Pojoaque land.

*LA 4968*

LA 4968 is a nineteenth century rancho located on the first terrace above the Rio Tesuque. Archival evidence and diagnostic artifacts suggest occupation between the 1780s and 1870, with the primary occupation between 1828 and 1868 (Moore 2000a). The site consists of at least six structural mounds and large trash scatters. Excavations thoroughly examined one large residential structure (Structure 1), two possible granaries, and several pit and hearth features. LA 4968 is most likely the rancho settlement of Vicente Valdez, who owned the land from approximately 1828 until his death in 1868 (Williamson 2018a:886). An 1871 map shows the area as "ruins of the Valdez rancho," providing a likely termination date for the main Hispanic occupation, and "Ruins of Rancho Conway" was included on a 1901 survey of the Cuyamungue Grant (Figure 4.1). The rancho contained several residences and out-buildings that probably housed Vicente Valdez and his extended family, minimally his daughter María de la Paz Valdez, who inherited the property (Williamson 2018a:889).

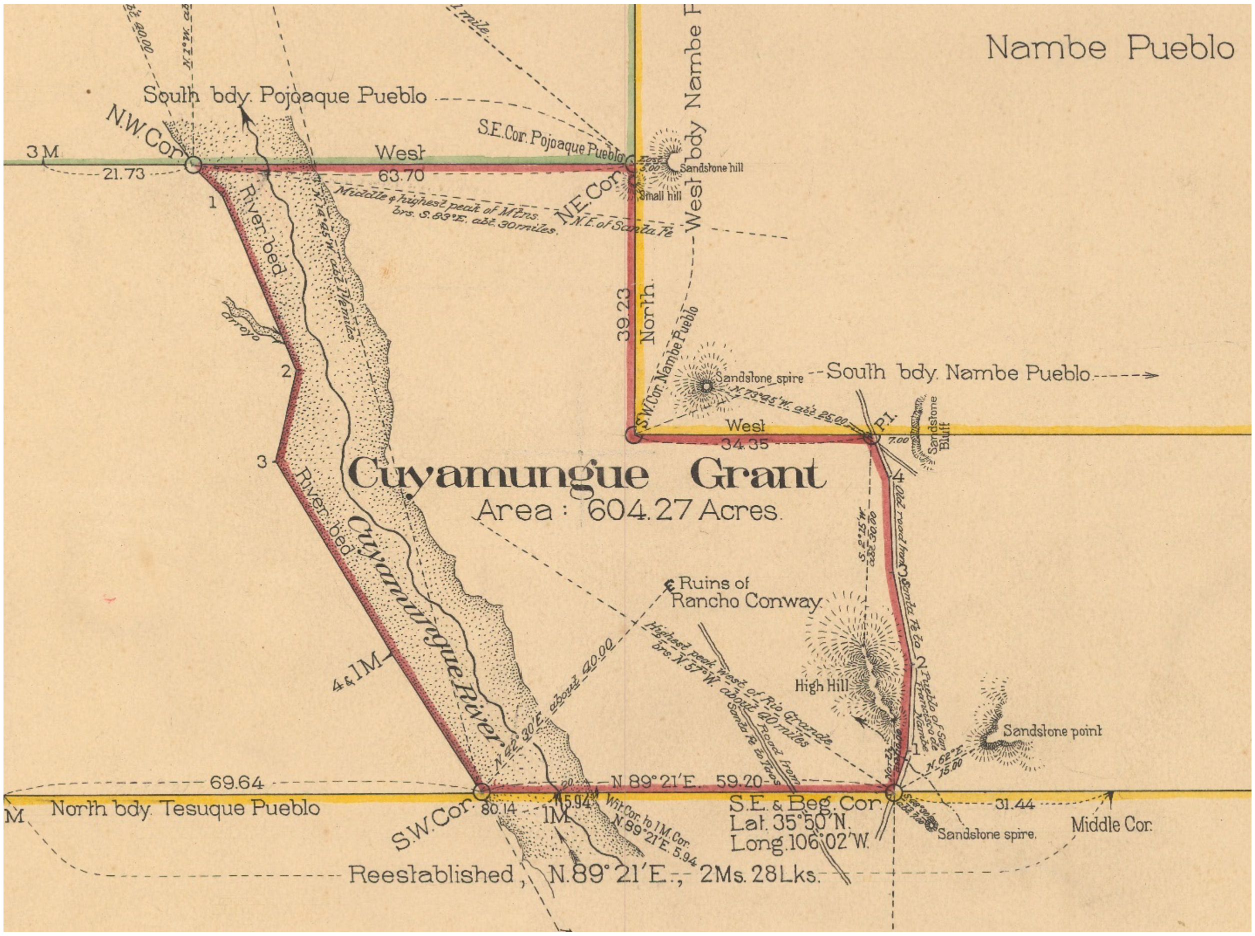



**Figure 4.1. Jay Turley. Cuyamungue Grant. Scale: 20 chains = 1 inch. Santa Fe, New Mexico: U.S. Geological Survey, 1901. DM ID: 463753. https://glorecords.blm.gov/details/survey/default.aspx?dm_id=463753&sid=uzd5pfgx.50l#surveyDetailsTabIndex=0. Accessed January 18. 2022.**

As it is currently understood, LA 4968 is a site that measures 185 x 90 m (607 x 295 ft), and is bisected by U.S. Highway 84/285, which likely destroyed portions of the site, possibly including structures (Figure 4.2). At least six mounds were documented on the west side of the highway, where most of the recent testing and excavation work occurred (Moore 2000a). Mounds 1, 2, and 4–6 were shown through test units and augers to likely be structural in nature and were renamed as “Structure 1” etc. (Moore 2018d:112). The main residential structures appear to be Structure 1, which was extensively excavated, and

Structure 5, which was outside the construction right-of-way and therefore not excavated. However, the Structure 5 mound has a distinctive “F” shape, which clearly identifies it as a multi-room residence rather than an outbuilding (Moore 2018d:113).

Like many Hispanic compounds from this period, it is likely that the house structures were occupied sequentially rather than simultaneously (Bunting 1976; C. Wilson 1997b). Excavations in Structure 1 have supported this (Figure 4.3). The structure went through at least three major phases of growth throughout its occupation. While wall abutments and constructure techniques could be used to establish the first building episode, the sequence of the second and third is tentative. Diagnostic artifacts were not sufficient to date the separate episodes. Several other forms of remodeling during the use of the residence included subdividing rooms, moving or closing up doors, and moving hearths and corner fireplaces. Sometime after the third building episode, there was a fire in Room 4, after which at least one door was sealed, interior hearth features were moved, and the adjoining room was subdivided into Rooms 1 and 7 (Moore 2018d:188). The latest remodeling episode appears to have been in response to the partial collapse of the west wing of the residence, possibly due to adobe or roof beam deterioration (Moore 2018d:189).

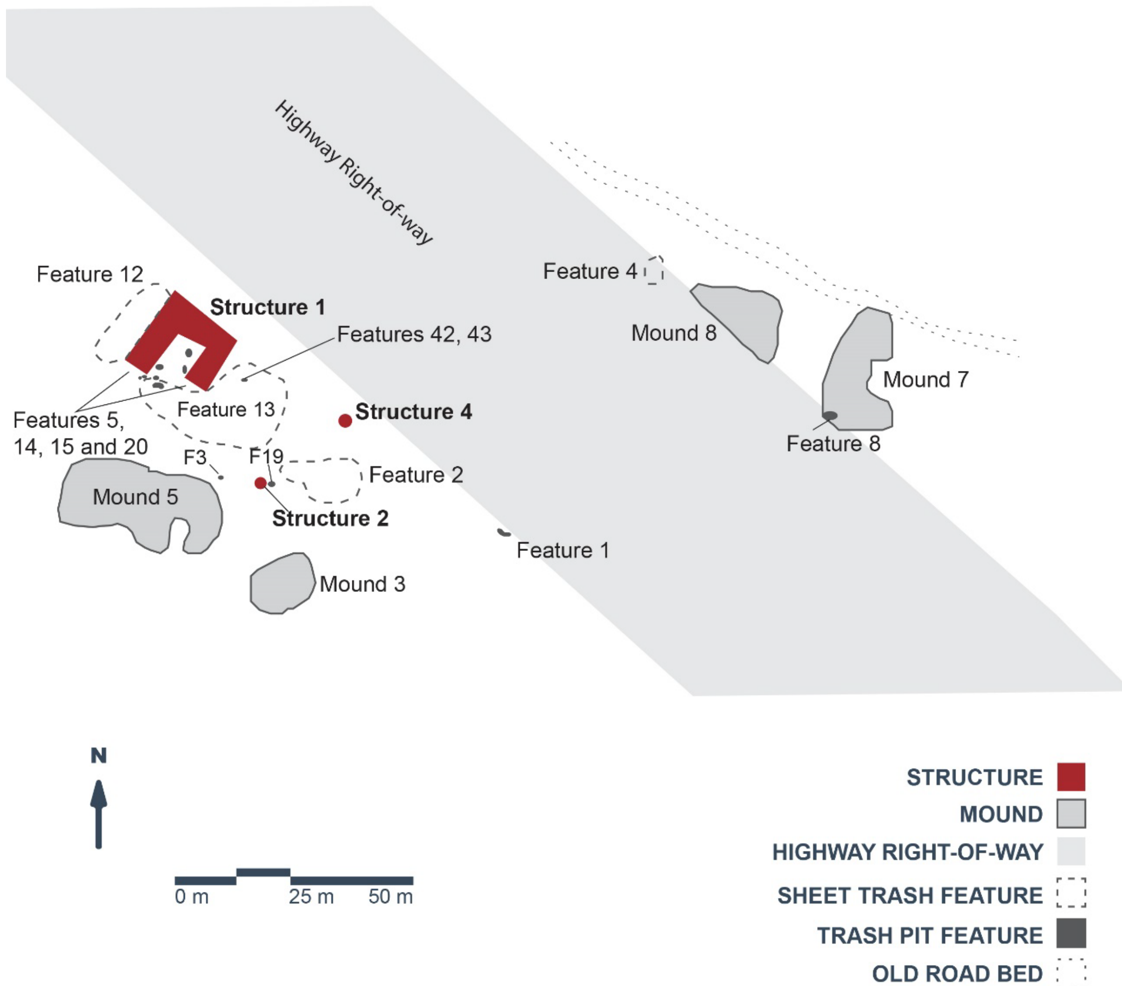



**Figure 4.2. LA 4968 site plan. Map based on Moore 2018c: Figure 4.100.**

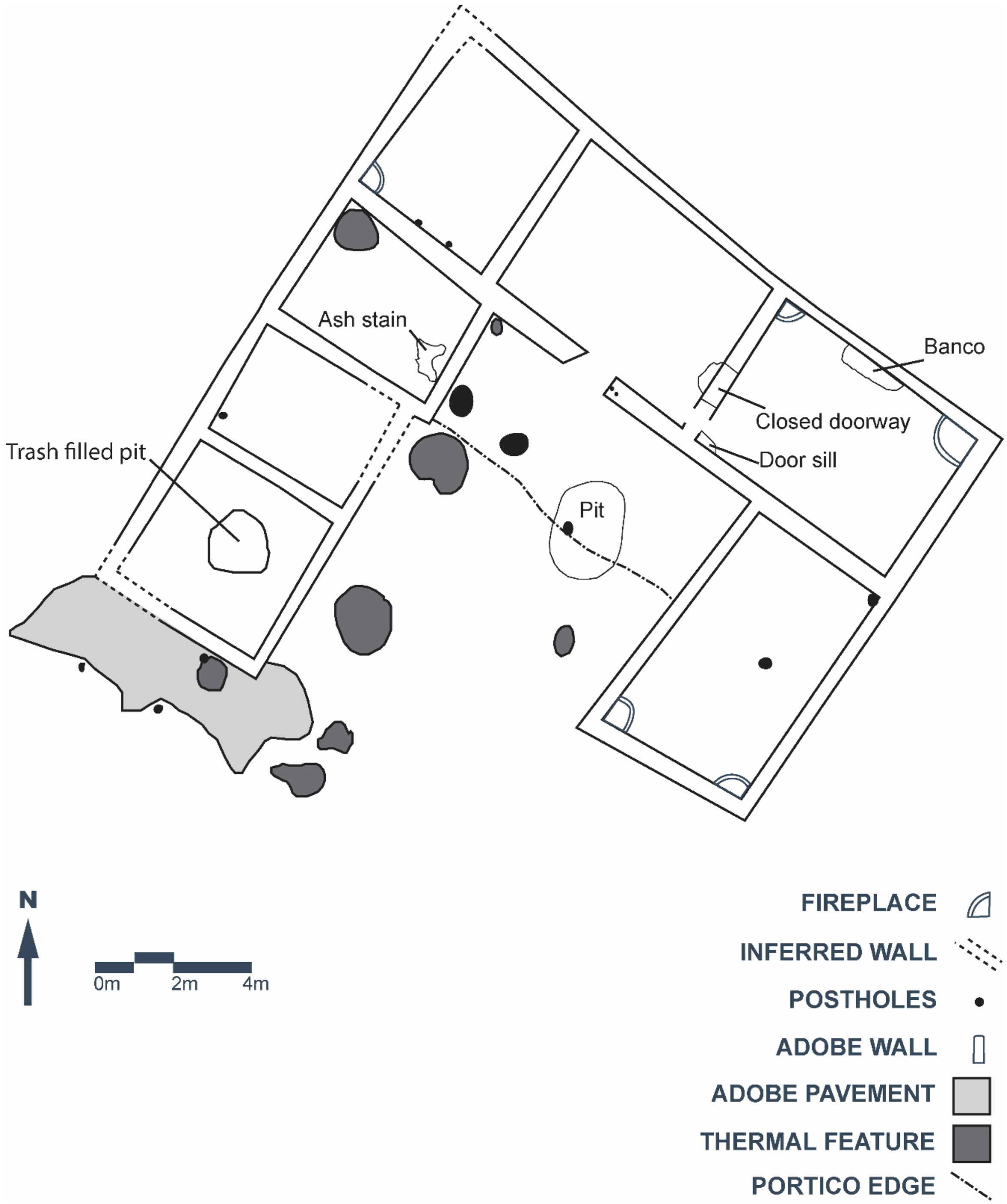



**Figure 4.3. Detail map of Structure 1. Map based on Moore 2018c: Figure 4.27.**

After the final building episode, Structure 1 was a C-shaped residence, with seven rooms and two open air *portales* (covered porches or arcades) that had ramada-style roofs and post-holes. The C opened to a courtyard area to the south. Structure 1 contained many architectural features observed in other Hispanic residences across New Mexico from the Mexican and American Territorial Periods (Bunting 1976; C. Wilson 2013). The building was constructed with cobble foundations and adobe bricks for the outer walls, while inner dividing wall footings were generally adobe bricks placed in a shallow trench dug along the wall alignment. Floors and walls were coated with adobe plaster, and sometimes white-washed or colored with *tierra amarilla* (yellow earth). Most rooms had several layers of wall plaster. Room 4 contained both a raised *fogón* (corner fireplace), and an adobe *banco* (bench) suggesting it may have operated as a cooking area at one time. Several other rooms also had corner *fogones*, some of which were raised above the floor and lined with adobe curbs, and most likely also had adobe hoods (Figure 4.4). The fireplaces were not always in the same corner; in Room 6, Feature 24 was in the southwest corner. In Room 4, a fire pit was first placed in the northwest corner (Feature 32), but the room was later remodeled and a *fogón* (Feature 27) was built in the northeast corner (Moore 2018d:136).

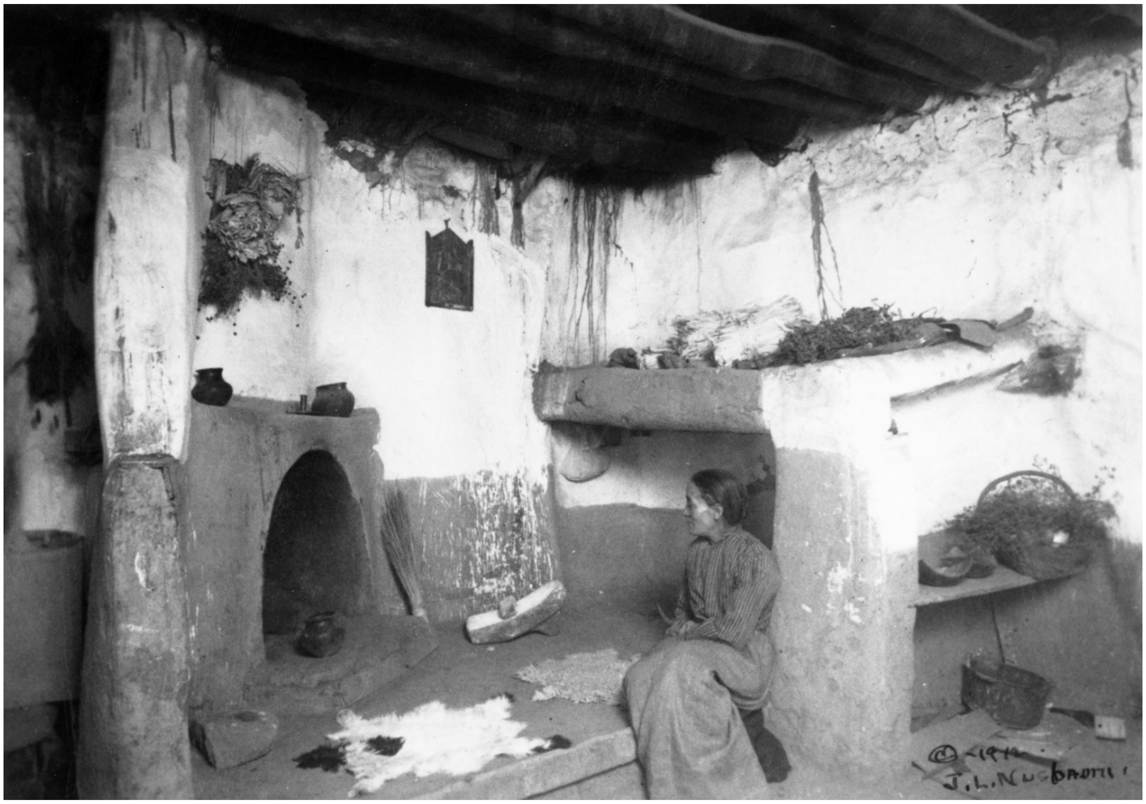



**Figure 4.4. Jesse Nusbaum (photographer). Interior of the de la Pena house, Santa Fe, New Mexico, 1912. Courtesy of the Palace of the Governors Photo Archives (NMHM/DCA), Jesse Nusbaum Collection, Negative No. 015335. *Fogón* (corner fireplace) used in large kitchens.**

Sometime after the third building episode, Structure 1 was abandoned—probably in favor of Structure 5. After the human occupants had left the structure, it was used as a stable for livestock and then trash disposal, resulting in multiple strata of manure and trash. Eventually the structure began to collapse and was dismantled as area residents took beams, frames, and adobe blocks from the structure for use elsewhere. Most of the artifacts from LA 4968 excavations come from Structure 1, but many of these artifacts, particularly those from the courtyard area, were probably discarded there after the structure had been abandoned. Based on the layout of the site, it is likely the trash disposal was by the occupants of Structure 5 (Moore 2018d:226).

Other features at the site identified through excavation include several episodes of trash accumulation, in both pits and unused surface areas, and in the case of Feature 1, possibly in a gully. There were several pits across the site area that were identified as borrow pits used to extract clay and mix adobe during various construction episodes at the site (and probably also for regular maintenance). These pits were frequently then re-used as trash disposal pits (Features 2, 4, and 12 especially), and as such, these artifacts were in their original depositional context. These features are especially useful in understanding the chronology and nature of activities at the site. Feature 2 was a series of borrow pits that were most likely related to a construction episode for Structure 1. It also contained two trash clusters, wherein the stratigraphy suggested separate deposition episodes most likely related to the occupants of Structure 1 (Moore 2018d:210). Feature 12 consists of two slightly overlapping trash deposits located outside the west wall of Structure 1. The feature depression may represent a gully or former borrow pit targeted for trash disposal. These artifacts also likely relate to the Structure 1 occupants (Moore 2018d:224).

Feature 4 was located on the east side of the highway, and its association with either Structure 1 or 5 is harder to establish. It is equally likely to be related to one of the unexcavated structure mounds on the east side. This feature was also a deep borrow pit that occasionally functioned as a trash pit. There are two groups of strata in the feature, with the lower strata capped by adobe. Datable artifacts in the two strata groups suggest that the lower most likely dates to the late Mexican or early American Territorial period, while the upper stratum appears to be from 1850–1860 (Moore 2018d:220). Fragments of metal cans were found in both levels, but there was much more animal bone in the lower stratum.

Feature 13 encompasses all extramural activities that occurred in the plaza or courtyard area enclosed by the C-shape of Structure 1 and the area to the south and east between Structure 1 and Structure 5. There are several small hearths in this area, as well as shallow pits, ash dumps, and at least three phases of trash disposal. Some of the trash disposal is probably associated with the occupation of Structure 5, after Structure 1 had been converted into a stable (Moore 2018d:227).

Finally, two out-buildings, Structures 2 and 4 were excavated. These were small round adobe structures with very carefully prepared cobble and adobe floors. They had small amounts of artifacts within them and were interpreted as possible granaries (Moore 2018d:198, 199).

As noted above, the main period of occupation for LA 4968 appears to be the 1820s through 1870s. The property was owned and most likely occupied by Vicente Valdez and his family, who acquired the property in 1828 and kept it until his death in 1868. Valdez was a member of a long-standing Cuyamungue area family that identified as Spanish or vecino. Vicente Valdez was one of the major landowners in the area, and in 1860 the U.S. census indicates he was the third wealthiest man in Cuyamungue. Valdez first inherited a portion of the Cuyamungue Grant from his mother, María Andrea Lucero de Godoy, in 1824, and continued to consolidate his holdings by purchasing other portions from his siblings and relatives. María Andrea was herself a wealthy woman and her will details land, *punche* (local tobacco), a divided house, fruit trees, horse harnesses, dough bowls and water jars, metates, chests, mattresses, and livestock divided amongst her children (Williamson 2018b:665).

From church and administrative records Williamson (2018a, 2018b) was able to reconstruct some details of Vicente Valdez’s life. In 1842 he is listed as a colonel in the local militia. He grazed goats and grew wheat on his properties. In the 1860 census he is listed as the head of his household with at least six others living with him, including his second wife, their young children, and a shepherd. Valdez is known to have had at least nine children—five by his first marriage and four in his second—but only one name is known from his will. María de la Paz Valdez inherited the property of LA 4968 in 1868 when Vicente Valdez died. However, she was 12 at the time and placed under the guardianship of Encarnación Romero (Williamson 2018a:889). Two years later María de la Paz married a U.S. military man immigrated from Ireland named John Conway and the couple moved to Santa Fe. However, they maintained ownership of the Valdez land and used it for grazing. An 1871 map of the area notes the ruins of "Rancho Valdez," suggesting that LA 4968 was no longer occupied (Moore 2018d:261). In general, families had begun to move out of the area, even as they worked through the process of gaining legal recognition for what became known as the Cuyamungue Grant (Williamson 2018a:892).

*LA 4968 Artifacts and Sample.* A total of 83,850 New Mexican ceramic sherds, 31,667 animal bones, 730 flaked stone lithics, and 3,567 imported European American and Mexican artifacts were collected from the site during OAS excavations. Due to high numbers of artifacts, OAS personnel only analyzed a 56.50 percent sample of the New Mexican ceramics from a range of proveniences ($n$ = 47,420). The sample prioritized all pottery from intramural spaces in Structure 1, potter from Structures 2 and 4, and features such as borrow pits and trash sheets (Moore 2018d:233). Analysts examined all lithics, imported artifacts, and 8,014 pieces of animal bones (Table 4.1).

Table 4.1. Artifacts from LA 4968 OAS Excavations, by Class.

| Artifact Class | Artifacts Excavated | OAS Analyzed | Hegberg Analyzed |
|---|---|---|---|
| New Mexican ceramics | 83,850 | 47,420 | 1,726 |
| Imported ceramics | 955 | 955 | — |
| Glass | 1,485 | 1,485 | — |
| Metal | 374 | 374 | — |
| Other | 755 | 755 | — |
| Animal Bone | 31,667 | 8,014 | — |
| Chipped Stone | 730 | 730 | — |
| Ground stone | 52 | 52 | — |
| **Total** | **119,868** | **59,785** | **1,726** |

The imported artifacts were dominated by glass, followed by ceramics, then selenite, which was probably used for windowpanes. Imported artifacts and decorated New Mexican pottery provide the diagnostic material for the site, and no radiocarbon dates or dendrochronological dates were submitted for analysis. Many of the diagnostic artifacts, such as majolica or pearlwares, have long production spans and do not help to provide precise dates for the site. Discounting post-railroad artifacts, which most likely represent incidental trash not related to the site's occupation, the assemblage generally supports the dates suggested by archival evidence for the site: ca. 1830 to 1870, with some potential for occupation as early as the 1780s, based on the majolicas (Moore 2018d:261). It was not possible to establish more refined dates at the site with the artifact assemblage, such as the initial construction of Structure 1 or the individual expansion episodes. There is some evidence that Structure 7, on the east site of the highway, was occupied before Structure 1, and that Structure 5, to the south of Structure 1, was occupied after. However, these structure mounds occurred primarily outside of the project right-of-way and were not extensively sampled, so this remains a hypothesis (Moore 2018d:261).

For my project, I selected the ceramic sample from the unanalyzed New Mexican ceramics, to contribute to the overall analysis for the site. I analyzed an additional 1,726 sherds from 25 individual proveniences (Table 4.2). Sherd proveniences were selected based on expanding the area of previous analysis and based on the size and intactness of sherds to collect accurate vessel form data and candidates for X-ray analysis. Most sherds (52.2%) came from Feature 13, the open courtyard area south of Structure 1. At least 35.3 percent came from the southwest portal area adjacent to Structure 1, and another 12.2 percent came from near the Structure 2 granary. Because of differences in data recording, the statistical analysis only used this study's sample.

Table 4.2. LA 4968 Proveniences for New Mexican Ceramic Analysis Sample.

| FS | Location | Feature | Feature Type | Level | Stratum | Count |
|---|---|---|---|---|---|---|
| 1115 | 534N 479E | 13 | plaza | 2 | 92 | 6 |
| 1116 | 531N 478E | 13 | plaza | 2 | | 133 |
| 1118 | 532N 478E | 13 | plaza | 1 | 8 | 59 |
| 1120 | 527N 483E | 13 | plaza | 1 | 8 | 127 |
| 1121 | 527N 485E | 13 | plaza | | | 4 |
| 1122 | 532N 478E | 13 | plaza | 2 | 92 | 33 |
| 1145 | 528N 485E | 13 | plaza | 1 | 8 | 185 |
| 1146 | 530N 485E | 13 | plaza | 2 | 92 | 260 |
| 1147 | 529N 486E | 13 | plaza | 2 | 92 | 64 |
| 1149 | 531N 486E | 13 | plaza | 1 | 8 | 10 |
| 1150 | 530N 486E | 13 | plaza | 1 | 8 | 20 |
| 1160 | 510N 503E near Structure 2 | NA | NA | 3 | 1 | 36 |
| 1167 | 510N 502E near Structure 2 | NA | NA | 2 | 1 | 47 |
| 1174 | 510N 502E near Structure 2 | NA | NA | 3 | 1 | 49 |
| 1183 | 509N 502E near Structure 2 | NA | NA | 2 | 1 | 63 |
| 1187 | 511N 502E near Structure 2 | NA | NA | 2 | 1 | 2 |
| 1337 | 512N 502E | 19 | Shallow pit | | | 15 |
| 1500 | 534N 473E | Structure 1 | portal | 1 | 8 | 18 |
| 1501 | 534N 473E | Structure 1 | portal | 2 | 8 | 82 |
| 1502 | 533N 472E | Structure 1 | NA | 3 | 111 | 435 |
| 1504 | 532N 473E | 30 | posthole | 1 | 113 | 2 |
| 1505 | 533N 472E | Structure 1 | portal | 4 | 112 | 43 |
| 1506 | 533N 472E | Structure 1 | portal | 5 | 12 | 30 |
| 335 | — | — | — | — | — | 1 |
| 336 | — | — | — | — | — | 2 |

*LA 160*

LA 160 is a second small habitation site located at the south end of the community of Cuyamungue. The site which includes, at minimum, a three-room house and *horno* (outdoor adobe oven), three main trash areas which are likely one feature bisected by gullies and eroded roads, and 14 small trash scatters that date to the 1950s and later. LA 160 was first recorded by H. P. Mera in the 1930s, but only the house and horno were excavated in 1959 by Stewart Peckham in response to highway construction through the site, and two trash areas were excavated by OAS in 1999 and 2001 in response to further highway modifications

(Moore 2000a, 2018c). The site was also extensively tested by OAS in 1999, and several other possible structures and historic features were identified as non-cultural. The three main trash areas were also damaged in 2000 during these highway modifications, leading to a loss of all of Trash Area 3 (Moore 2000b).

Artifact analysis by OAS suggests that the three-room house and nearby features most likely date to the 1830s through 1860s. The land was owned by Felipe Sena and known as Rancho de Felipe Sena from 1836 until 1854, when it was mortgaged to Vicente Valdez (the same owner of LA 4968), who held it until his death in 1868. The trash areas on the other side of the highway, however, appear to date between 1870 and 1900 and are most likely not associated with the structure.

Archaeologically, LA 160 is not as well understood as LA 4968. Less of the site area is within the highway right-of-way and therefore a smaller proportion of the site has been excavated. Excavated material from LA 160 comes from two excavations: the 1959 excavation of a three-room residence and some surrounding extramural features on the east side of the highway by Stewart Peckham (Area 2), and excavations to test two trash areas in 1999 and the early 2000s on the west side of the highway by OAS (Area 1) (Figure 4.5). The OAS artifact analysis and site interpretations include information from both projects. Unfortunately, the 1959 excavations were never fully described and reported at the time. OAS was able to re-examine the artifact assemblage held at the Museum of Indian Arts and Culture (MIAC), but there were no detailed excavation notes. Further complicating attempts at understanding LA 160, the site was damaged by heavy equipment in early 2000, which destroyed approximately 38.8 to 45.7 percent of the site area within the west-side right-of-way, including all of Trash Area 3, and parts of Trash Areas 1 and 2 (Moore 2000b).

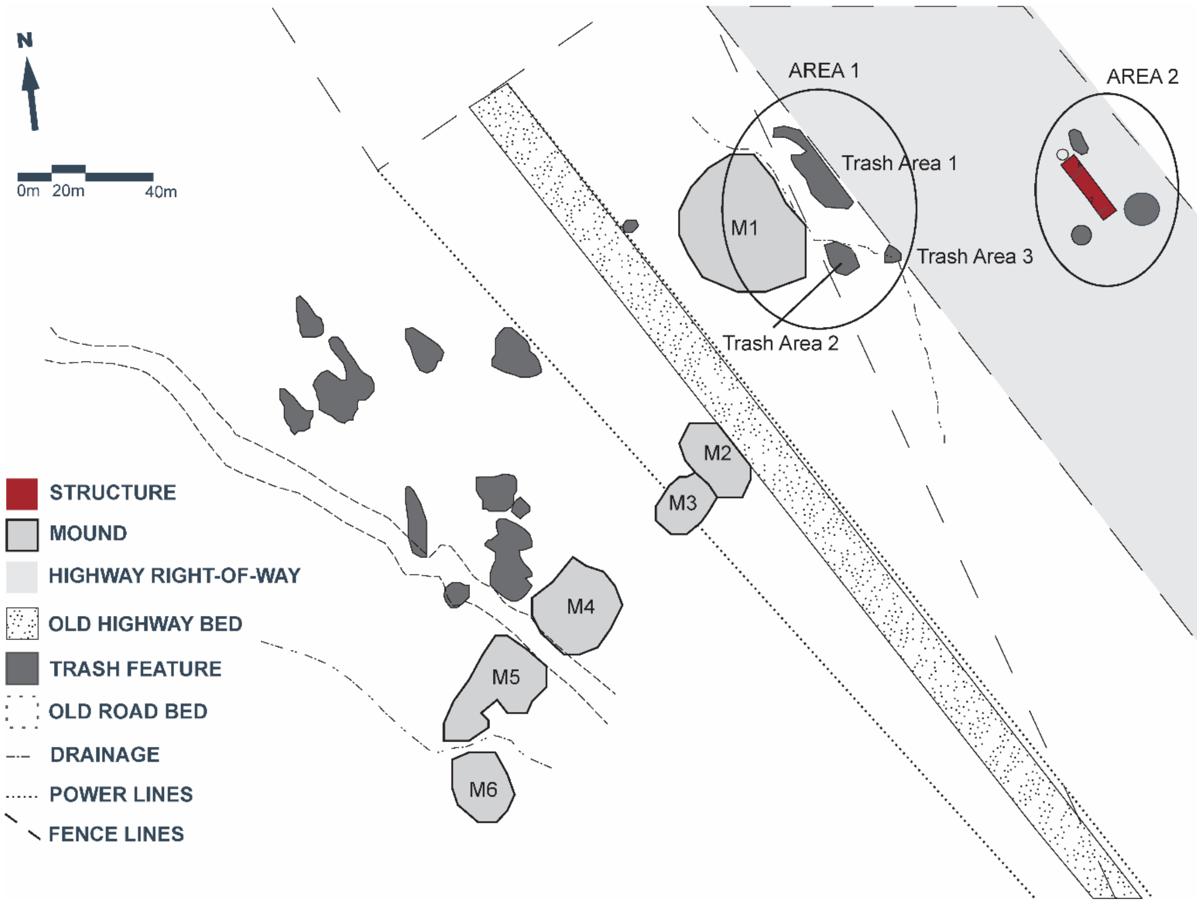



**Figure 4.5. LA 160 site plan. Map based Moore 2018: Figure 3.4 and Figure 3.6. Area 1 (OAS excavations) and Area 2 (Peckham excavations) are indicated. Testing demonstrated the mounds are not structural.**

It appears that Peckham excavated at least five features in Area 2 on the southeast side of the highway: the three-room habitation (Structure 1), an exterior *horno* adjacent to the north wall of Structure 1 (Feature 3), a trash mound southeast of Structure 1 (Feature 5), and two depressions that may have been trash pits or borrow pits (Features 8 and 12). Structure 1 was an adobe house with three rooms organized in a linear manner. The north two rooms were probably built first, and based on wall thicknesses and foundations, the third southernmost room was built in a second episode. *Fogones* (corner fireplaces) were noted in at least two of the rooms (Moore 2018c:93–94).

Excavations by OAS at LA 160 consisted of initial testing and data recovery excavations related to highway construction on the west side of the highway, where most site features had been recorded (Moore 2000a, 2000b, 2018c). In 1997, Peter McKenna had documented six possible structures on the west side of the highway, based on patterns of vegetation growth. One mound, shaped like a backwards "h" had been documented as a structure by nearly every survey documentation of the site, including Mera's in the 1930s. This mound was close enough to the highway right-of-way to be included in OAS testing and McKenna's possible structures were explored. However, testing indicated that none of these features were structural, and the large h-shaped mound was more likely a push-pile from an early stage in highway construction (Moore 2018c:93).

Other features documented on the west side of the highway consisted of a large area of high artifact density, interpreted as a trash scatter or midden. Two-track roads and gullies bisect the area, separating it into three portions, labeled Trash Areas 1, 2, and 3. Trash Area 1 was thought to contain intact deposits, but it also appears to be the result of highway construction, which pushed the original nineteenth century trash mound westwards, smearing it unevenly across the landscape (Moore 2018c:79). Trash Area 2 may still be intact and contains at least one possible pit feature (Feature 5). Trash Area 3 was inadvertently destroyed by machinery prior to data recovery (Moore 2000b). There were an also additional 14 small trash scatters dating to the 1950s at the site. These were not included in the OAS testing and artifact analysis (Moore 2018c:78).

Analysis by OAS of artifacts from Peckham's excavations and OAS excavations indicate that Structure 1 and the features excavated by Peckham were likely occupied from the 1830s to the 1860s. The trash scatters on the other side of the highway, however, date to the 1870s to early 1900s. Very few artifacts dating to the eighteenth century were found although the land had certainly been owned by many colonists prior to the 1830s.

Based on archival research by Williamson (2018a, 2018b), LA 160 was owned and occupied by the Sena family and then Vicente Valdez during the site's active occupation. Beginning in 1836 the land was owned by Felipe Sena, who received it from his father Manuel Sena. These men appear to be related to the original Bernardino de Sena family who was granted the land in 1731, although Manuel Sena had purchased this portion of land from Paulín Espinosa in 1821. The Sena's were traditionally blacksmiths. Bernardino and his son Tomás both served as the armorers of the presidio in Santa Fe, as well as other high-level roles in the colonial administration. Manuel Sena, who appears to be a grandson of Tomás, was also the armorer for the presidio and lived in Santa Fe. Manuel and Felipe are listed in Santa Fe in the 1826 census, but after receiving his land in Cuyamungue, it appears that Felipe and his wife took up residence there and Felipe proceeded to purchase more grant land in that area. The Sena family are the most likely occupants of the three-room house as LA 160. However, by 1854 Felipe had needed to mortgage his rancho—a portion of it to Vicente Valdez and a portion of it to Santiago Ulibarri. He lost all of it, and while Ulibarri sold his land, Valdez retained his portion until his death in 1868. Since the Valdez family was most likely living at LA 4968, it is unclear who may have occupied the house at LA 160 during this time. After Valdez's death, his daughter María de la Paz inherited the land with LA 160. In Valdez's will it is described as "the place called the placita" (Williamson 2018b:668).

*LA 160 Artifacts and Sample.* The OAS analyses included materials from both the recent excavations on the west side of the highway, and artifacts collected in the 1959 Peckham excavations (Table 4.3). A total of 10,884 artifacts was recovered. Excavations by

Table 4.3. LA 160 Artifacts from Peckham (1959) and OAS (2000) Excavations, by Artifact Class.

| Artifact Class | Peckham (1959) | OAS (2000) | Total |
|---|---|---|---|
| New Mexican ceramics | 2,471 | 6,016 | 8,488 |
| Imported ceramics | 20 | 1 | 21 |
| Glass | 124 | 55 | 179 |
| Metal | 73 | 42 | 115 |
| Other | 13 | 3 | 16 |
| Animal Bone | 550 | 1,348 | 1,898 |
| Chipped Stone | 56 | 71 | 127 |
| Ground Stone | 35 | 6 | 41 |
| **Total** | **3,342** | **7,542** | **10,884** |

Peckham yielded nearly 70 percent of the imported artifacts found at the site, but far smaller proportions of other artifact types, such as bone. It is likely that the 1959 excavations had different screening and sampling procedures than the later OAS excavations. All artifacts from both excavations were analyzed by OAS, although they did not collect additional ceramic characteristics on the 2,471 New Mexican ceramics from the Peckham assemblage. I selected a representative sample of 30 of the New Mexican ceramics from the OAS assemblage for analysis for my study. Of these, X-ray images were collected from all 30 sherds, 29 were used for petrographic analysis, and 14 of those 29 were further sampled for refiring analysis.

*LA 4968 and LA 160 Summary*

The two Cuyamungue sites in the sample are located less than 3.2 kilometers apart (Figure 4.6). Archival evidence indicates that the sites were associated for at least part of their histories—Vicente Valdez briefly owned both properties between 1855 and 1868. However, the two sites had different residential functions: LA 4968 was a multi-structure rancho that appears to have been a primary residence, possibly for the Valdez family. At LA 4968, Structure 1 underwent several expansion and remodeling episodes to encompass seven rooms before it was abandoned for Structure 5, also part of the broader rancho compound. This is a familiar historic Hispanic land-use pattern documented by architectural historians and historians (Bunting 1976; C. Wilson 1991, 1997b). LA 160, however, appears to have served as a secondary residence for a chain of owners with connections in Santa Fe and elsewhere. Archaeologists and historians have not yet explored such a land-use pattern. We do not yet have clear understandings how this pattern fits into broader understandings of the New Mexican economy during the Mexican Territorial period, or what kind of archaeological record might be left by such partial residency. While highway construction, restricted sample areas, and site damage all modified the sample artifact assemblage from each site, including both sites in this analysis provides an opportunity for a close comparative analysis of potential economic change over a brief period in the Mexican and American Territorial periods, as well as an opportunity to compare different land-use strategies operating within the same local market system adjacent to more urban Santa Fe.

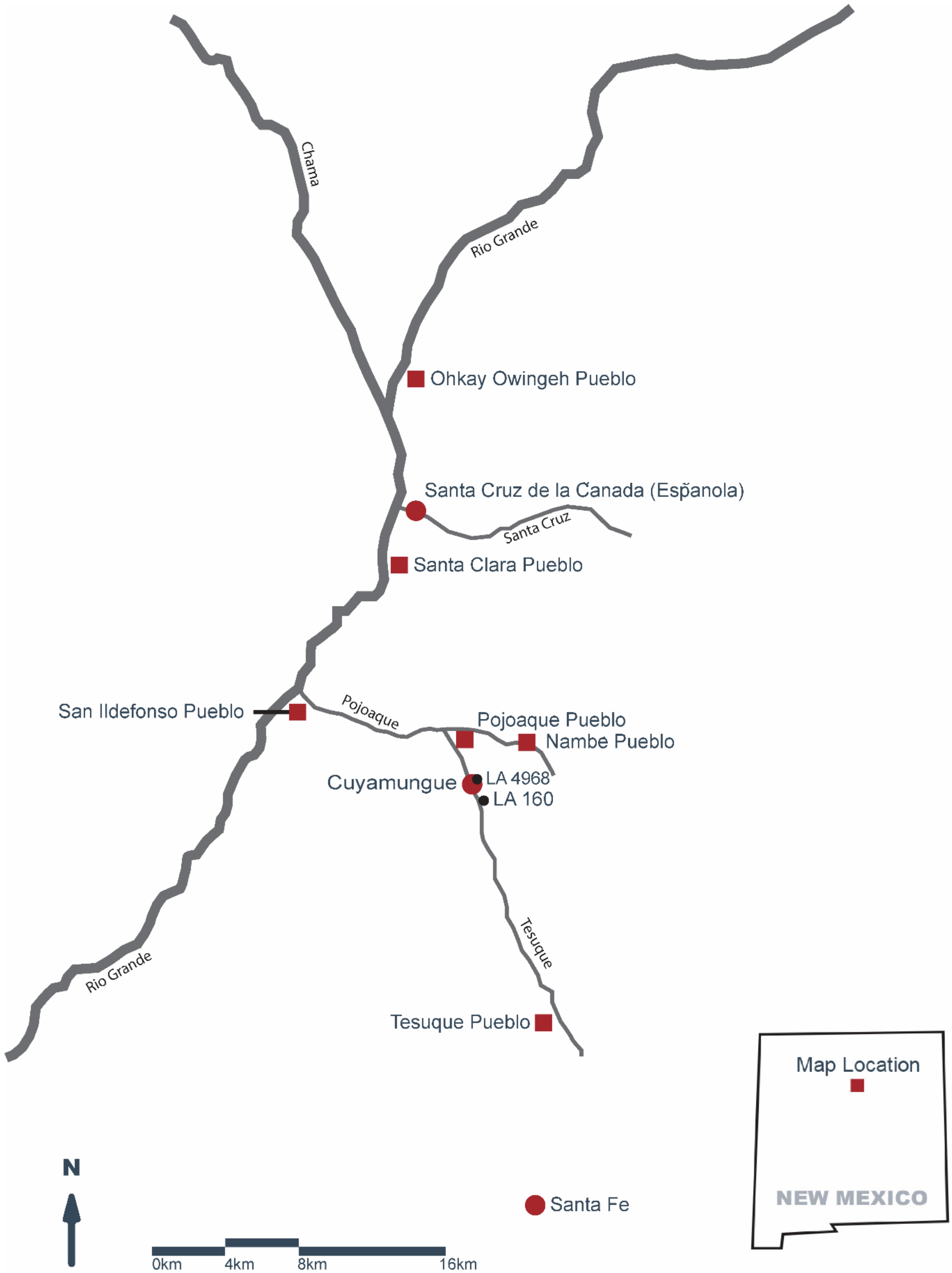



**Figure 4.6. Cuyamungue Sites and surrounding areas. Map by Oscar Camorlinga.**

## LA 8671

LA 8671 is a small residential site that dates to approximately the 1830s through 1870s, located in the Las Huertas Valley, on the north edge of the Sandia Mountains (Figure 4.7). It consists of at least one three-room house with an attached ramada area, an animal pen, and two trash middens (Brody and Colberg 1966; Ferg 1984). The site is one of several structural and agricultural historic sites in the Las Huertas Valley area, ranging between 1765 and 1940 (Scurlock 1983). The Las Huertas valley, carved by Las Huertas Creek, is situated at approximately 1731 m in elevation, and is approximately 10 kilometers from Algodones, 10.5 kilometers to the south of San Felipe Pueblo, and 22.5 kilometers southeast from Santa Ana Pueblo. The site is on the San Antonio de las Huertas Land Grant, which abuts the east side of the Bernalillo grant, the San Felipe Pueblo reservation grant is to the north, Santa Ana Pueblo's grant is to the northwest, and the Tejón land grant was eventually established on the eastern boundary of the San Antonio de las Huertas grant (not far from LA 8671).

The site is well situated within the protected valley. It is no more than 200 m east of Las Huertas Creek and residents would have had ample access to water and level terraces for farming. The Sandia Mountains were also important sources for copper, silver, and lead, which may have been mined by settlers as early as the colonial period (Forrest 1996). Later, in the early twentieth century, mining booms in nearby Golden and San Pedro hill caused whole communities to quickly grow, then dwindle (Gerow 2001).

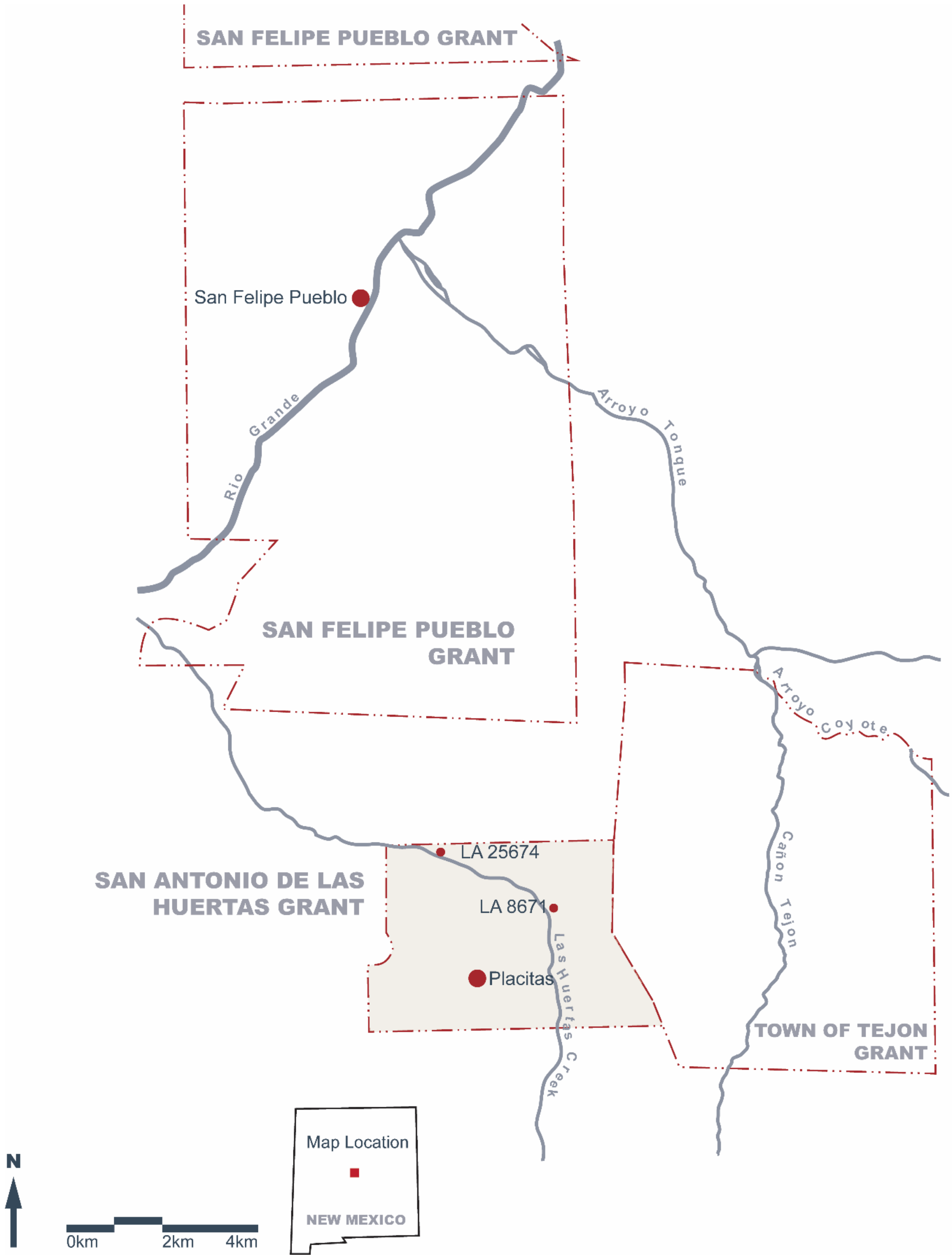



**Figure 4.7. LA 8671 and surrounding land grants, based on Ferg 1984:1. Map by Oscar Camorlinga.**

*Area Settlement History*

Understanding of the history of Hispanic settlement on the San Antonio de las Huertas land grant is enhanced by extensive documentary and archival research, in part due to land grant court cases and private land claims, through oral histories collected by the WPA Writers Project in the 1930s, and also self-published histories by land grant descendants (Batchen 2000; Rebolledo and Marquez 2000; Sanchez n.d.). There has also been extensive archaeological work in the valley in response to several pipelines that have been installed in the area since the 1970s (Ferg 1984; Marshall et al. 1986; Scurlock 1983).

There is sparse mention in archival records of a Spanish estancia owned by Diego de Trujillo known as Paraje de las Huertas in the Las Huertas area prior to the Pueblo Revolt in 1680 (Chavez 1975:108; Forrest 1996). It was abandoned when Spanish colonists fled the Revolt and there is no further mention of the region or Las Huertas until 1765 when a group of eight families from Bernalillo petitioned for a community grant (Brody and Colberg 1966). The grant, named San Antonio de las Huertas, was not formally approved until 1768, but the families were probably already settled on the land by then. By 1768 there were 21 families listed on the grant's final approval, including some individuals listed as *genízaros* (Atherton 2013).

The first major settlement for the grant was known as San José de las Huertas (LA 25674). This village is well documented both historically and archaeologically with excavations, oral histories, and extensive documentary research as part of land grant cases (Atherton 2013; Batchen 2000; Ferg 1984; Forrest 1996; Sanchez n.d.; Scurlock 1983; Smith 1976). The main occupation of San José de las Huertas occurred between approximately 1765 and 1826. Families in the village, which consisted of Hispanic, *genízaro,* and probably

Puebloan persons, farmed the valley and raised sheep and goats using the surrounding *merced* (common lands) for grazing. However, raids from Apache and Navajo became increasingly common in the 1820s, often in response to drought (Atherton 2013). In response to this pressure, the alcalde mayor of Alameda eventually passed on orders in 1823 for the village to evacuate for more defensible, populated areas. Many families left for Algodones, some to Socorro, and some to Albuquerque or north to La Cienega (Atherton 2013). Between 1823 and 1826 nearly everyone abandoned the village, though it is likely that the land continued to be used for grazing.

Settlers did not stay away for very long. Within a decade people began moving back into the Las Huertas Valley area, some from among the original grant settlers, and others who were new and drawn by reliable water, grazing lands, and mineral possibilities. Among the new settlers may have been the Zamora brothers, José de Jesús and Felix, sons of Valentino Zamora. During excavations at LA 8671, residents told J.J. Brody that the Zamora brothers had been the residents of the house structure (Brody and Colberg 1966:19).

As settlers began repopulating the land grant, other small villages began to grow. Las Placitas, located approximately 1.6 kilometers southwest of LA 8671, had 16 families by 1843. Tejón was founded in 1840 on the Tejón Land Grant, which abuts San Antonio de las Huertas to the east. Other settlements, such as Tecolote, Ojo de la Casa, and La Madera grew up around the Las Huertas Valley through the mid-nineteenth century. Roads through the area connected LA 8671 to Bernalillo, Tejón, and San Felipe Pueblo.

*Las Huertas Area Archaeological Research and Excavations*

LA 8671 was partially excavated by J. J. Brody and Ann Colberg with a University of New Mexico field school in the winter and spring of 1963–64. This was some of the first reported archaeological work done in the area. Following the field school, however, several gas pipelines, as well as residential growth of the town of Placitas, led to more CRM work being conducted in the Las Huertas Valley. At least three pipelines have been installed in the valley; the Mid-America Pipeline I (MAPCO), for which survey was conducted in 1972 (Schaafsma 1972); MAPCO II, which included cultural resource surveys in 1980 and some excavations in 1983 (Ferg 1982, 1984; Hammack and Hammack 1980; Lent 1981); the Cortez $CO_2$ pipeline, which included survey, monitoring, and data recovery between 1981 and 1983, and also some damage assessment when construction inadvertently impacted known archaeological sites (Marshall 1985; Marshall et al. 1986), and finally survey for the MAPCO Four Corners pipeline was conducted in 1995 (Bradley and Brown 1998a, 1998b). The pipelines run roughly parallel to each other.

It quickly became apparent through this work that a high number of Spanish colonial and Mexican Territorial period sites were preserved in the Las Huertas Valley. The rapid pace of development and extensive pipeline work in the valley caused some concern among residents and the New Mexico SHPO regarding the preservation of those sites. In 1983 Dan Scurlock conducted an additional survey of a 6.44 kilometer length of the valley, in the area where the pipelines had been proposed. He documented an additional 21 sites in the valley, including seven ranchos, three dugouts, and three sites with architectural remains (Scurlock 1983). He recommended that the area be nominated as a historic district. When the Office of Contract Archeology (OCA) conducted an assessment of the sites in the Las Huertas Valley as part of the Cortez $CO_2$ pipeline, they considered at least 88 sites, though not all of them could be confidently re-located (Marshall et al. 1986).

Excavations at San José de las Huertas (LA 25674) is the most extensive work done near LA 8671 (Atherton 2013; Atherton and Rothschild 2008; Ferg 1984). The village site was listed on the National Register of Historic Places in 1990 and is currently owned by the Archaeological Conservancy, which helps protect the cultural materials, offers site tours, and helps to fund research there. Alan Ferg excavated a structure there in 1983, and Heather Atherton and Nan Rothschild of Columbia University initiated test excavations, mapping and ground penetrating radar analysis there in 1999. Their project also included oral history interviews and analysis of Ferg's materials.

The village of San José was a walled settlement occupied between approximately 1765–1826. It had a *torreón* and small controlled access point at the southwest corner. Homes were arranged along the interior walls, but were clustered to form small placita areas rather than one large plaza (Atherton 2013:348). The Columbia research project at San José de las Huertas included transit mapping, surface collections, magnetic field gradient and electrical resistance survey, auger testing, and excavation of 101 $m^2$ within four houses, interior wall features, two trash-filled pits, a cart road, a sample of a plaza area, and a corral that was once used for smelting activities. Analysts examined a total of 6,745 locally made ceramics and 64 imported ceramics, as well as metal, glass, bone, and lithic samples.

*LA 8671 Excavations and Sample*

LA 8671 was first excavated by J. J. Brody and Anne Colberg as part of a University of New Mexico field school held on Saturdays in 1963–64. At the time the site area was on private land that was for sale. It came to be known as the Ideal Site based on a realtor's sign near the area, which field school students adopted. The results from the field school excavations were summarized in *El Palacio* (Brody and Colberg 1966), and the assemblage is curated at the Maxwell Museum of Anthropology at UNM. Student field notes, minimal excavation maps, a draft of the *El Palacio* article, photographs, and initial analysis notes by Anne Colberg are curated in the Maxwell Museum archives. However, it is unlikely that these materials are complete. They do not include excavation notes by either Brody or Colberg, nor are there any notes from the specialists who analyzed artifacts in the assemblage.

Because of this, it is difficult to fully reconstruct the field school's excavation and sampling procedures. The students excavated a three-room structure with an attached ramada that served as an external cooking area, an animal pen, and they sampled a trash mound 9.1 m in diameter (Figure 4.8). In their article, Brody and Colberg (1966) indicate that the structure was visible from the surface as stacked rock ruins, and interior adobe wall stubs were up to one meter above the floor level. According to the *El Palacio* article, units were excavated in 6-inch levels, but it is not fully clear the size or number of the units. Based on notes from field school students, initially a north-south trench was excavated through the trash mound, followed by another trench running east-west towards the structure. Additionally, a large test pit was placed in the trash mound, possibly 6 x 6 feet. The interior of the 3-room structure was fully excavated, apparently by room rather than defined units.

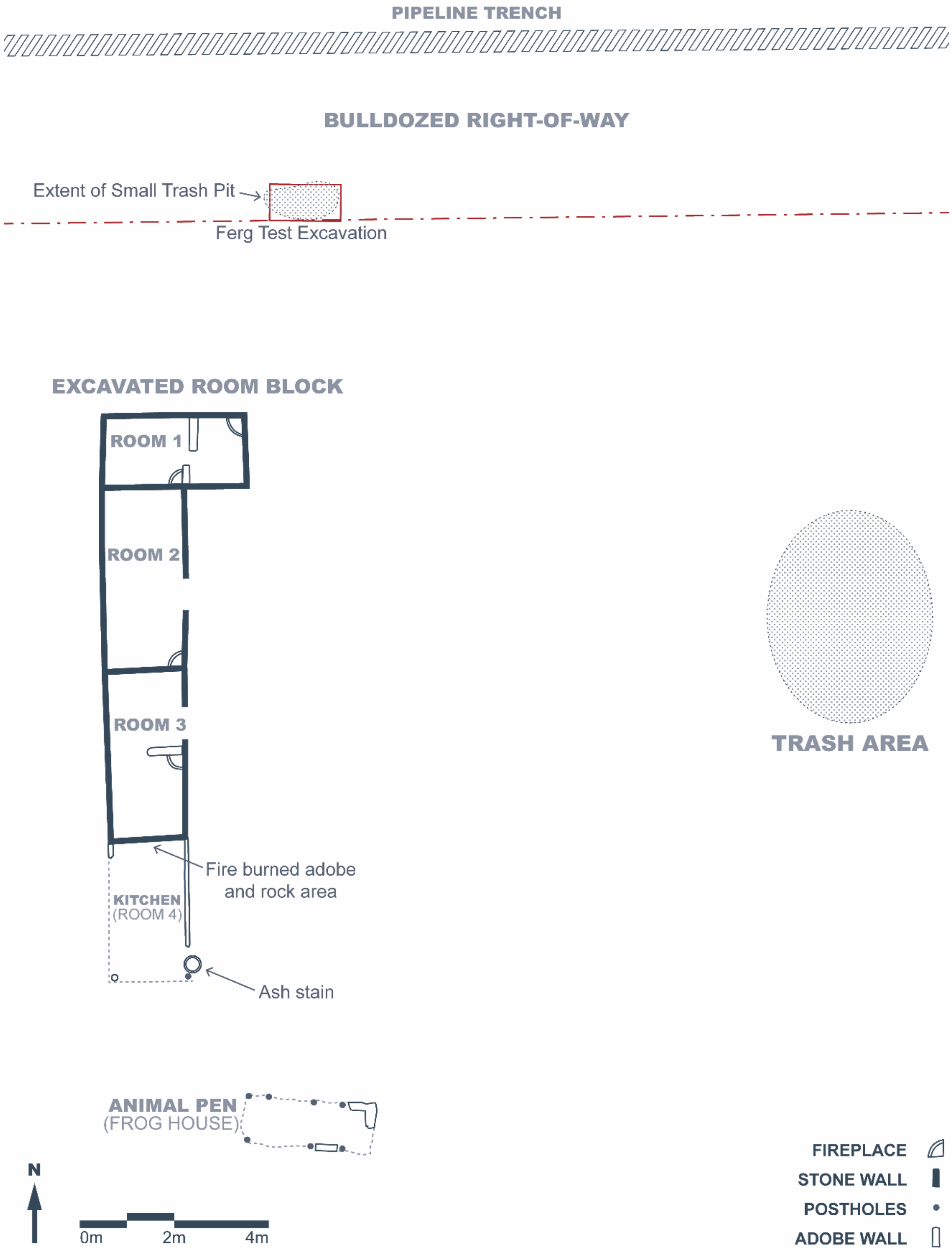



**Figure 4.8. LA 8671 site plan. Based on Brody and Colberg 1966:14 and Ferg 1984:Figure 36. Drawing by Oscar Camorlinga.**

Some testing occurred at the "South House," a structure located on the south side of a road, across from LA 8671. It is unclear why this feature was not included in the 1966 *El Palacio* article. Some student notes indicate that it was originally thought to be a PIV feature, other notes indicate it was also a historic structure that was occupied later than LA 8671. It appears this feature was only minimally tested, then abandoned. Finally, LA 8671 was surface collected and the majority of the collected artifacts in the assemblage come from surface collections (514 out of 953 New Mexican ceramics, according to Brody and Colberg 1966:table 1). However, it is not known if all visible artifacts or a sample was selected.

A total of 749 New Mexican ceramics and 309 imported glass, metal, and ceramic artifacts at the Maxwell Museum of Anthropology were analyzed during this project. The Ferg materials do not appear to be included in the Maxwell collections for this site. Materials at the Maxwell Museum are bagged with what appear to be the original excavation labels. However, these labels are not fully standardized and do not always appear to reflect systematic separation by location or unit level, and locations descriptions have ambiguous names such as "Frog House" or "Eastside pit screen" (Table 4.4). Field Specimen numbers were inconsistently assigned to materials other than New Mexican ceramics, and these were carried forward as catalog numbers, in some cases written on artifacts. However, the majority of artifacts in the collection have unknown or ambiguous horizontal provenience ($n$ = 407).

Table 4.4. LA 8671 Sample and Proveniences.

| Bag | Location | Level | New Mexican Ceramics Analyzed | Imported Artifacts Analyzed |
|---|---|---|---|---|
| 1015 | “Bag #2 Imported Ceramics” | No data | — | 25 |
| 1014 | “Surface and rooms, south end mostly” | No data | — | 14 |
| 1016 | “Trash heap and room 2” | No data | — | 8 |
| 1029 | Datum lateral perpendicular trench | 2 | 5 | 3 |
| 1006 | East side trash mound | No data | 11 | — |
| 1031 | Eastside pit screen | 2 | 32 | — |
| 1027 | Frog House | No data | — | 1 |
| 1038 | Frog House | No data | 45 | — |
| 1024 | Frog House, Surface, Eastside, Room3, Room 4 | No data | — | 5 |
| 1025 | Frog House, Surface, Eastside, Room3, Room 4 | No data | — | 1 |
| 1026 | Frog House, Surface, Eastside, Room3, Room 4 | “upper level” | — | 1 |
| 1034 | Refuse Pit | No data | — | 1 |
| 1020 | Room 1 | 1 | — | 1 |
| 1042 | Room 1a | “upper level” | — | 2 |
| 1017 | Room 1b | “upper level” | — | 7 |
| 1018 | Room 1b | No data | — | 1 |
| 1019 | Room 1b | 1 | — | 2 |
| 1043 | Room 1b East Wall | “upper level” | 12 | — |
| 1003 | Room 2 | “underfloor” | 14 | 1 |
| 1009 | Room 2 | 1 | — | 1 |
| 1010 | Room 2 | 1 | — | 8 |
| 1011 | Room 2 | No data | 5 | 4 |
| 1041 | Room 2 | 1 | 116 | 2 |
| 1032 | Room 2 East Trench | 2 | — | 47 |
| 1012 | Room 2 West Wall | 2 | — | 1 |
| 1004 | Room 3 | 1 | 2 | — |
| 1013 | Room 3 | 2 | — | 5 |
| 1022 | Room 3 | 1 | — | 3 |
| 1033 | Room 4 | 4 | — | 12 |
| 1036 | Room 4 | 1 | — | 10 |
| 1021 | Room 4 West | 2-3 | — | 2 |
| 1023 | Room 4 West | “fireplace ashes” | — | 5 |
| 1037 | Room 4 West | 4 | 1 | 19 |
| 1028 | South House | 1 | 13 | 1 |
| 1039 | South house | No data | 2 | — |
| 1002 | South House restorable "pot sherd" | No data | 9 | — |
| 1008 | Surface | Surface | 100 | 19 |

Table 4.4. Continued.

| Bag | Location | Level | New Mexican Ceramics Analyzed | Imported Artifacts Analyzed |
|---|---|---|---|---|
| 1035 | Surface | Surface | — | 1 |
| 1040 | Surface | Surface | 45 | 27 |
| 1044 | Surface | Surface | 67 | — |
| 1000 | Trash Mound | 1 | 161 | — |
| 1001 | Trash Mound | 1 | 41 | 9 |
| 1005 | Type sherd collection | "subsurface i.e. fill" | 38 | — |
| 1030 | Unknown | No data | 6 | 55 |
| 1007 | West room upper level | 1 | 24 | — |
| **Total** | | | 749 | 309 |

*Note:* Bag numbers assigned by author for tracking purposes. Locations are direct quotations from labels.

This precludes spatial analysis of the LA 8671 materials, except potentially by room or non-structural provenience. Vertical provenience is not always clear either—levels are sometimes referred to numerically, as 1, 2 or 3, and sometimes as a depth measurement, such as "6 inches to 12 inches." However, in the case of a bag of sherds from "Room 4 West" the depth was 6–18 inches, suggesting that levels were not always consistently separated. Other labels refer to "upper" or "lower" levels, which may be natural rather than arbitrary level distinctions.

Based on a site map in the 1966 *El Palacio* publication and excavation notes from field school students, most locations can be reconstructed. Rooms 1–4 seem fairly clear, referring to the main house structure and the attached ramada (Room 4). However, subdivisions within rooms, most likely referring to units on either side of partial wall partitions, are not always indicated. It is not clear whether "Pit," "Refuse Pit," and "Trash Mound" all refer to the same feature, although Brody and Colberg only identified one trash mound at the site, located approximately 15.24 m east of the structure and "Pit" may refer to a large test unit ("test pit") placed in the refuse mound. The refuse mound was described as a 12 x 15 ft mounded area of sheet trash (Brody and Colberg 1966:14). The "Frog House" appears to refer to the animal pen feature.

It may be that not all potential units or levels are fully represented in the Maxwell collection of artifacts, possibly because some artifacts were retained for analysis at other facilities, or by other researchers. Kenneth Honea and Anne Colberg initially analyzed New Mexican ceramics and compared them to type collections at the Laboratory of Anthropology at the time. David Snow also classified some New Mexican ceramics. At least one polished black ware sherd was sampled for petrographic analysis by J. Paul Fitzsimmons at the UNM Department of Geology. E. Boyd, at the Museum of International Folk Art, assisted with analysis of the imported artifacts.

In 1983 pipeline blading uncovered a trash pit northeast of the structure. Alan Ferg excavated the feature and collected an additional 143 New Mexican and 11 imported ceramics, as well as three pieces of glass, one gun flint, two retouched flakes, and 62 pieces of bone (Ferg 1984). The entire trash pit was excavated within a 1.5 x 3 m unit using one-quarter inch screens. No strata were noted. Ferg ascribed a similar date to the site's occupation as Brody and Colberg, and also speculated that some ceramics may have come from Zia or Cochiti, since it is unclear if San Felipe pueblo was producing ceramics for trade during this period (Ferg 1984).

The work of Brody, Colberg, and Ferg has helped characterize this site as what is most likely a single extended family habitation, occupied from approximately the 1830s to 1870s—perhaps two generations (Brody and Colberg 1966; Ferg 1984). The main structure has three rooms, arranged in a linear fashion. Based on the field school excavations, the center room was probably constructed first, as it has thicker adjoining walls than the rooms on either side. The newer rooms have internal partition walls that support corner fireplaces and probably also served as wind breaks. The outdoor ramada area has postholes suggesting a roof and open-walled plan with an oval concentration of ash at the southeast corner that may be an oven or other cooking feature. Brody and Colberg interpreted this outdoor room as a cooking area (Brody and Colberg 1966). At least two trash areas have been associated with the structure: one to the east, excavated by the field school, and one to the northeast, excavated by Ferg (1984).

Local informants had identified the house at LA 8671 as belonging to José de Jesús and Felix Zamora, sons of Valentino Zamora, a resident of the Las Placitas area (Brody and Colberg 1966:19). Valentino Zamora is mentioned in some stories collected by Lou Sage Batchen, who also lived in Las Placitas in the early 1930s and worked for the WPA writers project beginning in 1935 (Batchen 2000; Rebolledo and Marquez 2000). Other oral histories collected by Scurlock also identify the Zamora brothers as returning residents when the valley was repopulated in the 1830s and 1840s (Montoya 1983, cited in Scurlock 1983). There is no direct evidence linking the two men to the site. Scurlock identifies LA 8671 as the Zamora family rancho, but he also identifies LA 45914 as the adult residence of José de Jesus. This site contains an adobe house and possible *soterrano* (semi-subterranean storage room). According to Scurlock, José de Jesus patented the land with LA 45914 in 1903 and artifacts at the site date between the 1880s and 1920s. According to Scurlock (1983: 16–17), both brothers had applied for land patents in the Las Huertas Creek area in the 1890s. However, they are not listed among the current BLM digitized Government Land Office land patent records, suggesting the patents were never "proved up" and granted.

*Research Sample*

The UNM field school collected a total of 953 New Mexican ceramics, 164 imported ceramics, and at least 156 pieces of glass, metal, and other materials (Brody and Colberg 1966). Ferg (1984) collected an additional 143 New Mexican ceramics, 3 shards of glass, and 11 imported ceramics. I analyzed 749 New Mexican ceramics and 309 imported historic artifacts in the Maxwell Museum collections for this study (see Table 4.4). This sample was taken from a range of contexts, though without detailed site maps or excavation notes, how these relate to one other spatially can only be inferred from labels. However, most of the sample appears to be surface collected. The material has already received basic analysis which formed the basis of the 1966 publication on the site, but there are no notes or metadata reflecting any detailed technological analyses.

*LA 8671 Summary*

Interpretations of the architecture at LA 8671 show that it was similar to other known nineteenth century ranchos in New Mexico (D. Wilson 2013). The house follows a linear-to-rectilinear plan with rooms added incrementally as needed throughout the occupation of the site. There are at least 19 other sites from a similar period within the Las Huertas Valley, and LA 8671 is well-situated for easy access to water and the other Hispanic settlements growing nearby.

While not a large site, LA 8671 appears to have been well-integrated to take advantage of local networks and resources, including national and regional markets and access to villages as Placitas, Tecolote, and Algodones. Artifacts suggest the site was occupied from the 1830s–1870s. Ceramics are mostly locally-made utilitarian wares, with small amounts of polished wares, some of which may be from the Cochiti area, and decorated wares from Santa Ana or possibly San Felipe, and Acomita pueblos. Residents may have also had relationships in the Española Basin or near Santa Fe, as some ceramics appear to be Tewa-made as well (Brody and Colberg 1966).

## Barela-Reynolds House

The Barela-Reynolds house assemblage comes from test excavations on the property of the Taylor-Barela-Reynolds-Mesilla Historic Site (hereafter the Barela-Reynolds house), a property with no formal Laboratory of Anthropology number; however, it is listed on the State Register of Cultural Properties and became a state historic monument in 1977. The Barela-Reynolds house itself was probably built in the mid-1850s (Baxter 1977), although excavation materials also demonstrate an earlier context, possibly dating to the 1840s, pre-dating construction of the main house (Boone n.d.). The Barela-Reynolds house has a prime location on the northwest side of Mesilla's central plaza.

The history of the Barela-Reynolds house and its occupants are central to the history of the founding and expansion of Mesilla as a bustling trade town on the newly minted and fluctuating border between the United States and the Republic of Mexico. Its residents were caught between two adolescent nation-states struggling to establish themselves and their place in the world, as Mesilleros attempted to continue their lives in familiar manners, despite their shifting national status.

*Area and Settlement History*

The Mesilla Valley is in a broad open swath created by a curve in the Rio Grande and is a highly productive agricultural area. The valley itself held several small settlements in addition to La Mesilla, although trade and eventually the railroad meant that La Mesilla and Las Cruces became the dominant population centers. The area began to attract attention for settlement from El Paso del Norte communities in the second half of the eighteenth century. In the 1820s the area is mentioned in patrol reports by Mexican soldiers, as having small settlements at alluvial mouths into the valley (Taylor Daniels 2004). Later, stagecoaches stopped through the area at abandoned ranchos.

In 1827 the Mexican government financed a settlement at Ancón de Doña Ana, on the east side of the Rio Grande from the eventual site of Mesilla. The government's intent was to provide protection for the Camino Real/Chihuahua Trail trade route. By 1844 the settlement had grown enough to merit a visit from Bishop Jose Antonio Zubiría (Taylor Daniels 2004). This part of the Mesilla Valley was attractive because of the wide alluvial flats that provided plenty of room for agricultural fields and irrigation. However, prior to the Mexican-American War, Doña Ana was the primary settlement in the area, and the east side of the river occupied more than the west side (Figure 4.9) (Mora 2010).

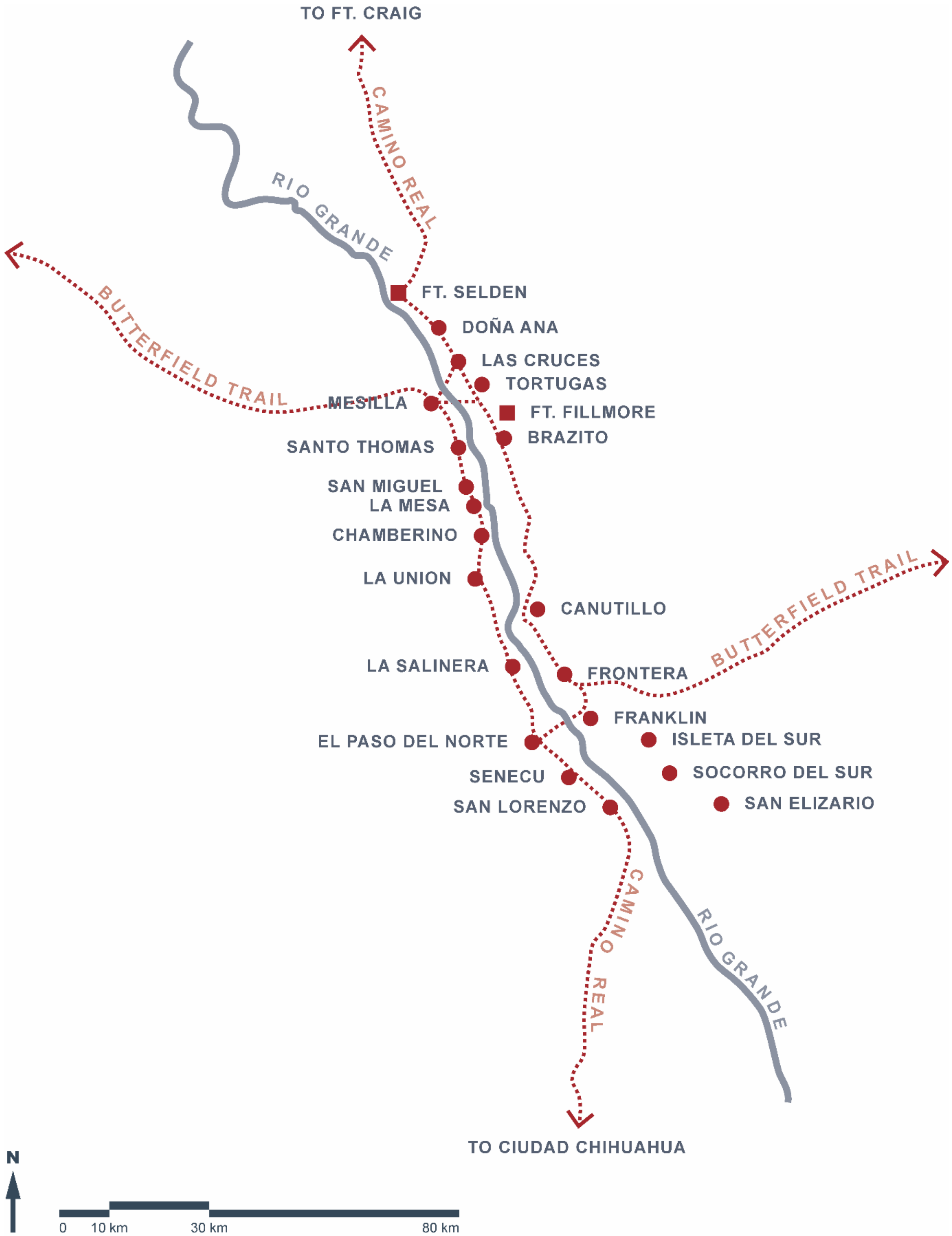



**Figure 4.9. Mesilla Valley map with historic settlements. Based on Taylor Daniels 2004:8. Drawing by Oscar Camorlinga.**

*Founding of Mesilla*

La Mesilla was one of several small settlements that grew up on the west side of the Rio Grande during the tumultuous years between the Treaty of Guadalupe Hidalgo in 1848 and the Gadsden Purchase in 1854, as the United States and Mexico negotiated and postured for disputed territory that included the area of La Mesilla. This contestation meant that national identity and the formal status of La Mesilla were central concerns for many of the early settlers in the town.

Initially the Treaty of Guadalupe Hidalgo and the associated boundary commission identified the international boundary as the deepest channel of the Rio Grande (Mora 2010). This turned out to be problematic since the course of the Rio Grande was prone to change. There are at least three historic channels documented in the El Paso del Norte area (Hall 1994). In the first two years following the Treaty of Guadalupe Hidalgo, Mexico was very interested in increasing its population along the northern frontier, as a buffer against both Native American attacks and American incursions. To this end, Father José Ramón Ortiz from El Paso del Norte was designated the Commissioner for Repatriation and provided with authority and funding to assist Mexican citizens living in the New Mexico Territory emigrate southwards back into Mexico.

Father Ramón Ortiz also worked to relocate persons from settlements and pueblos near El Paso del Norte, such as Ysleta del Sur, Socorro del Sur, and San Elizario, where a new channel of the Rio Grande had “moved” the international border in 1849 and now separated residents from their fields. American officials had occupied the newly “American” land and crops. This left many Mexicans dispossessed and facing famine with no ability to acquire land and sow new crops. Thus, Father Ramón Ortiz brought the two waves of settlers—northern New Mexicans and southern displaced New Mexicans, to the Mesilla Valley area and granted them land in 1848 and 1849. At least four settlements were founded in this way: Guadalupe de los Nobles, San Ignacio, Nuestra Señora del Refugio, and La Mesilla. Although the northern and southern groups clashed somewhat, both parties seemed to think that by settling in the Mesilla Valley, they were staying in or coming back to Mexico. The new settlements also received a large influx of people from Doña Ana, who were over-extended or fed up with the U.S. military occupation of the small town. By December, 1849, there were 1800 persons in Guadalupe de los Nobles, settled in the same manner (Taylor Daniels 2004:22).

At the same time, American merchants also began to settle in the new town. Some merchants came back to the area after first passing through Doña Ana with American troops during the Mexican-American War, and they had recognized the trade potential the area offered. Many of these settlers thought they were in the United States. Louis William Geck, Henry Cuniffe, and Sam Bean came to be successful merchants in the growing town (Taylor Daniels 2004).

Other factors contributed to La Mesilla's success as a commercial town: in 1851 Fort Fillmore was established on the east side of the river, approximately 18 kilometers from Mesilla. Several merchants, including the occupants of the Barela-Reynolds house, were able to profit from selling supplies to the fort (Baxter 1977). Additionally, La Mesilla and Doña Ana were the first substantive settlements on the south side of the Jornada del Muerto, and served as important resting stations for merchants on the Camino Real/Chihuahua Trail. Merchants in the Mesilla area frequently had strong commercial connections with Chihuahua merchants, which were reinforced with marriages (Calafate Boyle 1997; Reynolds et al.

2012). In 1856 a stage route between San Antonio, TX and San Diego, CA added a stop in Mesilla, and in 1857 the Butterfield Overland Mail route also had a stop in Mesilla. In 1860, the *Mesilla Times* reported that the town had twenty-five merchants, which certainly included occupants of the Barela-Reynolds house (Wilson and Polyzoides 2011:189).

*Barela-Reynolds House: Structure History*

The earliest homes in the Mesilla Valley were probably *jacales*, wooden structures sometimes sealed with mud or adobe, that are quick and easy to make, and easy to dismantle and move. *Jacales* are continuously used in New Mexican vernacular architecture throughout the historic period for initial shelter prior to rock or adobe structures, as expansions, and for outbuildings (C. Wilson 2013). In Mesilla, *jacales* were probably followed by adobe structures in the 1850s and 1860s as Mesilla continued to draw settlers, especially merchants (Taylor Daniels 2004). Excavations behind the Barela-Reynolds house revealed evidence of at least one such *jacal* structure, probably dating to the 1840s.

The Barela-Reynolds house began to be built in the mid-1850s behind two store fronts on Mesilla's main plaza. It had a prime location at the west edge of the plaza and was owned by a succession of Hispanic and European American traders who specialized in supplying the nearby U.S. military forts (Figure 4.10). Behind the two store fronts, which are connected by a *zaguán* passage (breezeway, or covered outdoor passageway), a large residential compound grew around small interior patios, in traditional New Mexican fashion. With this architectural layout, storerooms, corrals, and utilitarian spaces, as well as residential rooms clustered around patios to provide privacy, security, and flexibility as the structures passed through different owners (Figure 4.11).

**Figure 4.10. Barela-Reynolds house, looking southwest at the eastern (plaza-facing) façade. Mark Schara, 2005. Library of Congress, Prints and Photographs Division, HABS, Reproduction number HABS NM-205, Barela-Reynolds House, Calle Principal, Mesilla, Doña Ana County, NM.**

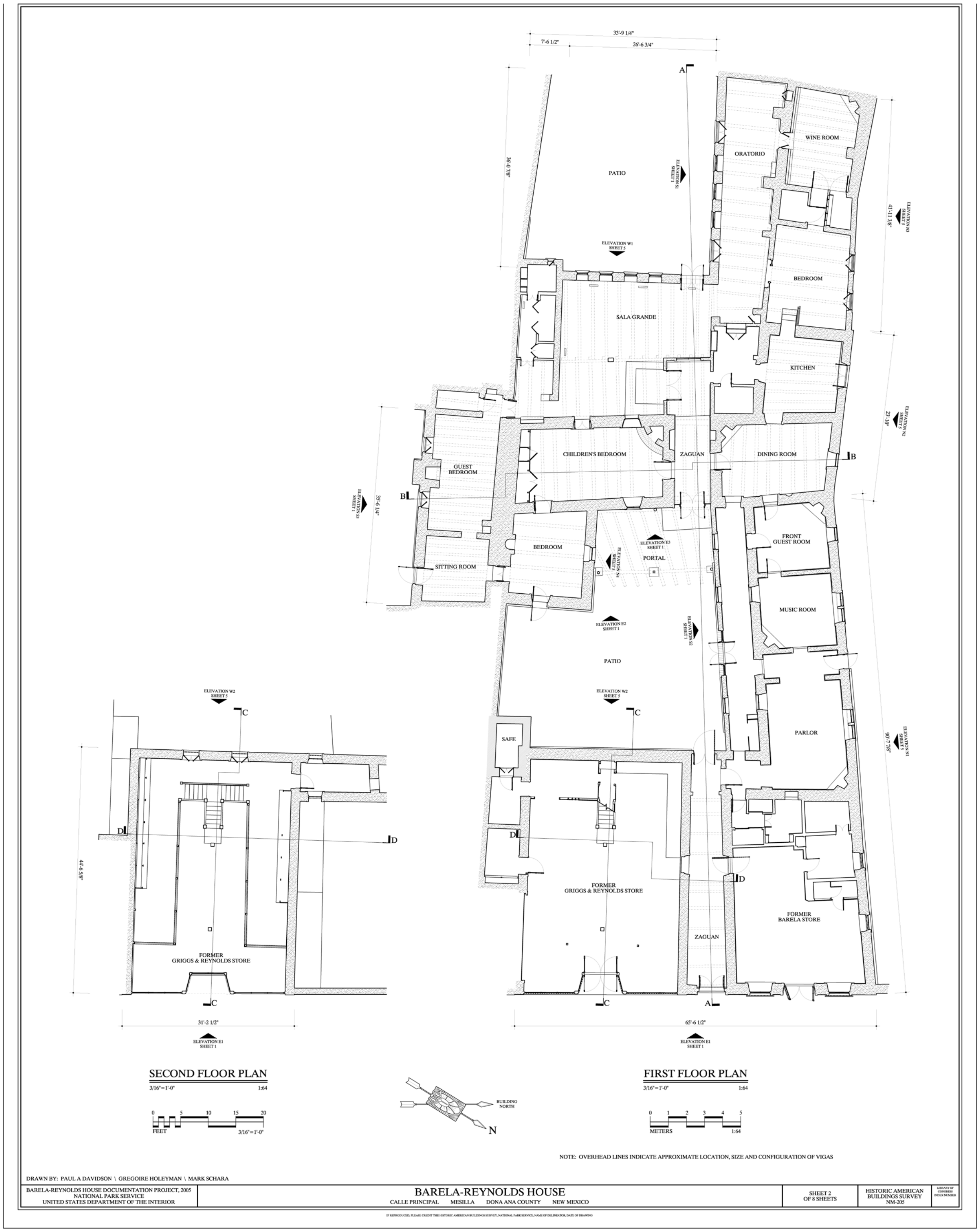



**Figure 4.11. Map of Barela-Reynolds house measured drawing by Mark Schara, 2005. Library of Congress, Prints and Photographs Division, HABS, Reproduction number HABS NM-205, Barela-Reynolds House, Calle Principal, Mesilla, Doña Ana County, NM.**

The two storefronts and attached residential and storage structures began under separate ownership and were not managed as a single property until 1903 (Table 4.5). The chain of ownership for both the north and the south properties reflects the importance of Mesilla as a trade depot, and the plaza-front properties continuously attracted merchants and prominent persons in Mesilla's history. The first builders and residents of the property were most likely Mariano Yrissari, for the north portion, and Pedro Peres and his wife Ysidra Garcia for the south portion. Both were merchants from the Albuquerque area who maintained connections and property in other parts of the territory. Generally, until 1903, the north portion of the property was owned by Hispanic merchants, whereas the south portion went through a series of owners who were European American men, sometimes with New Mexican wives, who maintained strong roles in local and national government.

Table 4.5. Barela-Reynolds House Ownership History.

| Year | North Portion | South Portion |
|---|---|---|
| 1854 | Mariano Yrissari | Pedro Peres and Ysidra Garcia |
| 1857 | | Charles A. Hoppin and Nathan B. Appel |
| 1859 | | Alexander Duval |
| 1863 | | Reynolds and Griggs Company |
| 1864 | Maria Rafaela Garcia Barela and Anastasio Barela (son Mariano Barela) | |
| | Both Portions Owned Together | |
| 1903 | William Charles Reynolds | |
| 1913 | Friar Juan Grange | |
| 1937 | Valentina McCunniff and daughter Perla Aladib | |
| 1953 | J. Paul Taylor and Mary Daniels-Taylor | |

*North Lot.* Mariano Yrissari was a successful merchant with ties to Albuquerque and a store in Rio Rancho (Calafate Boyle 1997). He was primarily involved in supplying the forts near Mesilla, such as Fort Fillmore and Fort Selden. It appears that his federal ties cost him in 1861 when Mesilla was occupied by Confederate forces, and $12,000 in military coats and jackets were confiscated (Baxter 1977:3). Yrissari may have maintained ownership of the north store up until, or possibly through the Civil War. We know that in 1864 the property was owned by Maria Rafaela Garcia Barela and the store was managed by her son, Mariano Barela (Baxter 1977).

Maria's husband, Anastacio Barela was also a commercial man and freighter with ties to the Albuquerque area, but his political sympathies were with the Confederacy. He served as the Doña Ana probate judge in 1860 and was the captain of a volunteer militia in 1861. Taylor Daniels (2004) records that Anastacio left his property, worth $10,000 to Maria Rafaela to prevent it from being confiscated when he fled to Texas with other Confederacy supporters.

Maria Rafaela managed the Barela fortune well, and successfully managed property and finances within the city, including mortgages and loans. Her son Mariano Barela, who managed the property and store until 1903, was integrated into every part of Mesilla's development. Not only was he a successful businessman, he also served as the Doña Ana sheriff beginning in 1866. The Barelas owned another residence east of the main plaza, but apparently frequently entertained at the main plaza property (Taylor Daniels 2004). According to Taylor Daniels, under Maria Rafaela's guidance, the plaza property provided a primary forum for community business and political dealings (Taylor Daniels 2004:115). Mariano Barela sold the plaza property to William Charles Reynolds of the Reynolds and

Griggs Company in 1903 and from then on, the two store fronts and attached residences were managed as a single property under unified ownership.

*South Lot.* Pedro Peres was the first known owner of the south store front and narrow lot allotted in the Mesilla Civil Colony Land Grant. His title to the land was granted by Guadalupe Miranda, Ramon Ortiz's successor, in 1854. It is likely that Miranda was merely confirming land that was already informally claimed (Baxter 1977). Peres sold his property shortly later in 1857 to Charles A. Hoppin and Nathan B. Appel, two European American merchants. Hoppin was originally from Rhode Island and Appel was from Germany. Both men had strong political and economic connections with Arizona and also supported the Confederacy during the Civil War (Baxter 1977). From them, the property quickly passed through the hands of another merchant, Alexander Duval, and then to James Edgar Griggs and Joseph Reynolds of the Reynolds and Griggs Company.

The Reynolds and Griggs Company was a well-established mercantile that eventually ran stores in Silver City, La Mesa, and Las Cruces as well as Mesilla. Both James Griggs and Joseph Reynolds had served as clerks for stores at Fort Fillmore and Fort Craig and had well established supply and purchasing relationships for their military customers. They housed their dry goods store in the south half of the property, fronting onto the plaza. The next adjoining building to the south, which is not considered part of the listed Barela-Reynolds property, housed feed and groceries for the store (Taylor 1982).

In 1903, William Charles Reynolds, son of Joseph Reynolds, purchased both the north and south lots, and from then on, the property was managed as a single entity. He quickly began to remodel the property, and his changes to the interior and exterior of the building, such as the pitched roof and Italianate details on the southern store, give the property its current American Territorial character. William Reynolds also made some changes to the building structure, such as enclosing a south patio to become a hallway (Baxter 1977).

*Barela-Reynolds House Excavations*

Excavations at the Barela-Reynolds house were conducted in 1983 by a New Mexico State University (NMSU) field school led by James Boone, in anticipation of restoration activities (Boone n.d.). Excavations occurred behind the house, within the yard and *zaguán* (covered breezeway) areas, near enough to the structures that most recovered materials are probably related to each structure and its occupants. The excavations recovered a total of 659 local ceramics, approximately 479 imported ceramics, 3,054 pieces of glass, and approximately 1,163 faunal remains, in addition to metal and other material artifacts.[4] The material is curated at the NMSU Museum and at one point a hand-written field-specimen excavation catalog was made, but the material is not formally catalogued within the museum collections. This means that while the excavation catalog, field artifact tallies, and unit level forms remain, a complete inventory of physical artifacts cannot be conducted to reconcile any numeric differences in the forms (see Appendix A for catalog and artifact tally data). However, the discrepancies are not large, and are typical of differences between initial field inventories and laboratory inventories.

However, artifacts and stratigraphy in the test units indicated that many were in very mixed contexts or disturbed contexts and did not necessarily reflect nineteenth century

[4] Glass, imported ceramics, and the vast majority of metal artifacts were not found in the NMSU museum collections, and it may be that parts of the assemblage have been loaned to other researchers for analysis or as teaching collections between 1983 and 2017. Characteristics for these artifacts were drawn from the excavation catalogs, which included sketches of manufacturer's marks, preliminary dates and analyses, and descriptive characteristics.

activities or surfaces. Many artifacts collected were found to be surface trash from the 1920s and later, which had accumulated during ongoing use of the house particularly by the Taylor family from 1953 onwards.

Of the 5,737 imported artifacts collected, 1,817 artifacts have identified production dates that begin in 1900 or later, and these are excluded from further analysis, leaving 3,920 imported artifacts analyzed. There are 1,550 artifacts, including 1,183 fragments of glass and 326 wire nails that were identified during initial laboratory analysis and catalog production as produced after 1880. It appears that during initial analysis, nearly all bottle glass without manufacturing characteristics for an accurate date was interpreted to post-date the arrival of the railroad. This interpretation reflects the dramatic increase in manufactured product availability after the railroad arrived. It is also likely many unidentifiable and undated fragments of metal described as metal plate or strap ($n$ = 372), are actually highly degraded can fragments, and date to later occupation of the site, but since they could not be confidently dated or identified, they are not excluded.

The NMSU field school excavated at least 32 square meters near the house and adjacent lots (Figure 4.12). The units were placed to expose likely activity areas for house residents, to identify any features or components that pre-dated the main house construction, and to identify architectural features and potentially agricultural or water management features in the "vineyard" area. Nine square meters were excavated within the *zaguán* passage, approximately nine square meters within the "vineyard" area north of the north property, which local lore states was used to grow grapes, two square meters within the Taylor's present-day yard, and approximately 12 square meters in the "Frietze area," the yard


**Figure 4.12. Map of excavation units at Barela-Reynolds house, based on 1982 excavation map by James Boone. Map by Oscar Camorlinga.**

area behind the south property, which formed the primary portion of the courtyard enclosed by residences behind the stores.

Units within the *zaguán* passage appeared to be the most intact, possibly because they received long-term protection within the passageway from aeolian and flood-related erosion and from larger disturbances within the yard areas. Two intact features, a stratified midden (units J1 and J2), and an early jacal feature (units J3–5) were located in this area. The midden is densest at levels 3 and 4 below the surface. It contains ash, high numbers of bone, European and Mexican imported ceramics, and local hand-formed ceramics. However, the numbers of metal decrease with depth, while hand-formed ceramic ratios peak at levels 3 and 4. This suggests that the midden is fairly intact. There are also small amounts of vessel and window glass and nails in the midden, which probably dates to the early occupation of the Barela-Reynolds house (Boone n.d.) (Figure 4.13, Table 4.6).

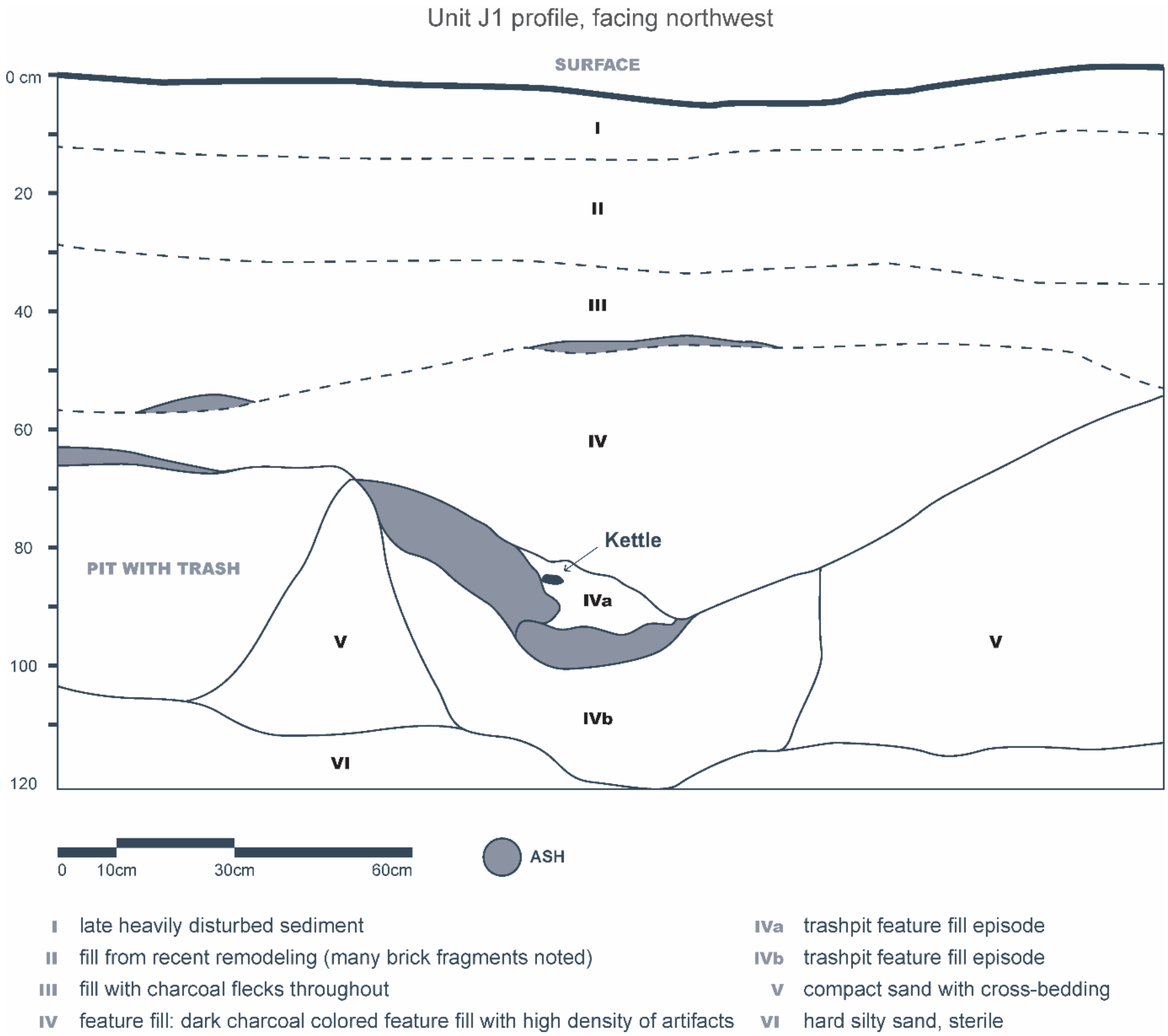



**Figure 4.13. Barela-Reynolds house, Unit J1 (zaguán area) profile, view northwest. Drawing by Oscar Camorlinga, based on 1982 field sketch from excavation materials collection of James L. Boone.**

Table 4.6. Units J1 and J2, Artifacts by Level.

| Level | New Mexican Ceramics | Mexican Ceramics | European Ceramics | Glass | Metal |
|---|---|---|---|---|---|
| **J1** | | | | | |
| 1 | — | 4 | 19 | 20 | 86 |
| 2 | 27 | 4 | 21 | 12 | 12 |
| 3 | 26 | 2 | 12 | 66 | 20 |
| 4 | 43 | 9 | 27 | 21 | 28 |
| 5 | 29 | 5 | 15 | 16 | 17 |
| 6 | 7 | 1 | 4 | — | — |
| **J2** | | | | | |
| 1 | 5 | 1 | 6 | 48 | 77 |
| 2 | 42 | 4 | 17 | 24 | 28 |
| 3 | 55 | 3 | 15 | 42 | 27 |
| 4 | 38 | 1 | 16 | 33 | 29 |
| 5 | — | — | — | 3 | 3 |

The jacal feature consists of a series of post-holes and an ash-pit located across units J3 through J5 (Figure 4.14). This feature also contained high numbers of bone, which appeared to be heavily processed, but not burned. A mandible of a sheep/goat was found on the floor of the feature. Other artifacts in the feature included predominantly local earthenwares, which were densest at level 3, but only one majolica sherd, and small amounts of European ceramics. Glass and metal diminished sharply with depth, and by level 3 were not present. The artifacts suggest this feature may pre-date the Barelas-Reynolds house construction. It was interpreted as an 1840s jacal-ramada structure (Boone n.d.).


**Figure 4.14. Barela-Reynolds house, Units J3 to J5. Floor level showing post holes and ash feature. Photo taken by James L. Boone, February 27, 1983. Scanned from color slide in the excavation materials collection of James L. Boone.**

The units in the Vineyard Area and possibly the Taylor's yard are more likely to represent artifacts and features affiliated with the northern property owners, primarily the Yrissari's and Barela's. The Frietze Area excavations are more likely to represent the range of southern property owners, and probably the activities of the Reynolds and Griggs Company mercantile. Because Reynold and Griggs, and later William Charles Reynolds, owned residences in other nearby blocks in downtown Mesilla, the artifacts in these units may be related to servants and employees rather than the property owners or family.

Units were excavated in either 10 or 20 cm levels and screened through one-quarter inch screens. In addition to the jacal and midden features described above, other features uncovered during excavations included several small trash pits, some with ash, which may represent disposal from cooking features or trash burning, possible floors with adobe and/or wooden planks, possible activity surfaces with highly compacted sediment, and a small portion of adobe wall in between units J7 and J8. The unit located at 0N 41E also contained architectural elements including adobe wall, plaster, rotten wood, bricks, and a stone foundation. However, units outside of the protected *zaguán* area tended to be highly disturbed and mixed contexts, ranging from the mid-nineteenth century through the 1950s. Furthermore, the excavations showed the extent of modifications within the property area—sewer lines, cement, a 1970s dog burial, and possible drainage trenches, have all been cut into the present day and historic surfaces around the Barela-Reynolds house. The artifacts collected during excavation represent the entire time range of the property's use, from possibly as early as the 1840s, through the first half of the twentieth century.

I examined 656 New Mexican sherds available in the NMSU museum collections for my research, and excavation notes and analysis of the imported historic artifacts were also employed in analysis.

The four sites used in this study are geographically, and in some ways socially and economically disparate. The materials from the Barela-Reynolds house, especially, stand out in contrast. They come from a mercantile residence at the center of a bustling, active trading town. Unlike the ranchos near Cuyamungue, which certainly included Santa Fe in their networks, or the Ideal Site, at the crossroads of pueblos and trails, the Barela-Reynolds house was at ground zero for nationalism, border actions by representatives of each nation-state, and trade.

## Conclusion

The goal of this research is to examine and compare the consumer profiles at four Hispanic residential sites along the Rio Grande to understand which scale of social network—local or regional—was most emphasized by site residents. While there is growing archaeological interest in Mexican and American Territorial sites within New Mexico, most studies thus far have focused on analyses of single sites, while trying to extend results throughout the territory (Jenks 2011). In order to examine the possibility of different strategies in different places, I selected four sites in the sample to provide a range of geographic and economic conditions. By characterizing the consumption practices at each site through analysis New Mexican ceramics and imported ceramic, glass, and metal artifacts and examining the number and type of social relationships they represent, I develop consumer profiles for each site (Chapter 8). What residents chose to consume, who they acquired materials from, and how they chose to use them are all consumer practices that established community and regional social networks and relationships in nineteenth-century New Mexico.

The sites in this project represent a variety of production and use contexts within the historic New Mexico Territory. LA 160 is a small residence, which may have only been occasionally occupied, located near the Pojoaque Pueblo. LA 4968 is a larger multi-family residence also located on the edge of the Pojoaque Pueblo lands, which appears to have gone through multiple phases of growth and remodeling. LA 8671 is a residence near a small town with approximately 200 residents in 1848, but it was well situated along a network of roads and travel corridors to reach several different pueblos, as well as settlements around Albuquerque. Finally, the Barela-Reynolds house is a residence located on the main plaza of a town with thousands of residents in the second half of the nineteenth century, but its location in southern New Mexico offers different social and economic alternatives with Fort Fillmore, southern Apache, Tiwa, and other tribes from northern Mexico and Texas. The variety in this sample is an opportunity to understand how different social and economic factors such as proximity to Pueblo population centers, proximity to urban Santa Fe, and proximity to the Santa Fe Trail and Camino Real/Chihuahua Trail affected strategies New Mexican communities used in their consumer relationships and how this related to Hispanic social identity. Contrasting different sites is an opportunity to understand how other ingredients to social identity, such as gender, class, and citizenship were leveraged with ethnicity and community identity. A diverse sample is especially important for understanding these changes in New Mexico, but also underscores what Anthony Mora calls "the complexity and importance that the local context had in determining the ways that individuals accessed larger imagined associations that were racial and national." (Mora 2010:19).

The sites in this sample provide chronological range as well, allowing for some diachronic comparisons to be made. First, LA 160 and LA 4968 are located within 3.2 kilometers of each other, within the same geographic zone and therefore presumably had similar physical access to markets. LA 160 was at least partially occupied in the early Mexican Territorial period and LA 4968 was occupied from approximately 1828 to 1868, bridging the regime change and extending at least one generation into the American Territorial period. Second, LA 8671, the Ideal Site, is located on the San Antonio de las Huertas land grant and was also occupied from approximately 1830 to 1870. This site can be compared with San José de Las Huertas, a village site occupied from 1765 to 1826, recently studied in detail by Heather Atherton (2013). San José de Las Huertas is located only a few kilometers to the north of LA 8671. A comparison of the two sites provides an opportunity to observe possible change over time, while again controlling for location and market access. Materials from excavations at the Barela-Reynolds house in Mesilla, near present day Las Cruces, date from the 1840s to the mid-1900s, thus providing a view of consumption throughout the period of study.

The next chapter will begin the technological analysis of the largest artifact class from each site—New Mexican ceramics. Chapter 5 will present analysis methodologies and basic descriptive results to better characterize this understudied class of artifacts.

# Chapter 5: Ceramic Analysis

This chapter presents the results of descriptive and technological analyses of New Mexican-made ceramics found at each site in the sample. The descriptive analysis defines a Descriptive type for each of 58,942 sherds from the four sites and examines patterns in form, decoration or surface treatments, and proportions of types. The technological analyses were conducted on a sub-sample of sherds. Unlike traditional stylistic analyses, this technological analysis closely examines production techniques at each stage of ceramic production: clay selection and preparation, vessel forming, surface treatments, and firing. The first half of the chapter presents the methodologies used for analysis of each stage of ceramic production: petrographic analysis with digital image analysis (148 sherds), X-ray fluoroscopy to examine forming techniques (139 sherds), and refiring experiments (78 sherds). The second half of the chapter presents results of the technological analysis for the four sample sites. These results highlight basic patterns in ceramic production technology represented in the New Mexican ceramic assemblages at each site and provide some context for understanding the variability in communities of practice and microstyles that will be identified using statistical analysis in Chapter 6.

Historic New Mexican-made ceramics, both plain wares and painted polychromes, make up a large portion of each assemblage (Table 5.1). As such, New Mexican ceramics most likely represent the primary material class that site residents acquired and consumed in their daily lives. New Mexican pottery was used to store water and different types of food, to cook over fires, to serve food, to store cosmetics and personal items, as pipes to smoke, and other intimate daily activities. The relationships residents maintained to have access to New Mexican ceramics would have been significant and probably enduring.

Table 5.1. Historic New Mexican Ceramics and Imported Artifact Counts from Each Site.

| Site | New Mexican Ceramics | Metal | Glass | Imported Ceramics |
|---|---|---|---|---|
| LA 160 | 8,468 | 116 | 179 | 21 |
| LA 4968 | 83,784 | 373 | 1,485 | 955 |
| LA 8671 | 1,083 | 90 | 54 | 175 |
| Barela-Reynolds house | 659 | 1,659 | 1,617 | 476 |

The results of the technological analysis do much to help us understand Territorial period New Mexican ceramic production and consumption—an area of research that has not been extensively pursued until now. Regarding utilitarian ceramic production, this work demonstrates that each region in the study had multiple distinct technological traditions. Based on paste and forming techniques, these traditions seem to be historically rooted, with similarities identified in the Pueblo pottery from the colonial period and pre-contact period, which has been more extensively studied. Regarding consumption, the technological analysis here suggests that most ceramics consumed at each site were produced nearby—at all four sites most ceramics contained aplastics and temper with minerals that would have been locally available. Although the technological styles of the pottery are embedded within local potting traditions, the surface treatments and decoration of New Mexican pottery at each site show similarities across the entire territory. For example, each site had its own representation of polished black wares, red-on-tan decorated wares, and unpolished buff ceramics.

Arnold (1985:144–150) notes several characteristics of use, including motor habits, dietary practices, and culinary habits that influence the form or technology of utilitarian ceramics in different cultural settings. Similarities in culinary practices or foodways may have led to broad similarities in utilitarian ceramics across settlements in New Mexico. Aesthetic continuity across the territory also indicates that there was a broader regional understanding of what pots "should look like" during this period, even among smaller rural communities such as at the Ideal Site. However, the *proportions* of different wares varied among the four sites in the sample, reflecting what was likely a recursive relationship between producer traditions and consumer demand (Sunseri 2009).

The results of the technological analysis also expose variation among the sites and begin to elucidate the range of variability within the ceramic assemblages at each individual site. For example, LA 8671 demonstrated the highest variation in paste and aplastic combinations, while the Cuyamungue sites and the Barela-Reynolds house appear to be more homogenous. Residents at LA 8671 consumed the greatest proportion of New Mexican ceramics from distant regions, while pottery at the Cuyamungue sites appears to have been very local. These results have implications regarding the number of communities of practice represented at each site, and the consumer relationships cultivated by site residents in order to acquire New Mexican pottery.

## New Mexican Historic Plain Ware Ceramics

My research focused on New Mexican historic plain wares. New Mexican historic plain wares are a class of low-fired earthenwares found at most historic sites across the region from the period of Spanish contact onwards. They most broadly encompass any ceramics from the historic period that do not have extensive painted or glazed decoration. The class may include slipped and/or polished wares, micaceous wares, or ceramics that have minor red or red-on-white slip decoration (Brody and Colberg 1966; Carrillo 1997; Dick 1968; Hurt and Dick 1946; Levine 2004; D. Wilson 2014a, 2001).

New Mexican historic plain wares can include what some researchers have called *colonowares*—which in the southwest are defined as ceramics that exhibit Spanish colonial forms such as soup plates or candlesticks, but which appear to maintain traditional indigenous American potting technology. The term colonoware is problematic for nineteenth century New Mexican ceramics, however. In the southwest, it is most often applied to pre-Revolt ceramics and some authors consider pre-revolt colonowares to be more often serving wares and specialty items, rather than utilitarian ceramics. Other researchers consider colonowares to be exclusive to the Southeastern United States where they are related to traditional indigenous and African potting techniques (Boyd Dyer 2010; Deagan 1990; Ferguson 1980; Galke 2009; Hume 1962; Penman 2002). By the nineteenth century, there were visual and functional equivalents of many New Mexican historic plain wares produced and traded throughout the territory, most likely by a range of different ethnic groups. While nineteenth century New Mexican plain wares occasionally occurred in forms introduced by the Spanish (such as pitchers and candlesticks), they are also closely tied to Puebloan or Athabaskan ceramic technologies and may demonstrate influences from Mexican majolica styles or indigenous Mexican technologies. In general, the culture history of New Mexican historic plain wares appears to be regionally distinct from the Southeast and may encompass more varied production groups than pre-Revolt ceramic production.

Kidder (1936) noted plain ceramics in historic strata at Pecos Pueblo and classified burnished culinary wares into Plain Red and Plain Black varieties. He also noted rough utilitarian wares and an un-slipped ware he identified as Heavily Striated Plain and Lightly Striated Plain (Kidder 1936). Each ware type appeared to date from approximately AD 1700/1750 until at least the abandonment of the pueblo in 1838. While Kidder did not speculate about the source and manufacture of these wares, Shepard noted that stylistically identical 'modern' wares with tuff temper also had clays with lower refractive indices, similar to other Biscuit wares, suggesting at least some tuff-tempered wares were imported from the Santa Fe region, while sand-tempered wares in both polished red and polished black forms appeared to be local (Shepard 1936:547–549).

Meanwhile, H.P. Mera (1939) also assembled data regarding historic period matte-paint polychromes and glazewares produced at northern Rio Grande Pueblos. His work included a discussion of highly polished black wares and redwares produced among primarily the Tewa pueblos after approximately AD 1700. Mera noted that among the Tewa pueblos, polished gray wares were replaced by more solidly black wares by 1720, thanks to the addition of a red slip before firing in a reducing atmosphere, and different pueblos seemed to adopt and specialize in the polished ware style at different times. Pojoaque and Nambé potters produced only polished wares by 1820. Santa Clara potters preferred to produce crenelated rims and a fully-slipped polished black ware, whereas Okhay Owingeh potters sometimes made polished red wares and sometimes only slipped approximately two thirds of the black ware vessels, creating shades of gray and black on the finished vessels.

Hurt and Dick (1946) were some of the first archaeologists to specifically identify certain wares as Hispanic-made, as well as draw attention to the wide geographic distribution of plain wares with similar stylistic qualities. Their typology was based on excavations at Quarai, southeast of Belen, surface collections and collector's materials at the nearby Hispanic village of Manzano, ceramics from excavations at historic sites in Tijeras Canyon east of Albuquerque, and surface collections from the Santa Rosa del Lima site and Casitas Viejas near El Rito in the Chama River drainage. Hurt and Dick did not consider these sites to be close to any known pottery-producing pueblo. They identified several classes of plain and micaceous ceramics: Manzano Coarse Ware, which included thick red-on-buff and incised variations, Manzano Thin Red-on-buff, Manzano Burnished Black ware, and Manzano Micaceous Ware. Hurt and Dick's initial Hispanic types addressed archaeologists' need to categorize the high number of plain wares documented at what were understood to be Hispanic or Spanish occupied sites that did not match any existing understanding of Puebloan styles or ceramic manufacture.

Dick (1968a) later expanded on this initial typology, using ceramics excavated from LA 917, Casitas Viejas near El Rito. His refined typology included six types: Casitas Red-on-Brown (equivalent to the previous Manzano Thin Red-on-Buff), El Rito Micaceous Slip, Petaca Micaceous, and Carnue Plain (equivalent to Manzano Coarse Ware). Dick also made notations on Powhoge Polychrome, as defined by Harlow (1967) and Kapo Black (which he equated to Manzano Burnished Black ware), as defined by Mera (1939). Many of Dick's refined types are still used by some archaeologists, particularly Carnue Plain, Casitas Red-on-Brown (or tan, or buff), and sometimes Manzano Black (Boyd 1986; Carrillo 1997; Franklin 1997, 2007; Heffington 1992; Jenks 2011; Kurota 2013a; D. Wilson 2001).

As broader theoretical interests in the archaeological discipline came to focus more on ethnicity, identity, and ethnogenesis, it is not surprising that much of the research regarding New Mexican historic plain wares attempted to find ceramic characteristics that could be used to define "Pueblo" or "Hispanic" manufacture. Attempts to differentiate between ceramics made by either culture group drove many studies of the physical characteristics of New Mexican plain ware ceramics. Levine (1990, 2004) looked at the temper and slip of ceramics from two Hispanic sites: the La Puente site near Chama had several distinguishable components that dated to approximately 1770–1810 and the Trujillo house site, occupied between the 1840s and 1900s, although many artifacts came from a borrow pit feature that most likely dated to 1885 and later (Boyer 2004a; Levine 2004). She concluded that the slip and temper were too different for the ceramics to have been made by nearby Tewa groups and were therefore likely Hispanic. Levine (1990) also suggested that it seemed that ceramics were often classified as 'Hispanic' based on a lack of Pueblo correlates. Two years earlier Olinger (1988) performed X-ray fluorescence analyses on presumed historic Tewa and Hispanic pottery at Los Alamos Laboratories and found that the pastes were chemically indistinguishable and both groups probably used the same clay source. During the same period, David Snow (1984) argued that there was little or no evidence for a Hispanic ceramic tradition.

The most enthusiastic and detailed study in support of a Hispanic ceramic tradition was published by Charlie Carrillo (1997). In his survey of evidence for Hispanic pottery production and craft specialization, Carrillo defined a "New Mexican Hispanic" person as "a person who chose to live in a Hispanic manner by residing in a Hispanic village or settlement." (1997:25) and further defines this in contrast to Native American lifestyles in the region. A Hispanic person was one who lived in *placitas* rather than Pueblo or nomadic settlements, who spoke Spanish, and who practiced Catholicism rather than a Native American religion (Carrillo 1997:25). Using ethnohistorical references from 12 villages primarily in northern New Mexico and archaeological site data from several sites along the Rio Chama, Rio Pecos, and Rio Grande extending south as far as El Paso, Carrillo elaborated on the Hurt and Dick typology with several forms he also identified as being part of a Hispanic ceramic tradition. Carrillo acknowledged that this Hispanic tradition was not necessarily technologically distinct from Native American traditions since many Hispanic potters apparently learned their craft from indigenous potters. In this circumstance, it is primarily the pottery's location and context within a Hispanic settlement that is part of its definition as "Hispanic-made." Carrillo drew on two excavations as detailed case studies, whereas the other sites and villages mentioned in his state-wide survey relied on ethnohistorical references, surface surveys, or informal site visits by the author.

Continuing research in the 2000s generally demonstrated a different approach to the typology of historic New Mexican plain wares. Rather than attempting to assign formal types to culture groups and finding technological markers to discern between "Hispanic" and "Puebloan" ceramics, archaeologists began to accept that there was considerable cultural and technological blurriness present in the historic New Mexican material record. Most gray literature reports describe such sherds as "potentially made by Pueblo, Hispanic, *genízaro*, or other potters" and identification of producer ethnicity was no longer a primary research question (Anschuetz et al. 2001; Biella and Scheick 1994; Mensel and Wilson 2004; D. Wilson 2018). Within many production groups and cultures, there appears to have been a broader visual lexicon for minimally decorated pottery during the Late Colonial and Territorial periods, what Sunseri (2009:100, 128) calls "marking compatibles" after Tsing (2005). These marking compatibles have allowed archaeologists to continue using descriptive or functional-descriptive typologies where New Mexican plain wares are concerned. These establish a (somewhat) mutually understandable vocabulary among archaeologists, while acknowledging that these "types" do not have the same cultural or chronological weight as other ceramic typologies. For example, Polished Black type ceramics were found at all four sites in the sample but were produced by many different groups.

Archaeologists shifted their attention towards understanding the variation present within these compatible ceramic classes and looking at historic New Mexican lifeways more holistically. The theoretical umbrella of communities of practice—where the practice in question might be producing pottery, or living in a village, or being Hispanic—became a common framework for examining the production and use of different utilitarian ceramics as well as other activities. For example, in his re-examination of the Late Colonial site Casitas Viejas near El Rito, Sunseri (2009) collapsed many traditional typologies into broader groups defined by 'marking compatibles' and examined production characteristics such as temper and surface treatment of utilitarian ceramics, as well as intra-site discard patterns and 'hearthscapes,' which included analysis of faunal remains and cooking habits. While fully accepting the typologies of Carrillo (1997) and Brugge (1982) and their ethnic implications, Eiselt (2006) examined a range of micaceous wares from sites near Chama. Her analysis included clay and mica sourcing using INAA, examination of pottery production sites, and formal analysis of how different types of micaceous pottery fit into trade relationships between Apache and Hispanic peoples that also included imported materials and metal craft. In Atherton's (2013) examination of village lifeways at San José de Las Huertas between 1765 and 1824, she also does not use traditional typologies but rather descriptive groups to compare the variation and technological styles within each group, and she places ceramic production and consumption practices within broader community practices illustrated by ethnohistorical sources and village design. Finally, Jenks (2011) also examined communities of practice, and the practice of living and belonging to a community, in her examination of materials excavated from San Miguel del Vado along the Pecos River. Each of these studies is interested in issues of identity and interaction among the many ethnicities within New Mexico during the post-contact period, but they do not assume a one-to-one relationship between artifacts (or typologies) and singular identities.

As Boyer (2018b) points out in his reassessment of the controversy over whether there was a Hispanic tradition of ceramics, much of the disagreement in the 1990s had more to do with how researchers defined "Hispanic" and how they defined "ceramic tradition" than with variation in the pottery itself. Work in the 1990s did not closely examine the context of ceramic production and consumption during the periods in question, or the technological characteristics of New Mexican plain wares more generally (Boyer 2018b). Alternatively, work in the early 2000s closely examined contexts of historic New Mexican plain ware production and consumption in detailed analyses rooted in frameworks of ethnicity that move beyond 'either/or' dichotomies or attempting to define ethnic markers within ceramic types. However, these recent works have generally focused on single sites or regions, and close analysis of the technological aspects of New Mexican plain wares that includes comparative and inter-regional analyses, has yet to be conducted (though an exception is work by Eiselt 2006; Eiselt and Ford 2007; Eiselt and Darling 2012 focused on micaceous wares). Because of this, we still do not have a clear understanding of the cultural implications of the 'marking compatibles' of plain ware types, despite their dominance in New Mexican historic sites spanning from 1700 to 1900.

*A Note on Typology*

Attempts at formal typologies of historic New Mexican ceramics, most especially plain wares, have many problems. First, many early type descriptions were based on surface collections rather than excavated material from well-dated contexts (Dick 1968b; Hurt and Dick 1946). While some typologies were expanded with excavated materials (Ellis and Brody 1964; Ferg 1984; Kidder 1936; Levine 2004), this material was not necessarily integrated or well-tested on a regional scale. Second, without a clear research program or extensive testing regarding historic New Mexican plain wares, there has been substantial proliferation of descriptive types throughout the state, with poor understanding of how different forms of polished black wares, for example, may relate to each other chronologically or culturally.

Dean Wilson (2018) also notes several problems with previous typological systems for late eighteenth century and early nineteenth century New Mexican pottery: 1) for decorated wares, many types were defined using whole vessels, and these defining criteria cannot be easily applied to sherds, 2) many types reflect assumptions about the chronology, geographic source, or ethnic identity of producers, which have not been well-supported or rigorously tested archaeologically, and 3) traits often used to define type groups, such as paste and temper, surface treatments, and aesthetic qualities, have considerable overlap among different types of historic New Mexican plain wares (D. Wilson 2018). Wilson speculates that this high degree of overlap amongst types may reflect the economic and production circumstances of plain wares in the late eighteenth and early nineteenth centuries, described by Frank (1991, 2000), in which high demand for Pueblo-made ceramics motivated technological efficiencies, which increased similarities between different "types." Wilson notes "One result of these pressures may have been the development of a more fluid technology, resulting in a wider range of ware groups and a less direct division between specific wares than during earlier periods." (D. Wilson 2018:42).

To improve the comparability of this work with other archaeological research of New Mexican historic plain wares, I have adopted the terminology and descriptive type groups defined by OAS for the analysis of the Pojoaque Corridor Project sites, which included all of LA 160, and a large portion of the assemblage from LA 4968 (D. Wilson 2018). This is so that my analysis can be quickly and easily incorporated back into the entire assemblage analysis for LA 4968, and the results are comparative with LA 8671 and the Barela-Reynolds house site. Because the Pojoaque Corridor Project was one of the most extensive excavation and analysis projects for the early Mexican Territorial period yet completed in New Mexico, and because OAS conducts a large portion of archaeological research in New Mexico, using OAS terminology will ensure maximum compatibility with future projects as well.

Each sherd analyzed in this project was assigned to one of the OAS descriptive type groups (Table 5.2) based on interior and exterior surface treatments, texture, and firing effects, following OAS methodology. Descriptive type groups are not used in the statistical analyses in Chapter 6, nor are they considered to be necessarily informative in chronological, cultural, or geographic terms, but they represent sherds with similar visual characteristics that have been grouped to facilitate other types of functional and technological comparisons. In this chapter I will use these groups as a descriptive short-hand to discuss and analyze sherds and begin to compare site assemblages. Technological microstyles may extend across many descriptive types, and descriptive types certainly extend to many cultural and geographic areas. Indeed, each descriptive type, originally defined by OAS to discuss assemblages in the Upper Rio Grande, is also found in the assemblage at the Barela-Reynolds house and

Table 5.2. Office of Archaeological Studies Descriptive Types and Definitions.

| Type | Description | Equivalents or Sub-Types in Literature |
|---|---|---|
| Historic Polychrome | Sherds with bichrome or polychrome paint on at least one surface, or that were identified as part of a Puebloan polychrome type. When possible, specific types, such as Ogapoge Polychrome, Puname Polychrome, or Pojoaque Polychrome were identified. | Historic Puebloan polychrome types have been extensively studied and described. Frank and Harlow (1997), Harlow (1967), Batkin (1987), Chapman (1953, 1970), and Mera (1939) provide some foundational descriptions. |
| Plain Utility | Sherds that lack evidence of slip, paint, or polishing and have clear firing coloration on at least one surface | Yupa Plain (Brody and Colberg 1966)<br>Carnue Plain (Dick 1968; Hurt and Dick 1946; Kurota 2013b)<br>Carnue Utility (D. Wilson 2001)<br>Manzano Coarse (Dick 1968) |
| Polished Red | At least one surface exhibiting red slip and a polished surface. | Tewa Red (Batkin 1987, Harlow 1973: 42-43, Kidder and Shepard 1936:287-290, Mera 1939)<br>Posuge Red (Mera 1939) |
| Polished Black | Both surfaces are blackened, usually due to thick black carbon deposits over slip. At least one surface is polished. | Tewa Black (Mera 1939)<br>Kapo Black (Dick 1968: 82)<br>Plain Black (Kidder 1936:287–290; Shepard 1936:541–544)<br>Manzano Burnished Blackware (Hurt and Dick 1946:282-283) |
| Polished Gray | At least one slipped and polished surface, reduced to a gray color. This type may also encompass un-slipped and lightly smudged portions of other types of vessels. | Kapo Gray (Mensel and Wilson 2004) |
| Unpolished Buff | No paint, slip, or firing coloration. No polished surfaces. | (D. Wilson 2018) |
| Buff Undifferentiated | No paint, slip, or firing coloration. Smoothed sherds with at least one polished surface. | |
| Smudged Exterior/Buff Interior | Polished sherds with gray or black exterior surfaces and buff interior surfaces. | (D. Wilson 2018) |
| Smudged Interior/Buff Exterior | Polished sherds with gray or black interior surfaces and buff exterior surfaces. | (D. Wilson 2018) |
| Red-on-tan | Buff colored sherds with a band or decoration with red slip, often near the rim. | Casitas Red-on-brown (Dick 1968: 80-81, Carrillo 1997)<br>Manzano Thin Red-on-buff (Hurt and Dick 1946)<br>San Juan Red-on-tan (Batkin 1987, Frank and Harlow 1990)<br>Isleta Red-on-tan (Batkin 1987; McKenna 2007; D. Wilson 2001) |

Table 5.2. Continued.

| Type | Description | Equivalents or Sub-Types in Literature |
|---|---|---|
| Micaceous | Formed with highly micaceous residual pastes. | Petaca Micaceous (Dick 1968, Eiselt 2006)<br>Peñaso Micaceous (Eiselt 2006)<br>Vadito Micaceous (Alder and Dick 1999)<br>Cimarron Micaceous (Eiselt 2006; Gunnerson 1969)<br>Taos Micaceous (Ellis and Brody 1964; Woosley and Olinger 1990)<br>Ocate Micaceous (Gunnerson 1969, Eiselt 2006)<br>Tewa Micaceous (Eiselt 2006; Guthe 1925) |
| Smudged Interior/Mica Slip Exterior | Non-micaceous paste with a distinctive micaceous slip on the exterior. Slipped surfaces are often smoothed, but not polished. Interiors are polished and smudged gray to black. | Vadito Micaceous Slipped<br>Tewa Micaceous Slipped (Eiselt 2006; Olinger 1992) |
| Polished Interior/Mica Slip Exterior | Non-micaceous paste with a distinctive micaceous slip on the exterior. Slipped surfaces are often smoothed, but not polished. Interiors are polished and are not smudged. | Vadito Micaceous Slipped<br>Tewa Micaceous Slipped (Eiselt 2006, Olinger 1992) |
| Unpolished Mica Slip | At least one surface has distinct mica slip. No surface is polished. Either surface may be smudged. | El Rito Micaceous Slipped (Carrillo 1997, Dick 1968) |
| Indeterminate | Paste is carbonized, or both interior and exterior surfaces are missing, precluding identification. | |

LA 8671. Archaeologists have described very similar sherds at nineteenth century Hispanic and Native American sites across the entire state and into Arizona, California, Northern Mexico, and Texas (Brown et al. 2004; Fox and Ulrich 2008; Mabry et al. 1994; Marshall 1997; Peelo (Ginn) 2011).

## Methodology

There were two main stages of ceramic analysis in this study: initial visual analysis of a large sample of sherds (the “initial sample”), and secondary technological analyses of a smaller sub-sample of sherds (the “sub-sample”). Initial analysis consisted of macroscopic and tactile inspection of each sherd and documentation of visible characteristics of the pottery (Table 5.3). Interior and exterior surface treatments, texture, and firing effects were documented for each sherd. Sherd size, thickness, vessel form, and vessel part were noted. When forming techniques could be discerned, these were also noted.

Table 5.3. Characteristics Recorded During the Initial Analysis.

| Characteristic | Description |
|---|---|
| Descriptive type | Typological groups defined by external surface treatment characteristics such as paint, slip, polish and smudging. See Table 5.2 for descriptions. |
| Vessel Part | Body, rim, shoulder, base, etc. |
| Rim Type and Orifice Diameter | Rim shape and orifice diameter in centimeters. |
| Vessel Form | Jar, bowl, plate, etc. |
| Length x Width | In millimeters. |
| Thickness | Average thickness in millimeters, rounded to the nearest millimeter. For rim sherds, measurements were taken below the rim. |
| Aplastic type | Dominant aplastics observed through digital microscope. |
| Interior/Exterior Surface Treatment | Presence or absence of paint, slip, or glaze. |
| Interior/Exterior Surface Texture | Type and degree of smoothing, wiping, polish. May be light, medium, or heavy. |
| Interior/Exterior Firing Treatment | Presence or absence of intentional smudging or less intentional discoloration due to firing conditions ("fire clouds"). Defined as none, light smudging (incomplete discoloration), or smudged (fully blackened). |
| Formation Technique | Optically or tactically discerned formation technique such as coiling or slab construction. Based on thickness patterns, breakage patterns, or some surface textures. |

A digital microscope was used to identify a primary aplastic type for each sherd. These identifications were used to select the technological sub-sample. The technological analyses were selected to better understand different stages of pottery production: clay selection and preparation (petrography), vessel forming (X-ray imaging), and firing (refiring analysis). The methodology for each analysis is discussed in detail below.

The initial sample consisted of all of the sherds that could be identified as historic New Mexican or regionally-made ceramics from LA 8671 and the Barela-Reynolds house, and 1,726 ceramics from LA 4968, which represents 2.58 percent of the total New Mexican assemblage from that site, and 4.73 percent of the remaining un-analyzed sherds (Table 5.4). All of the New Mexican ceramics collected from LA 160 were previously analyzed after Stewart Peckham's excavations in 1959 and after OAS excavations in 2000–2001, and those data were also included in the statistical analyses and used for selecting a sub-sample for that site (Moore 2000a, 2018c).

Table 5.4. Large Initial Analysis Sample.

| Site | Ceramics Examined by Author | Ceramics Examined by OAS | Total New Mexican Historic Ceramics Analyzed | Percent of Total New Mexican Ceramics at Site |
|---|---|---|---|---|
| LA 160 | 30 (petrography sample) | 8,468 | 8,468 | 100 |
| LA 4968 | 1,726 | 47,353 | 49,079 | 58.59 |
| LA 8671 | 736 | — | 736 | 68.34* |
| Barela-Reynolds house | 659 | — | 659 | 100 |

* Note: All ceramics in Maxwell Museum collections for LA 8671 were examined. However, Brody and Colberg (1966) list 953 ceramics recovered and Ferg (1983) recovered 143 sherds). Therefore, and estimated 68.34 percent of the New Mexican ceramics were analyzed for this project.

### *Clay Selection and Preparation: Petrography*

In many cases potters must modify raw clays before they are ready for use in creating pottery. Potters may add or remove aplastics to improve the clay's plasticity, help to control shrinkage while drying and firing, or affect important characteristics in the finished pot, such as resistance to thermal shock, or evaporative cooling (Rye 1981). There are several potential techniques that may be used to ensure that aplastics and the clay body are properly mixed and sorted to meet the potter's needs. Some of the processes of clay modification are visible in a finished pot or sherd. For example, Rye notes that clay sorting techniques may be recognized by the size and distribution of clay particles, temper preparation techniques may be recognized by the shape of the aplastic fragments, or the distribution of voids may indicate the extent of kneading (Rye 1981:37–40). In this study, I used petrographic analysis of a sub-sample of sherds from each site to understand broad technological choices made by potters to select and prepare their clays for potting, and to some extent understand where the pottery may have been produced. The petrographic analysis also included digital image analysis (DIA) using high resolution scans of the thin-sections. To some extent, refiring experiments also provided some information on clay selection, as similarities in clay color after the final oxidizing soak can suggest broad similarities in clay sources (Franklin 2007).

During the initial analysis, I examined the paste of all sherds in the initial sample using a digital microscope and grouped sherds according to dominant aplastic identification, for example "coarse sand." Next, I selected a sub-sample from each identified aplastic group for petrographic analysis (Shepard 1956; Sunseri 2009). For the Barela-Reynolds house, which had a high number of initially observed aplastic types, I selected specimens from groups with more than 10 sherds identified. While at least two specimens from each aplastic group were desired, the highly fragmentary nature of the assemblages made it difficult to find two sherds that were large enough for thin-sectioning from every group. In cases with very small aplastic groups that contained only small sherds that might be fully consumed by the thin-sectioning process, only one specimen was selected to leave another sherd from that aplastic group fully intact. This resulted in a sub-sample of 29 sherds from LA 160, 40 sherds from LA 4968, 39 sherds from LA 8671, and 40 sherds from the Barela-Reynolds house (summarized in Table 5.5).

Table 5.5. Petrographic Sample.

| Optically Observed Aplastic Type | LA 160 | LA 4968 | Barela-Reynolds house | LA 8671 | Total |
|---|---|---|---|---|---|
| ash | — | — | 1 | 1 | **2** |
| ash and sand | — | — | 2 | 2 | **4** |
| basalt | — | — | — | 2 | **2** |
| crushed rock | — | — | — | 2 | **2** |
| fine tuff and sand | 5 | 6 | 5 | 2 | **18** |
| fine tuff or ash | 4 | 7 | 2 | 5 | **18** |
| granite and basalt | — | — | — | 2 | **2** |
| granite and sand w/ abundant mica | — | 1 | — | — | **1** |
| granite and sand w/o abundant mica | — | — | 5 | — | **5** |
| granite and tuff | — | — | — | 4 | **4** |
| granite w/ abundant mica | 4 | 4 | — | 1 | **9** |
| granite w/o abundant mica | 4 | 3 | — | 2 | **9** |
| gray crystalline basalt | 1 | — | — | — | **1** |
| highly micaceous residual | — | 2 | — | — | **2** |
| indeterminate | — | — | 2 | — | **2** |
| large tuff fragments | 2 | 3 | — | 1 | **6** |
| mica, tuff, and sand | 2 | 3 | — | 1 | **6** |
| mixed sand | — | — | 5 | 3 | **8** |
| mixed sand and tuff | — | — | 3 | — | **3** |
| none | — | — | 1 | 1 | **2** |
| sand | 2 | 4 | 9 | 4 | **19** |
| sand and basalt | — | — | 2 | 2 | **4** |
| sand and mica | 1 | 3 | 1 | 1 | **6** |
| sand and sherd | — | — | 2 | — | **2** |
| sherd | — | — | — | 1 | **1** |
| tuff and mica | 4 | 4 | — | 2 | **10** |
| **Total** | **29** | **40** | **40** | **39** | **148** |

Petrographic analysis was primarily oriented towards identifying the range of variation in aplastic types and clay composition (the proportions of paste, aplastics, and voids) in the ceramic assemblage at each site, rather than identifying specific source areas for ceramic types (Habicht-Mauche 1995; Mills et al. 1997; Ownby et al. 2014; Schleher et al. 2002; Shepard 1942; Warren 1976). However, because so little previous petrographic work has been done with ceramics from the study period, a full suite of petrographic data was collected for each sherd, in hopes of supporting sourcing research in the future. Qualitative and quantitative data were collected regarding aplastic type, size, shape, and distribution as well as void size, shape, and distribution (Quinn 2013; Rye 1981; Sunseri 2009; Whitbread 1989). Following Rye (1981), aplastic and void orientations were examined to understand vessel forming techniques, and these observations are discussed in the Vessel Formation section. Characteristics of the paste matrix related to firing conditions were also noted.

*Petrographic Data Collection.* Characteristics of aplastic size, shape, and distribution can also be useful in identifying clay preparation practices (Boyd Dyer 2010; Rye 1981; Schleher 2010; Schleher et al. 2002). Similar analyses have been conducted for post-contact and pre-contact Puebloan pottery in New Mexico. Shepard's original, ground-breaking petrographic work on New Mexican glazewares indicated that within identified glazeware types, pastes were very uniform (Shepard 1965:164) and she paid close attention to aspects of temper preparation and firing technology that could be discerned from petrographic analysis.

Schleher's work (2010) further supported this, showing that the proportions of aplastics, voids, and paste from San Marcos pueblo glazewares show strong similarities across both time (Glaze Periods A–F) and space (imported and locally made ceramics had similar proportions). Boyd Dyer (2010) examined Early Colonial period colonowares and glazeware bowls from four settlements and found that while clay constituents in glazewares appeared to generally be consistent pre- and post-contact, colonowares reflected different technological practices. For instance, the colonoware soup plates showed higher numbers of voids across all temper groups except augite monzonite, suggesting less preparation of the clay through wedging and kneading (Boyd Dyer 2010). Finally, Capone (Capone 1995,

2006) conducted petrographic analysis of ceramics from Glaze D through F glazewares from Abó, Gran Quivira, San Clemente, and Tenabó pueblos, and noted that changes in manufacturing seemed to indicate more expedient technology developed during the Mission Period (AD 1630–1680).

Thin-sections were produced from a sub-sample of sherds from each site, representing each optically-observed paste type and a range of identified descriptive types. Thin-sections were cut as perpendicular sections. For this project, all petrographic analysis was conducted using a Nikon Labophot 2-POL polarizing microscope with a camera attachment, available at the Ceramic Analysis Laboratory at the University of New Mexico. Digital Image Analysis (DIA) was conducted using high resolution scans from a PathScan Enabler 5 histological and geological slide scanner by Meyers Instruments. Table 5.6 summarizes the data collected for each sherd in the petrographic analysis. Both qualitative and quantitative data were collected to identify individual or related paste groups that represent different clay preparation sequences and/or material sources.

Data collected using the petrographic microscope were largely qualitative and included mineral and rock type identification and relative abundance estimates, notes regarding distribution and orientation of aplastics and voids, and matrix texture, mixing, and optical activity. Qualitative paste descriptions followed procedures outlined by Whitbread (1989) and Quinn (2013). These descriptions were cross-referenced with quantitative data regarding aplastic density and angularity collected using DIA techniques, described below.

Table 5.6. Petrographic Data Collected.

| Characteristic | Collection Method |
|---|---|
| **Aplastics** | |
| Mineral or rock types and relative abundance | Polarizing microscope |
| Shape | DIA |
| Percent of thin-section | DIA |
| Size | DIA |
| Distribution | Polarizing microscope |
| Orientation | DIA |
| **Voids** | |
| Shape | DIA |
| Percent of thin-section | DIA |
| Size | DIA |
| Distribution | Polarizing microscope |
| Orientation | DIA |
| **Matrix** | |
| Texture | Polarizing microscope |
| Percent of thin-section | DIA |
| Mixing | Polarizing Microscope |

*Note:* Digital Image Analysis (DIA).

*Digital Image Analysis.* I recorded quantitative characteristics for each specimen, including the relative percentages of aplastics, voids, and matrix for each sherd, as well as sphericity or roundness of aplastics, and the size and size distribution of aplastic grains. Traditionally, these data have been collected using comparative charts and point counting with a range of different sampling techniques (Quinn 2013; Stoltman 1989; Whitbread 1989). Point counting is arguably the most arduous and time-consuming part of petrographic analysis and archaeologists and geologists have been experimenting with image analysis alternatives since the late 1980s (Aydemir et al. 2004; Livingood and Cordell 2009; Reedy 2006; Reedy et al. 2014; Reedy and Kamboj 2003). However, in the last ten years, DIA has become an increasingly common strategy to quantify clay constituents in thin-sections, especially when used in conjunction with microscope analysis and assessment (Blanco-

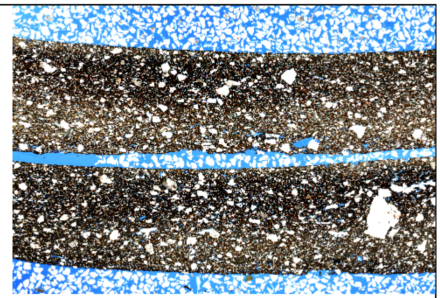
Gonzalez et al. 2014; Eramo et al. 2014; Ther 2016). DIA has several advantages: 1) the ability to quantify differences between samples based on actual pixels rather than comparisons by the analyst, which are more prone to variation among analysts, 2) the ability to generate quantitative data for a higher number of sherds more quickly. This has the potential to decrease the cost of petrographic analysis, which will hopefully allow archaeologists to increase their sample sizes when they conduct petrographic analysis. DIA removes the most time-consuming portion of petrographic analysis; 3) metrics can be produced using the entire thin-section. Point counting is a sample of the data available within the thin-section, which is itself a sample of a sherd, which is a sample of an assemblage. By maximizing the use of the data available in the thin-section, DIA can better represent variability within the sherd and assemblage. DIA methodologies, best practices, strengths, and limitations are continuing to develop as the technique is becoming more common in petrographic analysis (Reedy 2006; Reedy et al. 2014).

I collected scans with 10000 dots per inch (dpi) resolution using the PathScan Enabler 5 histographic and geological slide scanner. Livingood and Cordell (2009) noted that when using scanned images, a resolution of greater than 3200 x 1600 dpi was important for accurate analysis, while Reedy and colleagues (2014) found 5300 x 5300 dpi to be sufficient. While a range of proprietary and open-source software packages have been used by archaeologists thus far, this study used FIJI (Fiji Is Just ImageJ), a second-generation release of ImageJ. FIJI and ImageJ are Java-based open-source software from the National Institutes of Health (NIH). This software package was selected for several reasons. First, DIA is not a new technique in medical imaging or research. These disciplines rely on DIA as an important diagnostic and analysis tool and thus the software has been rigorously tested and modified over the last 30 years to become the industry standard (Schneider et al. 2012). Second, because it is open source, using FIJI will continue to keep DIA and petrographic costs down for archaeologists. Furthermore, open-source code means that archaeologists may modify or create analysis tools to meet their unique data needs.

This study followed the basic procedure outlined in Figure 5.1. Generally, DIA protocols, regardless of the software used or analysis goals consist of 1) image processing to enhance the contrast of the objects of interest, 2) segmentation to isolate those objects, and 3) measurement and quantification. *Segmentation* is the digital identification and separation, based on characteristics such as shape or color, of distinct components of the image; in this case clay matrix, voids, and aplastics, as shown in steps 3 and 4 of Figure 5.1.

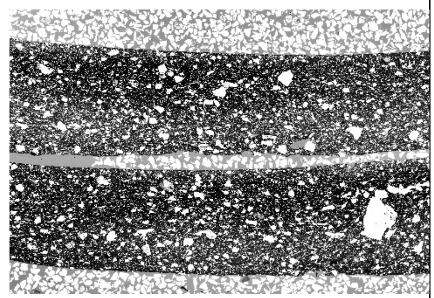
Accurate segmentation requires sufficient contrast between each group of interest. Thus, the first step in DIA was to improve the contrast and sharpness of each scan to ensure that aplastics and voids were distinct from the matrix, and that individual aplastics could be isolated and measured with high confidence. FIJI offers a wide range of tools for improving image contrast, some of which systematically change pixel values. In the high-resolution images collected in this project, the contrast between aplastics and sherd matrix was often excellent, however noise within the image affected the final segmentation and delineation of particles, so FIJI tools "Remove Outliers" and "Despeckle" were used to reduce noise in the images. Remove Outliers replaces a pixel with the median of the pixels in the surrounding area *if* it deviates from the median by more than a determined value. Despeckle is also a median filter, which replaces each pixel value with the median value within a 3 x 3 pixel area. These two tools remove noise in an image without impacting edge definition of fine and very fine-sized particles in each thin-section.

1. Thin-section is scanned under regular light.



2. The image is converted to 16-bit grayscale and noise is reduced.

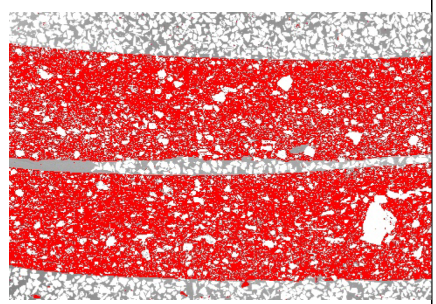
```
run("RGB Color");
run("16-bit");
run("Remove Outliers...", "radius=2 threshold=50
which=Bright");
run("Despeckle")
```



3. The image is segmented using an Automatic Threshold algorithm to isolate non-matrix (aplastics and voids) from the matrix.

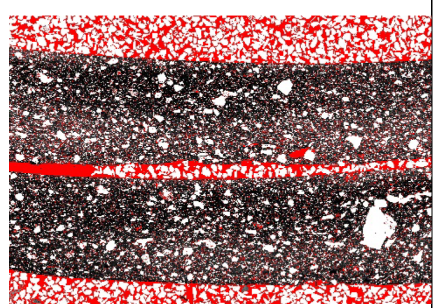
```
run("Threshold...");
setAutoThreshold("Minimum");
setOption("BlackBackground", true);
run("Convert to Mask");
```

**Li and Otsu algorithms also used as appropriate.



4. Targeted thresholding and/or analysis of voids.

```
run("Threshold...");
manually set threshold
setOption("BlackBackground", true);
run("Convert to Mask");
```



5. Analyze the size and shape of thresholded areas.

```
roiManager("Select", 59);
run("Analyze Particles...", "size=0.00-infinity circularity=0.00-1 show=[Overlay Masks] display
summarize");
```

**Figure 5.1. Work-flow for FIJI with steps and tools used.**

Researchers have used several other types of techniques to increase contrast and improve edge definition in thin-section scans, such as mathematical operators, which perform calculations using pixel values from two or more overlapped images (such as subtracting an image taken in plain polarized light from the same image with cross-polarized light, used by Aprile et al. 2014; Eramo et al. 2014), and using built-in non-linear filters that alter pixel values to enhance contrast or brightness. Experimentation with filters and automatic processes available in FIJI, such as Enhance Contrast, were found to not substantially improve the accuracy of segmentation results in the high-resolution images used in this project, and so were not applied.

Segmentation is the most important component of DIA because it is the process which identifies objects of interest that are later quantified. Segmentation is used in DIA for microscope imagery, satellite imagery, and other forms of analysis (Dey et al. 2010; Meinel and Neubert 2004; Sezgin and Sankur 2004). Because of this, there are a wide range of segmentation protocols available within FIJI and other software programs, designed to deal with different types of images and to extract different types of data. Some techniques used by analysts rely on supervised or unsupervised machine learning (Arganda-Carreras et al. 2017; Eramo et al. 2014). Segmentation based on pixel values, or color, is often called 'thresholding' wherein a threshold is identified and pixels on one side are included, while all others are excluded, creating a binary image.

Automatic thresholding algorithms were assessed for thin-section images from each site (Landini 2017). A wide range of thresholding algorithms are available through FIJI and other edge-finding and segmenting software. Some plugins offer options to identify and train custom thresholding techniques using machine learning strategies, such as the WEKA Segmentation plugin (Arganda-Carreras et al. 2017). FIJI also offers manual thresholding options in both color and grayscale options. Because a single thresholding algorithm can rarely perform well for every type of image, a range of color thresholding and shape-based thresholding algorithms were visually assessed using thin-section images from a variety of paste groups from each site (Sezgin and Sankur 2004). The algorithm Minimum was found to most accurately separate matrix from non-matrix pixels for the Barela-Reynolds house and LA 8671. The algorithm Li was found to be effective for the high-density ashy pastes of LA 160 and LA 4968. Otsu was also used on some paste groups. Each of these algorithms are available within the Auto Threshold plug-in for Fiji (Landini 2017). Although manual thresholding is generally discouraged due to its difficulty with reproducibility and the potential for user-bias (see Brocher 2017), it was necessary for segmenting voids from aplastics and matrix. LA 160 and LA 4968 thin-sections were stained, which created a small range of pixel intensity for voids, which could be easily segmented using manual thresholding and an examination of the grayscale histogram for each sherd. LA 8671 and Barela-Reynolds house samples were not stained and were manually segmented using visual inspection.

After thresholding, characteristics of size and shape for matrix and non-matrix particles within the thin-section can be calculated using the Analyze Particles function. This function identifies edges and enclosed particles within a binary image and performs quantitative calculations on each identified particle. Data were collected regarding non-matrix particle Area, Circularity, Aspect Ratio, Solidity, and Roundness. While none of these measures uses the precise equations used by the popular Powers Roundness Scale (Powers 1953), a combination of Circularity, Roundness, and Solidity (Table 5.7) are comparable measures and can be more consistently applied.

Table 5.7. Shape calculations used within FIJI.

| Circularity | Roundness | Solidity |
|---|---|---|
| $4\pi(\frac{[area]}{[perimeter]^2})$ | $4\ (\frac{[area]}{\pi[major\ axis]^2})$ | $(\frac{[area]}{[convex\ area]})$ |

Unstained voids in the LA 8671 and Barela-Reynolds house thin-sections were also identified within the non-matrix threshold by using the Analyze Particles function. Voids in the thin-sections for these sites were observed to be consistently elongated and larger than most aplastics. Therefore, they could be identified and measured separately using more narrowly identified Circularity and Size parameters in the Analyze Particles function. For LA 4986 and LA 160, thin-sections with blue stained epoxy were acquired, and these voids were easily segmented based on pixel values (color). In other ceramic analyses, voids are not always so clearly delineated by shape or size, and Eramo and Aprile (2014) and Marinoni and colleagues (2005) provide methodologies to segment voids using mathematical operators.

While I designed the DIA to collect data similar to those acquired through point-counting methods, there are certain qualitative and quantitative differences between the datasets produced by the two methods, and DIA has its own weaknesses and caveats. Both methods essentially produce a picture of paste constituents—matrix, aplastics, and voids—which can be presented as ratios. However, point-counting relies on a sample within the thin-section, and DIA, using the Particle Analysis tool within FIJI, is able to count and measure every single segmented particle. The size of the particles counted is only limited by the resolution of the original image, the quality of the segmentation in identifying the objects of interest, and any size thresholds placed on the Particle Analysis process. This can result in the identification and analysis of tens of thousands of particles within a single thin-section.

There are some patterns that can introduce small amounts of error into object identification. Some aplastic particles along the edges of thin-sections were likely left out of the particle analysis because they could not be differentiated from the slide background during segmentation. Also, particle counts may be slightly inflated when large aplastics with heterogenous colors or textures were segmented as several smaller particles and voids. This type of error may have been more common among some Barela-Reynolds house sherds, where large grains of volcanic sand had mottled color patterns. Alternatively, in the unstained sherds from the Barela-Reynolds and LA 8671 thin-sections, quartz and voids generally had the same pixel values (color). They could easily be distinguished during segmentation and analysis based on shape, except when they were directly contiguous. Contiguous quartz particles and voids were more likely to be identified and quantified as a single aplastic entity, which would slightly inflate the aplastic ratios for these sherds, while depressing the void ratio. Generally, however, these types of misidentification are unlikely to have altered the number of identified particles or the area of identified particles by more than five percent. In other DIA studies with more complex tasks of identifying types of mineral inclusions as well as matrix and voids, the error rates for misidentifications have generally been 0.3 and 6 percent (Aprile et al. 2014; Aydemir et al. 2004; Livingood and Cordell 2009; Marinoni et al. 2005). In cases where a high level of error was suspected, individual thin-sections were not included in the DIA or presented averages for paste groups. There were seven thin-sections where accurate particle analysis was not possible due to these segmentation constraints.

For this analysis, no size parameters were used in the initial matrix/non-matrix analysis, although size and shape parameters were used to identify voids for the Barela-Reynolds and LA 8671 thin-sections. The result is that the Particle Analysis process returned between 6,771 and 78,776 particles analyzed per specimen. However, between 1 and 33 percent of these particles had a long dimension of 62.5 micrometers or less (0.0025 inches), which is identified as silt on the Wentworth Scale. Silt particles were counted during the initial particle analysis, but since they most likely reflect natural inclusions, they are included as part of the matrix in the ratios presented in Appendix B, Table B.1. The identification and quantification of silt particles is useful, however, in comparing clay textures between specimens and potentially offers an additional avenue for defining paste groups and clay sources.

*Vessel Forming: X-rays and Thin-sections*

Sometimes vessel forming techniques can be determined based on visual and/or tactile characteristics or from studying sherd breakage patterns. When possible, these characteristics were used to identify vessel forming techniques for sherds during the ceramic analysis of the initial sample. However, many forming techniques are not immediately visible on a finished vessel. Rye noted that without the use of some instrumentation, nearly 90 percent of sherds do not display any evidence of forming techniques (Rye 1977). Furthermore, Berg (2008) noted that visual and tactile analyses are more likely to identify secondary and finishing techniques rather than primary forming techniques. In a radiographic image, patterns can be seen in ceramic density, in the form of seams, joins, coils, or paddle impacts, or in the alignment of inclusions and voids, indicating clay processing and shaping (Rye 1977). For these reasons, radiography (both X-ray and computed tomography) was recognized as a useful method for examining ceramic vessel structure and archaeological interest has been consistent since the 1970s (Adan-Bayewitz and Wieder 1992; Berg 2008; Berg and Ambers 2017; Carr 1990, 1993; Greene et al. 2017; Sanger et al. 2013; Vandiver 1987, 1988; Vandiver et al. 1991).

Prior to preparing thin-sections, I selected large sherds in the sub-sample, as well as any large sherds or identifiable vessel portions such as rims and necks, shoulders, and bases, for X-ray analysis. Portions such as shoulders and bases were selected because they are more likely to demonstrate details of vessel construction, such as seams or specific shaping techniques. Table 5.8 summarizes the X-ray sample. I captured all X-ray images at the University of New Mexico Hospital Outpatient Surgery and Imaging Services (OSIS) center with the assistance of Dr. Philip Heintz and Daniel Sandoval. Initial testing and calibration were done using two digital fluoroscopy units and a digital radiography unit. After review, it was determined that for the purposes of this project, there was no real difference in contrast and resolution between the images produced by the two units. Therefore, a Philips Medical Systems DigitalDiagnost fluoroscopy unit with Eleva01 software was used for all subsequent imaging.

Table 5.8. X-ray Sample.

| Site<br>Form | Thickness (mm)<br>3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | Indet. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LA 160** | **—** | **—** | **3** | **3** | **13** | **4** | **6** | **—** | **—** | **—** | **1** | **30** |
| bowl | — | — | 2 | 2 | 6 | 1 | 2 | — | — | — | — | 13 |
| indeterminate | — | — | — | — | 2 | 2 | 1 | — | — | — | — | 5 |
| jar | — | — | — | 1 | 4 | 1 | 3 | — | — | — | 1 | 10 |
| plate | — | — | 1 | — | 1 | — | — | — | — | — | — | 2 |
| **LA 4968** | **—** | **2** | **7** | **5** | **10** | **8** | **5** | **3** | **2** | **—** | **2** | **44** |
| bowl | — | 1 | 5 | 2 | 6 | 2 | 3 | — | — | — | — | 19 |
| indeterminate | — | — | 1 | — | — | — | — | 1 | — | — | 2 | 4 |
| jar | — | 1 | 1 | 3 | 2 | 6 | 2 | 2 | 2 | — | — | 19 |
| plate | — | — | — | — | 2 | — | — | — | — | — | — | 2 |
| **Barela-Reynolds house** | **1** | **—** | **1** | **4** | **9** | **7** | **3** | **2** | **—** | **1** | **—** | **28** |
| bowl | — | — | — | 3 | 3 | 2 | 2 | 1 | — | — | — | 11 |
| indeterminate | 1 | — | — | — | 1 | — | — | — | — | — | — | 2 |
| jar | — | — | — | 1 | 5 | 5 | 1 | 1 | — | 1 | — | 14 |
| plate | — | — | 1 | — | — | — | — | — | — | — | — | 1 |
| **LA 8671** | **—** | **—** | **9** | **13** | **10** | **3** | **1** | **1** | **—** | **—** | **—** | **37** |
| bowl | — | — | 2 | 6 | 3 | 3 | — | — | — | — | — | 14 |
| indeterminate | — | — | — | — | 1 | — | — | — | — | — | — | 1 |
| jar | — | — | 6 | 5 | 6 | — | 1 | 1 | — | — | — | 19 |
| plate | — | — | 1 | 2 | — | — | — | — | — | — | — | 3 |
| **Total** | **1** | **2** | **20** | **25** | **42** | **22** | **15** | **6** | **2** | **1** | **3** | **139** |

Initially, I took test images using six sherds with known forming techniques: modern wheel-thrown, paddle and anvil, coiled with a scraped interior and exterior, coiled with a scraped interior, un-scraped corrugated, and slab-built. Figure 5.2 clearly shows the differences between each forming technique as visible in the fluoroscopy.

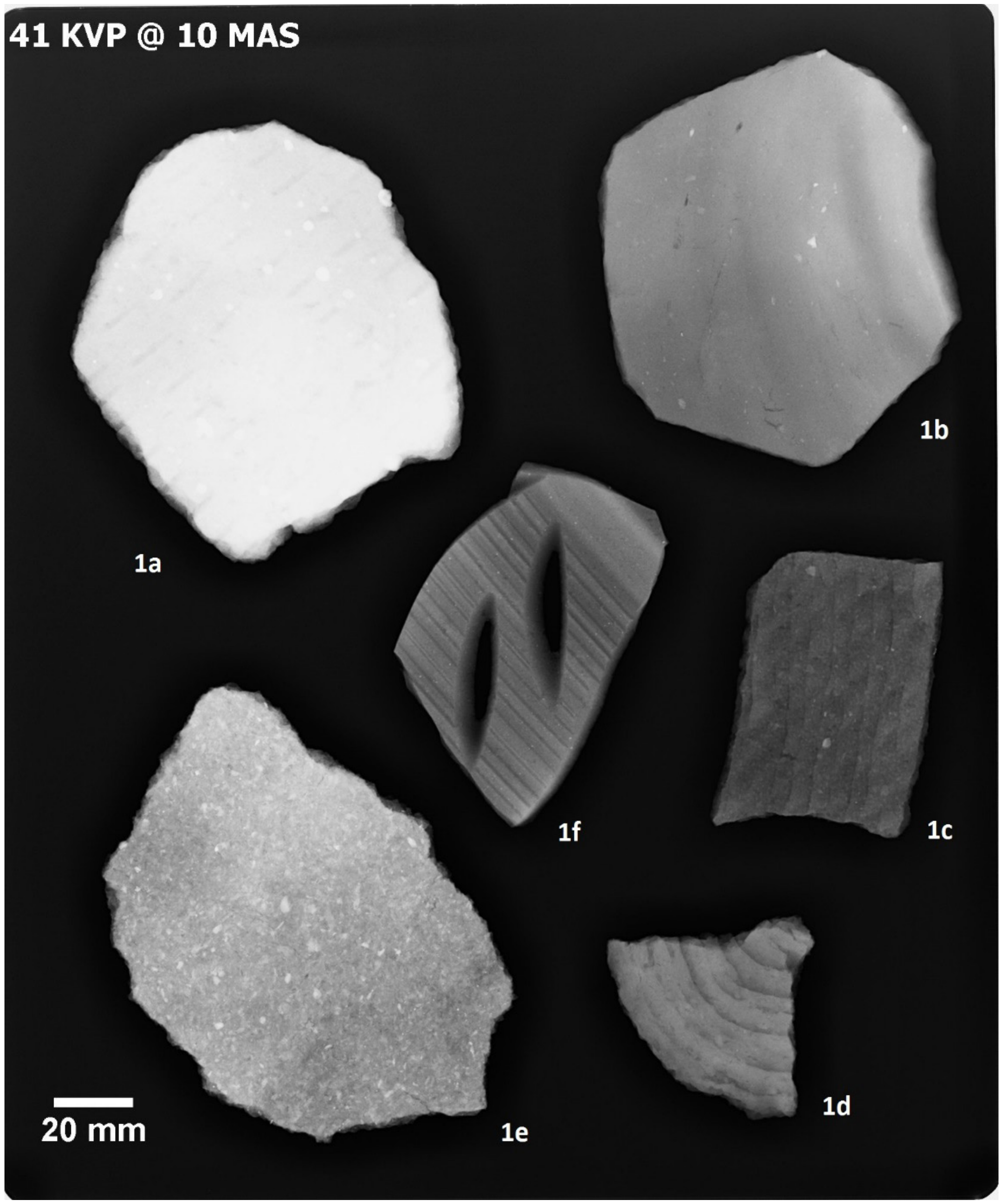



**Figure 5.2. Unmodified X-ray images of six test sherds. Clockwise from upper left corner: (a) sherd from a slab built vessel (97.2 x 85.5 x 10.7 mm thick); (b) coiled vessel sherd that was scraped internally and externally (82.4 x 96.4 x 3.6 mm thick); (c) corrugated coiled vessel sherd with internal scraping (64.2 x 46.1 x 2 mm thick); (d) coiled vessel base sherd with no scraping (61.9 x 47.6 x 4.4 mm thick); (e) sherd from a vessel thinned with paddle and anvil techniques (122.7 x 84.7 x 3.8 mm thick); (f) wheel formed vessel sherd with incised decoration (76.7 x 55.8 x 2.5 mm thick). All sherds are from the sample collection at the UNM Laboratory for Ceramic Analysis.**

Images were taken using a range of different kilovolt (kV) and milliAmphere seconds (mAs) settings to determine the best arrangement for high contrast penetration of the clay matrices in the sample. A low energy X-ray beam provides increased contrast but potentially decreased penetration. A higher energy beam will more fully penetrate a given sherd, but the image will lack the contrast needed to distinguish details such as inclusion and void alignments. Because the instrumentation was digital in nature, there were no film or cost constraints in the number of exposures taken.

The fluoroscopy instrument was set to a "hand" protocol for all X-ray images to achieve the best possible resolution. Hand X-rays generally deal with the smallest bones in the body and therefore the hand protocol is designed to offer high contrast and resolution. At 41kV, these settings provided sufficient contrast and resolution to observe forming techniques indicated by subtle differences in clay thickness as well as temper alignment and distribution.

*X-ray Image Analysis.* The ability to digitally process images to enhance contrast, magnify, and otherwise overcome the deficiencies inherent in "raw" imagery is an additional benefit to digital radiography. All image analysis and adjustment in this project was also done using ImageJ v.1.47 and v.1.51h (FIJI). Image adjustments made in this project were primarily oriented towards enhancing image contrast in two ways: 1) manipulating the pixel intensity histogram through equalization or histogram stretching functions, or 2) altering the color representation of the pixels using look-up tables (LUTs) also included in ImageJ. Equalization and stretching formulaically alters the pixel values whereas changing the colors with an LUT does not change the actual intensities of the pixels—it merely replaces the shades of gray with an alternate color spectrum, such as orange to blue, which helps the eye perceive more features and characteristics indicative of forming techniques (Figures 5.3 and 5.4).

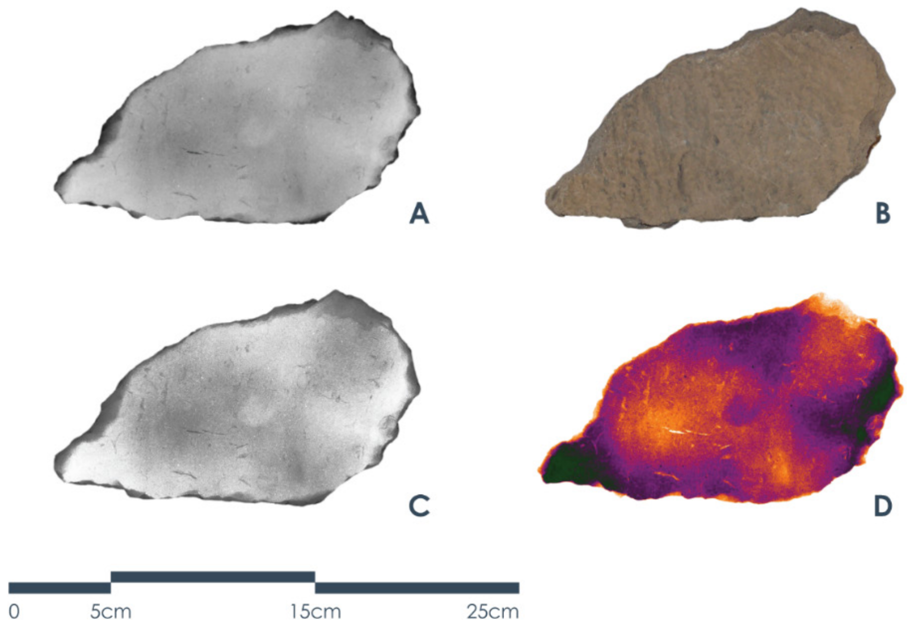



**Figure 5.3. X-ray image modification: (a) unmodified X-ray image; (b) regular photograph; (c) X-ray image with enhanced contrast; (d) X-ray image with color modification.**

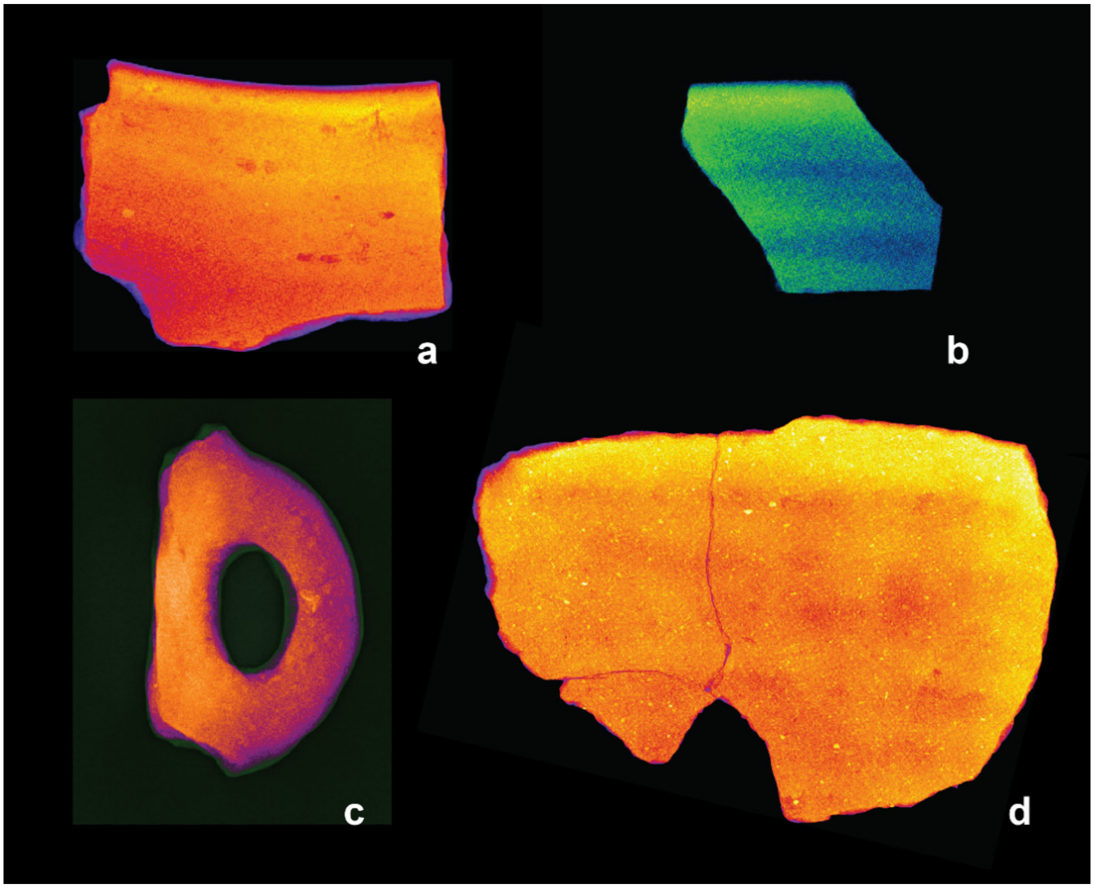



**Figure 5.4. X-ray images showing color modifications: (a) LA 4968 specimen 3053 (43 mm wide x 56 mm long x 4 mm thick); (b) Barela-Reynolds house specimen 205 (66 mm wide x 55 mm long x 6 mm thick); (c) LA 160 specimen 3337 (29 mm wide x 45 mm long, thickness not taken); (d) LA 8671 specimen 753 (154 mm wide x 111mm long x 5 mm thick). Images are not to scale.**

*Thin-sections and vessel formation.* Whenever possible, thin-sections were cut tangential to the vessel rim, providing a vertical cross-section of the clay paste. With this orientation, coil techniques may be visible as circular orientations of voids and inclusions in the thin-section, with relic coils, or as randomly oriented inclusions and voids (Rye 1981). If elongated voids are oriented horizontally be coil construction, they would appear as short, rounded voids with equal dimensions in a tangential cross-section. Alternatively, slab, pinch, and wheel techniques would appear in thin-sections with elongated voids, oriented parallel to the vessel rim (perfect preferred orientation, according to Rye 1981). Wheel-made vessels may have a slight upward angle to parallel voids, towards the outer edge of the sherd.

Generally, X-ray images and void orientation in thin-sections is not a definitive measure of vessel manufacturing methodology. Often different techniques are used in different parts of the vessel, and these imaging strategies only capture a portion of the vessel. Furthermore, secondary forming techniques can potentially obscure characteristics of primary techniques. However, general trends within each site sample assemblage can be observed to understand the variation in forming techniques in use in different regions of New Mexico during the territorial period. Formation strategy is often considered highly conservative within ceramic production (Gosselain 1998), and it is an important component of understanding production groups and learning lineages within historic New Mexican pottery.

*Surface Treatments: Initial Optical Analysis*

Surface treatments were documented using visual inspection for four characteristics: interior and exterior decoration, and interior and exterior surface texture. These characteristics were documented by myself or OAS for all 58,942 sherds in the initial sample. Surface treatments are a detailed break-down of traits that are most commonly used to define New Mexican utility ware “types” including descriptive types used by OAS and this analysis (D. Wilson 2018:296). Characteristics were intentionally separated into interior and exterior data fields to measure variation that is acknowledged within and between descriptive types, but rarely quantified. For example, Kapo Black is sometimes considered to have a higher polish on the exterior than other regional variants of burnished black wares (D. Wilson

2001:46), and Atherton describes what may be a continuum in the degree of surface striations between Kidder's striated plain wares and Carnue Plain (Atherton 2013:119).

Interior and exterior decoration were documented as None, Painted, Glazed, or Slipped. In some cases, the type or color of slip was distinguished, creating categories for Mica slipped, Red Slipped, or White Slipped. Sherds that are slipped, then smudged to black, where merely categorized as Slipped. Interior and exterior texture categories are qualitative and somewhat subjective, but were identified to categorize the level of effort and type of texture created on the vessel surfaces. These were documented as Rough, Scraped, Wiped, Smoothed, Highly Smoothed, Lightly Polished, and Highly Polished (Table 5.9).

For LA 160 and much of LA 4968, these data were extrapolated from OAS analysis, in which characteristics were either directly described in the Interior or Exterior data fields, or were encoded in the descriptive type assignment (i.e. Polished Black wares were extrapolated as "Polished" for the exterior texture data category, based on the given OAS definition of the Polished Black descriptive type).

Table 5.9. Surface Treatment and Texture Definitions.

| Characteristic | Definition |
|---|---|
| | Surface Treatments |
| None | No surface treatment |
| Glazed | Glaze |
| Slipped | Slip applied, smudged to black |
| White Slipped | Includes white, cream, beige, and fawn colors |
| Red Slipped | Slipped and fired in an oxidizing atmosphere. Red or orange colored |
| Mica Slipped | Applied mica slip, does not include ceramics made with micaceous pastes |
| Painted | Includes bichrome and polychrome designs |
| Indeterminate | Surface treatment cannot be determined, usually used on carbonized sherds. |
| Gone | Surface has eroded away. |
| | Surface Textures |
| None | No texture modification |
| Rough | Surface texture is very uneven, lumpy |
| Scraped | Surface has been modified with an uneven tool, such as a corn cob, to produce regular visible striations. |
| Wiped | Surface has very minor regular striations, indicating it was wiped when wet. |
| Lightly smoothed | Striations and lumps have been smoothed from surface, but coarse texture may remain. |
| Smoothed | Surface has been smoothed to an extent that temper does not affect surface texture. |
| Highly Smoothed | Surface has been smoothed to the point that it is soft to the touch, but no polishing or burnishing. |
| Lightly Polished | Some burnishing is visible, but it does not cover every surface—slightly streaky. |
| Polished | Burnishing covers all surfaces but does not have a high shine. |
| Highly Polished | Burnishing covers all surfaces and is reflective. |
| Indeterminate | Surface is covered in soot or otherwise carbonized and treatment cannot be determined. |
| Gone | Surface has eroded away. |

*Refiring*

Basic information on refiring environments such as an oxidized or reducing atmosphere, was collected during the initial sample by noting the interior and exterior firing treatment of each sherd. Categories included none, Lightly Smudged (fire clouds and light gray smudging) and Smudged (blackened). Data regarding approximate maximum firing temperature were collected through the examination of firing cores in sherd profiles from the sub-sample, and by refiring chips from sherds from the sub-sample to determine at what temperature the clay became fully oxidized and at what temperature there were measurable changes in paste color and hardness (Rye 1981; Shepard 1956). Examination of the colors of fully oxidized pastes were also used to compare the basic mineralogical similarities of the clays (Franklin 2007). Changes in paste color were documented using a Munsell Color Chart and changes in hardness were documented using Moh's Hardness picks.

Seventy-eight specimens representing at least one sample from each paste group identified during petrographic analysis were refired for five minutes at temperatures between 500° C and 900° C, at 50-degree increments. In almost all cases, 1 $cm^2$ chips were taken from the same sherds used for petrographic analysis. Color and hardness changes in paste and outer slip or paint (if present) were noted after each refiring. Then, sherds were fired for 30 minutes at 950° C to fully oxidize any remaining carbonaceous material in the clays, and paste color and hardness were again recorded for comparison.

## Results

*LA 160*

*Clay Preparation and Petrographic Results.* LA 160 and LA 4968 are both located within the Española Basin, one of a chain of north-south trending basins along the Rio Grande Rift, a geologic feature which stretches the full length of New Mexico from the San Luis Valley in the north to El Paso in the south. This rift dominates the geological development along the Rio Grande and discussion of all four sites in the study and so a brief summary of rift basin development and in-fill will be discussed here, although the principles apply to all four sites.

The Rio Grande Rift is a 550 km long geologic feature that now frames a series of interconnected basins, including the Española Basin and the Albuquerque Basin, near LA 8671. The basins generally began to open and subside due to rift activity during the Miocene and Pliocene. Basin in-fill, primarily rock debris eroded from surrounding highlands and mountain units, but also including aeolian, fluvial, and alluvial sediments, continued through the Miocene into the early middle Pleistocene in most basins (Pantea et al. 2011). Collectively known as the Santa Fe Group (SFG), in-fill deposits vary between 1,220 and over 3,048 m in depth and are generally divided into lower, middle, and upper units (abbreviated as LSF, MSF, and USF) (Hawley and Lozinsky 1992).

Individual basin sedimentary characteristics and exposures that might have provided clay and tempering material for ceramics are based on local sedimentary deposits, interbedded volcanic material from surrounding uplands, and aeolian deposition. Washed volcanic sand, possibly from the SFG, is a dominant aplastic in sherds at LA 8671 and the Barela-Reynolds house and was common in LA 160 and LA 4968. The Española Basin is also defined by a series of volcanic events, which introduced volcaniclastic sediments, ash fall, and tuff among layers of basin fill. Finally, fluvial transport along the Rio Grande can move materials from north to south along the state, such that pumice or obsidian from the Jemez region and the Española Basin can be found in deposits in the Mesilla Basin, over 483 km (300 miles) to the south (Hawley and Lozinsky 1992).

The Española Basin encompasses the area east of the Rio Grande, west of the Sangre de Cristo mountains, north of Santa Fe, and south of Española. This is the original type area for the Santa Fe Group, although the Group definition has been used very broadly by New Mexico geologists and has also been applied to infill in the Mesilla Basin (Galusha and Blick 1971). The Pojoaque area is defined by two main geologic categories: 1) sedimentary rocks and alluvium in the stream valleys, which include much of the Santa Fe Group and can be up to 1,220 m deep and 2) older crystalline rocks; mostly granite, gneiss, and schistosic rocks that generally occur in the Sangre de Cristo mountains and are washed into the Pojoaque areas along alluvial plains and tributary streams that extend to the Rio Grande river (Trauger 1967). Here the Rio Grande Group, which includes the Tesuque Formation at its top, consists of soft arkosic silty sandstone, micro-conglomerates, and siltstone with ash and/or clay interbedded. The component sediments are derived from the crystalline rocks of the Sangre de Cristo mountains, and manifest as granitic sand with quartz, plagioclase, orthoclase and high amounts of mica.

OAS and Stewart Peckham recorded initial analysis characteristics for 8,487 sherds from LA 160. There are 2,471 sherds from Peckham's sample where temper was not recorded, and 9 prehistoric sherds collected from the site that are not discussed here. Of the remaining 6,007 sherds, OAS identified 15 temper groups through optical and microscope analysis. The largest temper group was Fine Tuff or Ash, representing 34.24 percent of the assemblage. These are most likely local wares made with Española Basin clays. Granite with Abundant Mica and Granite without Abundant Mica are the next most common temper types, representing 23.32 percent and 17.62 percent, respectively. Fine Tuff and Sand represented 12.13 percent of the assemblage. All other temper groups contained less than 5 percent each of the assemblage, Highly Micaceous Residual Paste, Large Tuff Fragments, Sand and Mica, Gray Crystalline Basalt, Fine Sandstone, Basalt and Sand and Sherd and Sand each are represented by fewer than 100 sherds. The distribution of optically recognized tempers by descriptive type are presented in Appendix B, Tables B.2 and B.3.

Each dominant temper group has varied representation among descriptive types. Some sherds from each descriptive type contain Fine Tuff or Ash temper, or Granite without Abundant Mica. However, most descriptive types at LA 160 were clearly dominated by a single temper group. Smudged Interior/Mica Slip Exterior, the most common descriptive type at LA 160, is overwhelmingly tempered with granite, with or without abundant mica, as was Polished Interior with Mica Slip. Ceramic groups that OAS identifies as Tewa Polychromes and Tewa Plain Wares, (including Polished Black, Polished Gray, and Polished Red wares, and Buff Utility wares) were tempered primarily with Fine Tuff or Ash, or Fine Tuff and Sand, with only slight representation from other temper groups (D. Wilson 2018). Wilson considers the wares with micaceous slips to be consistent with other micaceous utility wares known to be produced by Tewa potters as well. Nambé, Pojoaque, and Tesuque pueblos in particular were known for using sand and granites for temper in micaceous wares (Mera 1939; D. Wilson 2018) and Eiselt (2006:527) describes micaceous wares from Ohkay Owingeh as having arkosic sand temper. This suggests that the majority of the LA 160 New Mexican historic pottery came from nearby Tewa potting communities.

A total of eight distinct paste and temper groups were identified in the petrographic sub-sample from LA 160 (Table 5.10). Paste Group 1 is further divided into two closely related subgroups, Paste Group 1 and Group 1a. Full descriptions of paste groups and quantitative information for individual specimens are in Appendix B.

All of the paste groups from both LA 160 and LA 4968 were characterized by dense, well-mixed clay, with very few irregularly shaped voids. The few observed voids were probably related to the burn-out of organic material. Many paste groups from both sites are dominated by pastes that appear to be naturally tempered with either very fine vitric ash, very fine quartz-feldspar sand, or some combination of the two. Most paste groups from LA 160 had between 70 and 80 percent matrix, although Paste Group 1a had an average 68.4 percent matrix, and Paste Group 4, represented by one sherd, had 91.8 percent matrix (Figure 5.5).

Paste Groups 1 and 1a are two possibly related sub-groups with medium-sized subrounded granite or monzonite sand temper with occasional volcanic lithics. These groups appear to be roughly equivalent to Paste Groups 1 and 1a from nearby LA 4968 and may represent similar clay sources and technological traditions. The groups encompass a continuum between very fine ash and very fine quartz-feldspar sand in the fine-sort materials, with Paste Group 1 having primarily ash and very fine sand in equal amounts, whereas pastes in Paste Group 1a have primarily vitric ash and almost no very fine-sized sand. This may suggest that Paste Groups 1 and 1a are similar technological traditions, using two related clay sources—one with very fine sand present and one without.

Table 5.10. LA 160 Paste Groups.

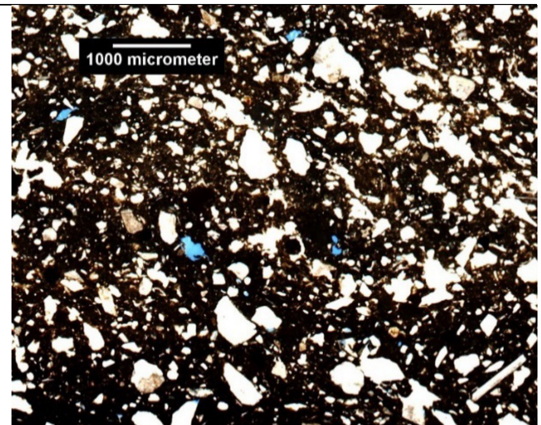
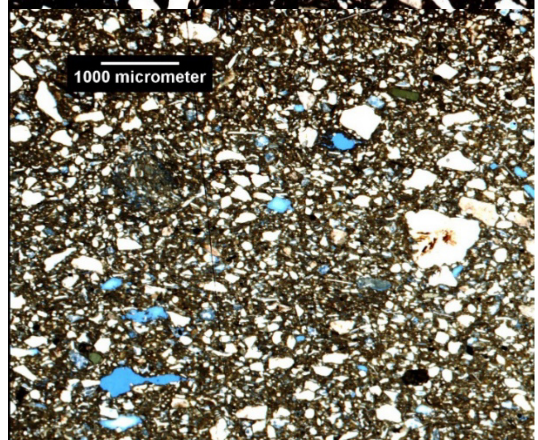
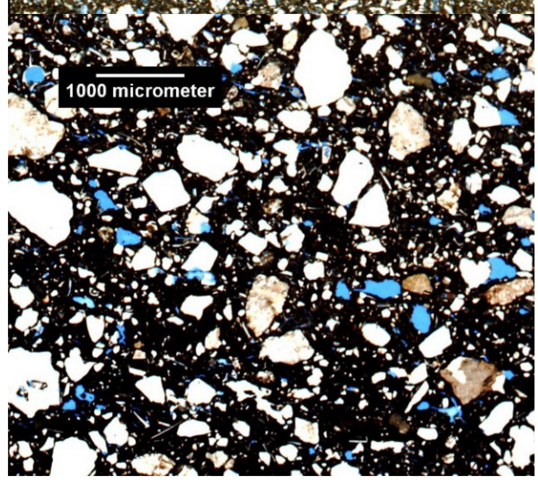
| Paste Group | Description | Specimens | Type | Example Photo |
|---|---|---|---|---|
| Paste Group 1 | Moderately dense sub-rounded granite/augite monzonite sand temper. | 3311<br>3314<br>3319<br>3325<br>3340 | Unpolished Mica Slip<br>Polished Interior/Mica Slip Exterior<br>Smudged Interior/Mica Slip Exterior<br>Smudged Interior/Mica Slip Exterior<br>Unpolished Buff |   |
| Paste Group 1a | Similar to Group 1, with a greater percentage of aplastics, particularly coarse sand. | 3322<br>3324<br>3330<br>3333<br>3335 | Smudged Interior/Mica Slip Exterior<br>Smudged Interior/Mica Slip Exterior<br>Polished Interior/Mica Slip Exterior<br>Unpolished Buff<br>Smudged Interior/Mica Slip Exterior |   |
| Paste Group 2 | Very dense ashy sandy paste. Apastics are very fine and most likely natural additions. | 3312<br>3315<br>3316<br>3318<br>3320<br>3321<br>3328<br>3331<br>3332<br>3334<br>3336<br>3339 | Red-on-Tan<br>Polished Gray<br>Polished Red<br>Polished Red<br>Historic Polychrome<br>Historic Polychrome<br>Polished Red<br>Red-on-Tan<br>Red-on-Tan<br>Polished Black<br>Buff Undifferentiated<br>Historic Polychrome |   |

Table 5.10. Continued.

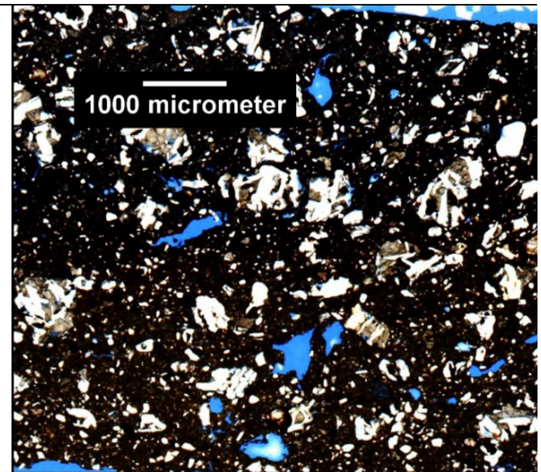
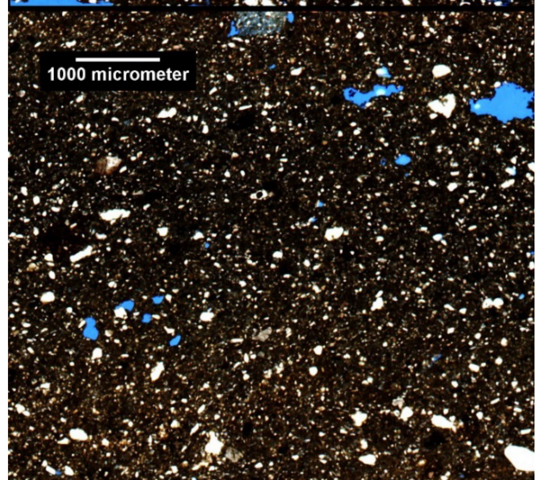
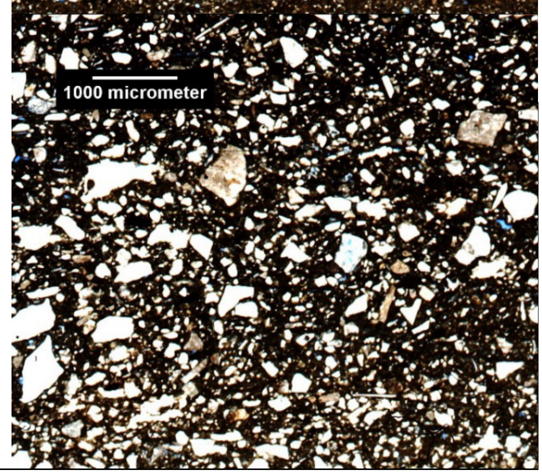
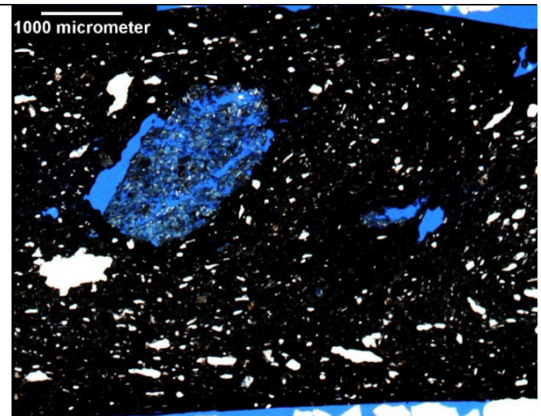
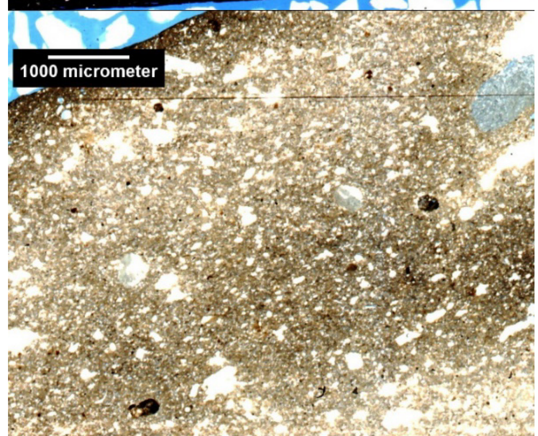
| Paste Group | Description | Specimens | Type | Example Photo |
|---|---|---|---|---|
| Paste Group 3 | Dense gritty paste with crushed basalt temper. | 3313 | Puname polychrome |   |
| Paste Group 4 | Dense ashy sandy paste with some mica. Probably related to Paste Group 2 | 3338 | Historic Polychrome |   |
| Paste Group 6 | Silty, ashy matrix with crushed granite or gneiss temper. Possibly from a severely weathered residual clay source. | 3317<br>3323 | Smudged Interior/Mica Slip Exterior<br>Unpolished Mica Slip |   |

Table 5.10. Continued.

| Paste Group | Description | Specimens | Type | Example Photo |
|---|---|---|---|---|
| Paste Group 7 | Paste with very fine ash and degraded mica with sparse very coarse and granule-sized rounded particles of tuff or scoria | 3326 | Polished Red |  |
| Paste Group 8 | Exceedingly fine ashy paste with almost no aplastics | 3329 | Polished Red |  |
| Paste Group 9 | Silty paste with little to no ash and small amounts of angular granite and volcanic lithic temper | 3327 | Unpolished Mica Slip |  |

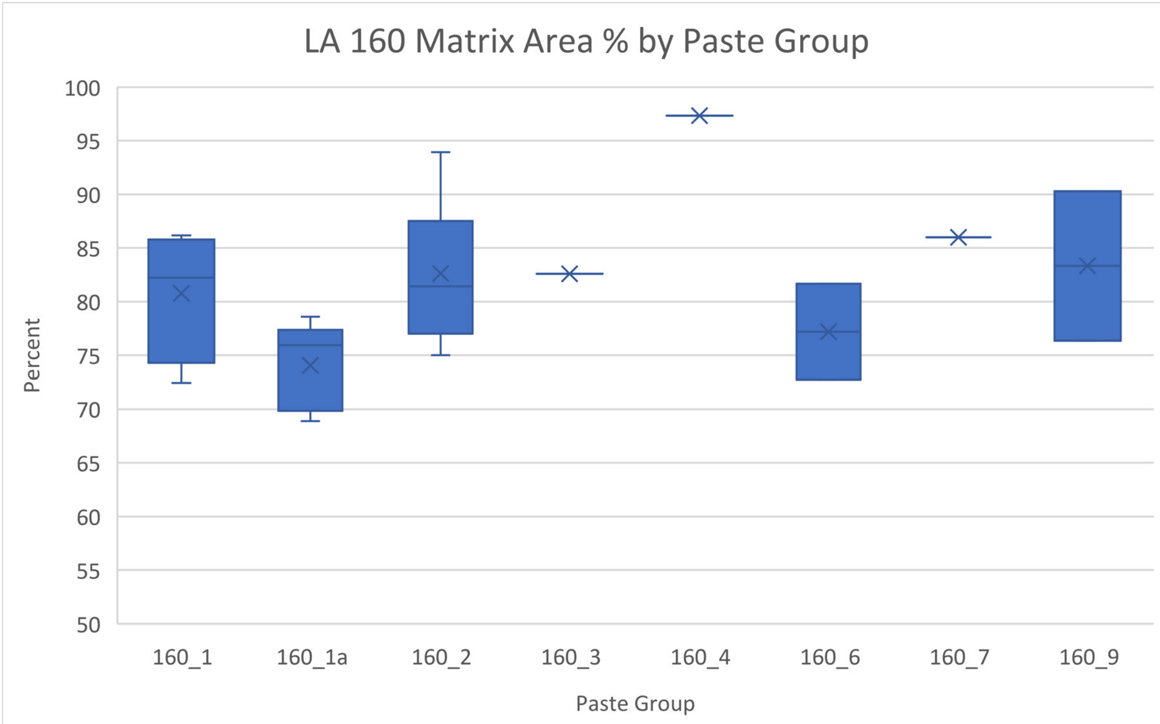



**Figure 5.5. LA 160 Boxplots of matrix area percentages, by Paste Group. Note: DIA segmentation for Paste Group 8 (one specimen) did not produce reliable results.**

Paste Group 2 contained twelve specimens and is the largest group in the petrographic sub-sample from LA 160. This group also appears to be closely related to Paste Groups 1 and 1a. It has a very dense ashy paste with high amounts of very fine quartz-feldspar sand that is probably naturally included in the clay source. Larger aplastics that may represent added temper are sparse but include occasional fine-grained rounded devitrified tuff and mudstone.

A second common paste type at LA 160 includes Paste Groups 6 and 9. These groups also have clay matrices defined by fine ash and very fine sand. Larger inclusions are dominated by sub-angular and angular plutonic lithics, which may be granite or gneiss. The very fine sand in these paste groups is more angular and consists of the component parts of granite and gneiss, suggesting that the pastes are formed from secondary clays near a residual granitic source.

Paste Groups 4, 7, and 8 are each represented by one sherd in the petrographic sub-sample. Paste Group 4 is represented by a Puname Polychrome bowl sherd, with distinctive crushed granular basalt temper, which has been associated with the Zia Pueblo area (Frank and Harlow 1997; Shepard 1942:178; D. Snow 1982). Paste Group 7 has a fine ashy paste with degraded mica and sparse large vitric tuff granules. Paste Group 8 has very fine ashy paste with almost no aplastics.

*Type and Form.* The majority of sherds from LA 160 were small body sherds whose vessel form could not be confidently identified. This is because many decorative techniques that might normally indicate a vessel was a bowl, may also be extended into the neck area of a jar (D. Wilson 2014b). Second, many small body sherds simply had no particular surface treatment at all. Indeterminate forms constitute 70 percent of the assemblage analyzed by OAS (Figure 5.6).

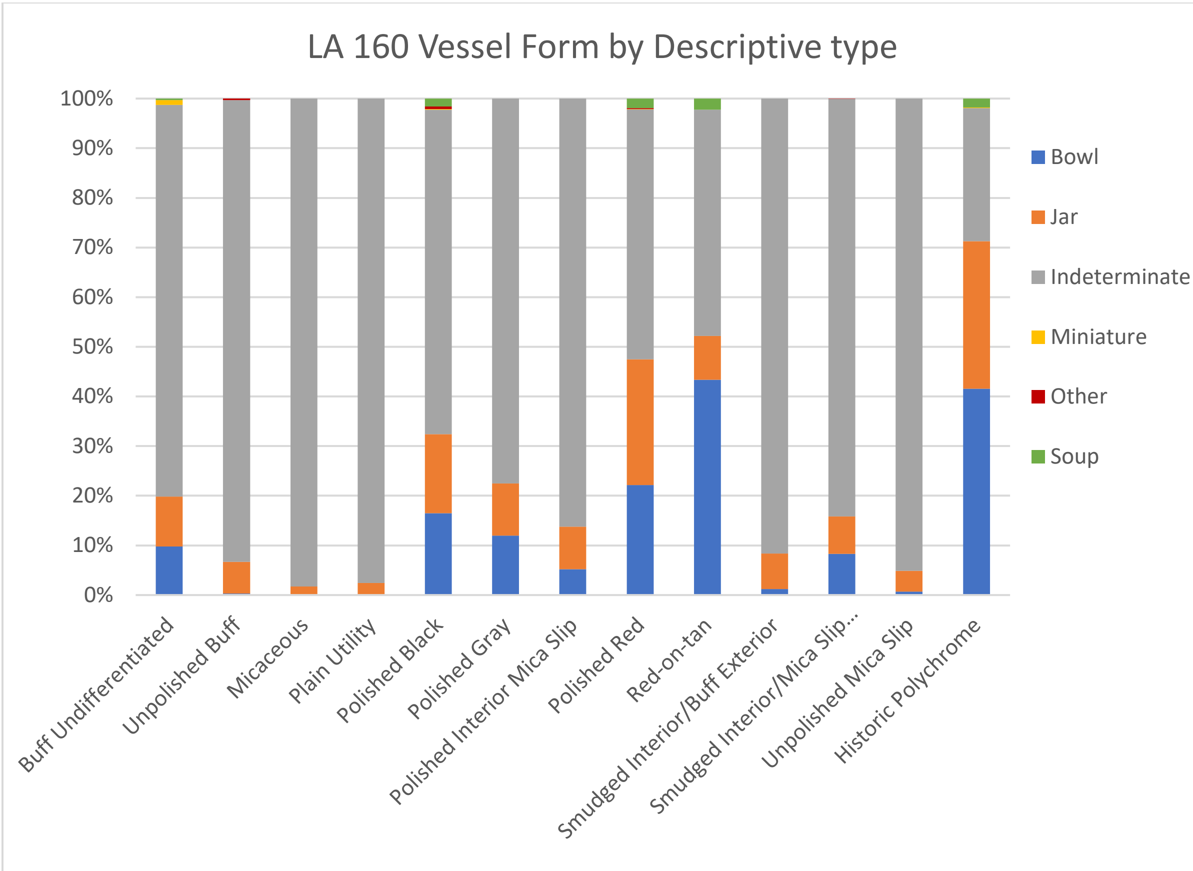



**Figure 5.6. LA 160 vessel form by descriptive type.**

Approximately 15.02 percent of the assemblage was bowls (*n* = 1,272) and 13.92 percent was identified as jars *(n* = 1,180). Bowls were especially prevalent in the Historic Polychrome (41.58%) and Red-on-tan (43.33%) descriptive type groups, although this may be in part because a higher number of vessels forms were identified within these types, since jars were also the most common among Historic Polychromes (29.7%). The type with the second highest number of jars was Polished Red (25.32%). When only rims are considered, bowls represent 48.38 percent of the vessels, jars are 24.05 percent, and indeterminate are 26.16 percent. With rims, Smudged Interior/Mica Slip Exterior is the type with the greatest proportion of jars (48.84%) while jar rims only represent 18.22 percent of Historic Polychrome rims and 17.56 percent of Polished Red rims.

Less common vessel forms include soup plates (*n* = 61), which were most frequent among Historic Polychromes (*n* = 22). The Other category encompasses a range of rarer forms that only have a few examples per form, such as handles (*n* = 5), feather boxes (*n* = 5), a cloud blower, miniatures (*n* = 12), seed jars (*n* = 2), and candlesticks (*n* = 2).

*Vessel Forming Techniques.* X-ray images of 30 sherds from LA 160 were captured using digital radiography. In general, X-ray images from LA 160 offered good resolution of voids and aplastics, ceramic density and minor variations in thickness, and cracks. Mica, for example, was highly reflective of X-ray light (i.e. impenetrable) and is well illuminated in images. Shrinkage cracks were also frequently clearly visible. However, features such as coil seams were never visible, even in rim or base sherds. Six sherds showed very faint linear orientation in voids, possibly left by scraping techniques. Three sherds had visible variation in thickness within the sherd, possibly due to pinching behaviors or shadows of different coil widths.

The matrix texture of different petrographically identified paste groups was also apparent in the X-ray images. Tuff inclusions, granite, and fine sand each had different visual characteristics in the X-ray images. It appears that Paste Group 2 was most amendable to demonstrating forming techniques—seven of the nine sherds with possible formation characteristics visible were from Paste Group 2. Alternatively, this suggests that in future research, if destructive thin-sectioning is not possible for sherd analysis, fabric groups might be delineated using non-destructive X-ray techniques. Adan-Bayewitz and Wieder (1992) suggested this possibility of fabric identification with their early X-ray work with Roman sherds.

The matrix texture of sherds in the petrographic sample showed that most of the sherds had very few voids, indicating that the clay as well-wedged and had a low amount of shrinkage. Within thin-sections, no sherds had voids or inclusions with perfect preferred orientation which would be suggestive of slab, pinch, or wheel as a primary manufacturing technique. Instead, 13 sherds showed no evidence of elongated voids, 11 sherds had random orientation, and five sherds had partial preferred orientation. Taken together, the X-ray images and thin-sections do not provide any clear picture of manufacturing techniques used in the LA 160 assemblage, except to suggest that coil and scrape methods were used by at least some potters, and that pinching was also a secondary manufacturing technique.

*LA 160 and LA 4968 Refiring.* Because LA 160 and LA 4968 are geographically and temporally so close to each other, and appeared to have similar ceramic assemblages, it was expected that pottery at each site was made from similar clay sources that would present similar hues after a 30-minute soak at 950° C. This proved to be the case, as most sherds in both sites refired to the 5YR hue (Figure 5.7). However, the two sites also demonstrated differences in color changes during the successive refiring cycles which could indicate different original firing temperatures.

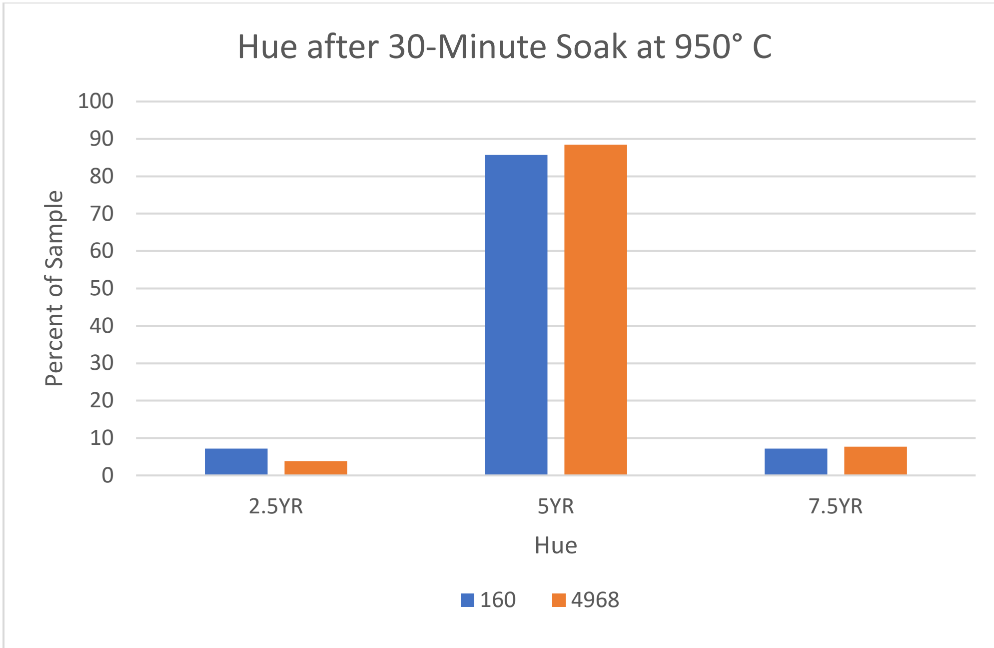



**Figure 5.7. LA 160 and LA 4968 post-950° C soak.**

A high proportion of sherds from both LA 160 and LA 4968 experienced color changes during the first refiring cycle at 500° C as carbon deposits were burned out of the surface of the sherds. However, by 650° C and 750° C the two sites had diverged and displayed inverted change ratios: 38.46 percent of LA 4968 sherds experienced a color change at 650° C (compared to 21.43% of LA 160 sherds), whereas 50 percent of LA 160 sherds experienced a color change at 750° C (compared to 11.54% of LA 4968) (Figure 5.8). These data suggest different firing practices dominated each assemblage, wherein pottery at LA 4968 was generally fired at lower temperatures than pottery at LA 160. This difference may indicate a chronological change in firing technology by potters in the region, although both LA 160 and LA 4968 were occupied primarily between the 1830s and 1870, both have the potential for earlier components, or the differences may reflect fine-scale chronological changes. Another explanation is that residents at the two sites acquired their pottery from different potting groups who had slightly different firing practices.

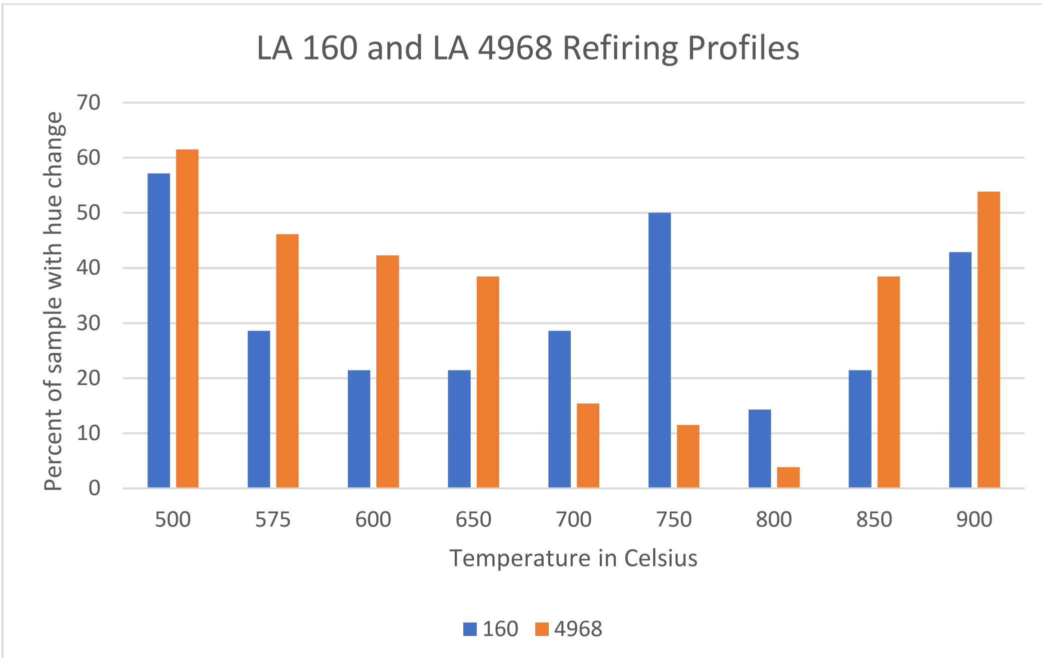



**Figure 5.8. Refiring profiles, LA160 and LA 4968.**

*LA 4968*

*Clay Preparation and Petrographic Results.* OAS analyzed 47,420 sherds out of a total of 83,850 recovered at LA 4968. An additional 1,726 sherds were analyzed for this study, for a total sample size of 49,146. Sixty-six sherds in the sample assemblage were identified as predating the main occupation period for the main site (prehistoric and glaze wares), leaving 49,080 sherds considered in the initial sample assemblage. Twenty-four temper groups were identified during the initial analysis, although many of these groups are likely to be closely related, if not identical (for example, dark sand and sand are potentially the same). Furthermore, 14 of these groups were represented by less than 100 specimens (or less than 0.2 percent of the sample assemblage) (see Appendix B, Tables B.4 and B.5).

Overall, LA 4968 shows very similar trends as LA 160 with regards to ceramic descriptive type and temper distributions. Like LA 160, the dominant temper group observed was Fine Tuff or Ash (30.51%), followed by Granite with Abundant Mica (16.59%, although Granite without Abundant Mica only represented 4.06%) and Tuff, Mica, and Sand (15.72%). Fine Tuff and Sand represents 13.13 percent of the assemblage, and all other temper groups each compose less than 10 percent of the sample assemblage.

The largest descriptive type represented at LA 4968 is Historic Polychrome, classified here as mostly undifferentiated decorated wares, dominated by polychromes most likely manufactured by local Tewa communities, based on the dominance of Fine Tuff or Ash temper (41.47%) and Tuff, Mica, and Sand temper (24.17%). These sherds generally displayed white or cream slip and black paint, but the design was insufficient to make a more specific identification. They compose 22.42 percent of the assemblage. Much smaller amounts of Ogapoge (0.11%), Pojoaque ($n$ = 2), and Powhoge Polychrome (2.09%) were securely identified, as well as imported matte paint polychromes such as Puname polychromes (0.13%) and Acoma/Zuni polychromes (0.04%). Smudged Interior/Mica Slip Exterior is the largest unpainted Descriptive type observed at LA 4968 (18.23%), and it is dominated by Granite with Abundant Mica temper (51.36%). However, this type also contains a range of 17 other temper groups, generally consisting of different proportions of tuff, mica, and sand. As described in the previous section, mica-slipped ceramics were likely also produced in local Tewa potting communities.

Like LA 160, descriptive types associated with Tewa manufacture, such as Polished Black and Polished Red, as well as Tewa Polychromes, were dominated by Fine Tuff or Ash temper, which composed 39 to 52 percent of each type. Micaceous wares, however, such as polished and unpolished wares with mica slip, tended to be tempered with granite, with or without abundant mica, over 50 percent of the time.

A total of eight distinct paste and temper groups were identified in the petrographic sub-sample from LA 4968 (Table 5.11, Figure 5.9). Full descriptions of paste groups and quantitative information for individual specimens are in Appendix B. All of the paste groups except for Paste Group 3 (highly micaceous residual clays), have similarly dense, fine-grained clay matrices, differentiated by the amount of vitric ash or very fine sand present. Paste Groups 1 and 1a, 4, 5, and 6 each have very fine ashy-sandy matrices, differentiated by the presence of crushed granite, coarse sand, or tuff temper. Paste Group 1 has primarily ash with little to no fine sand inclusions, while Paste Group 2 has a fine sandy matrix with little to no ash and the addition of crushed granite temper.

Table 5.11. LA 4968 Paste Groups.

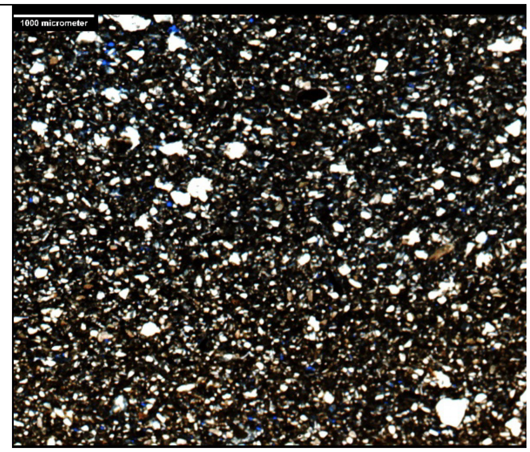
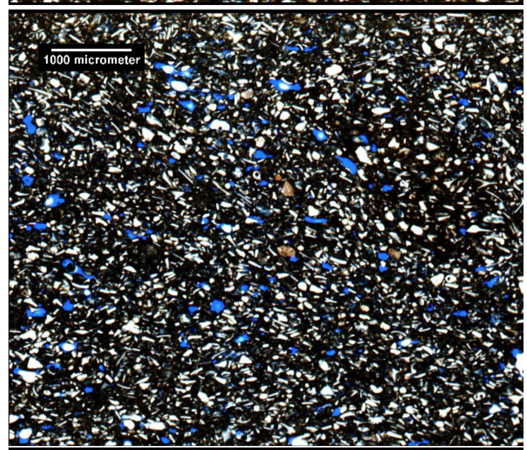
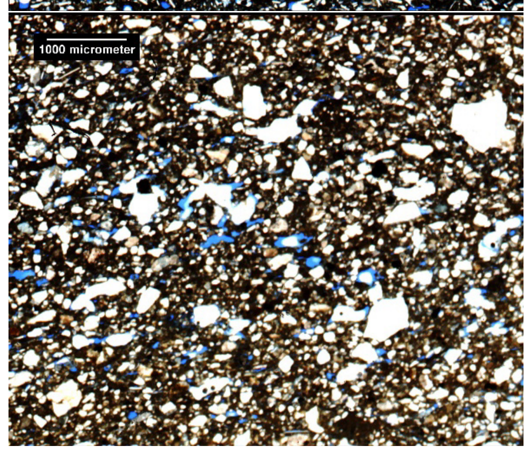
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 1a | Moderately dense paste with equal amounts ash and grit with volcanic sand. | 1777 | Red-on-tan |   |
| | | 1782 | Polished red | |
| | | 2030 | Historic polychrome | |
| | | 2861 | Historic polychrome | |
| | | 2862 | Buff undifferentiated | |
| | | 2866 | Plain utility | |
| | | 2962 | Historic polychrome | |
| | | 3000 | Polished black | |
| | | 3038 | Historic Polychrome | |
| | | 3177 | Polished black | |
| | | 3222 | Polished black | |
| Paste Group 1 | Closely related to Paste Group 1, but with a higher ratio of coarse ash to grit, and sparse medium-grained volcanic sand temper. | 1596 | Unpolished buff |   |
| | | 1778 | Red-on-tan | |
| | | 1826 | Polished black | |
| | | 1828 | Polished gray | |
| | | 2075 | Unpolished buff | |
| | | 3031 | Historic polychrome | |
| | | 3051 | Historic polychrome | |
| | | 3053 | Historic polychrome | |
| | | 3341 | Plain Utility | |
| Paste Group 2 | Predominantly gritty dense matrix with no ash and frequent mica and crushed granite temper. | 1761 | Polished red |   |
| | | 2193 | Polished interior with mica slip | |
| | | 2637 | Smudged interior/mica slipped exterior | |
| | | 2863 | Smudged interior/mica slipped exterior | |
| | | 2876 | Smudged interior/mica slipped exterior | |
| | | 2954 | Smudged interior/mica slipped exterior | |
| | | 2987 | Fine grained micaceous | |
| | | 3264 | Polished interior with mica slip | |

Table 5.11.  Continued.

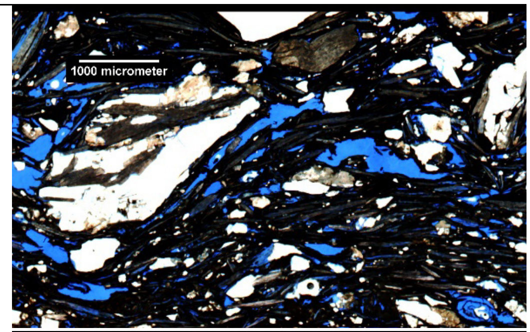
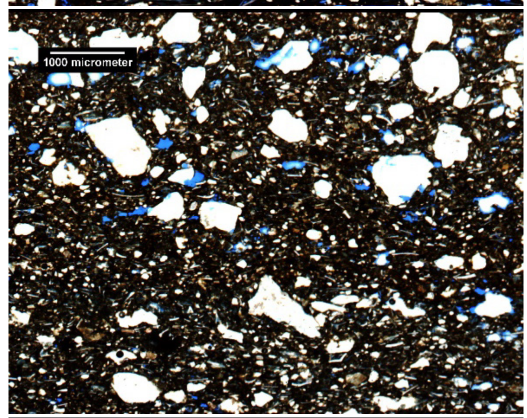
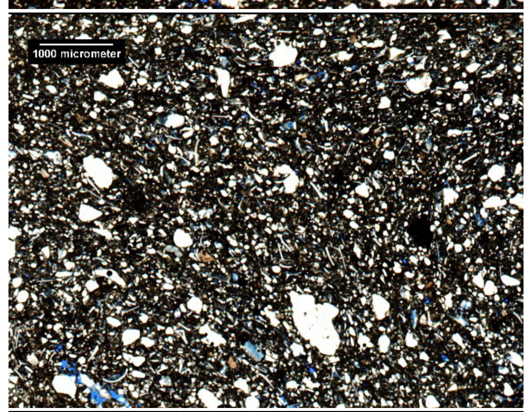
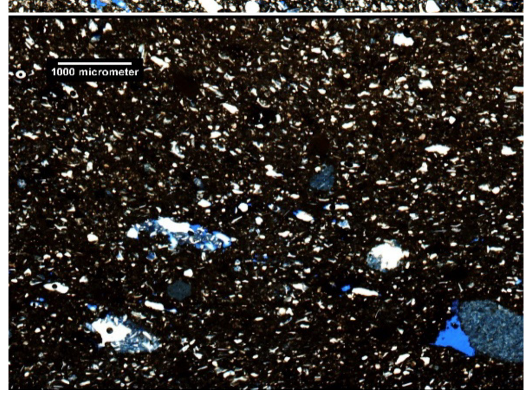
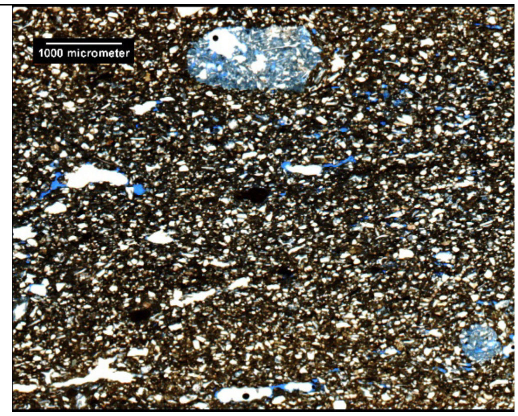
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 3 | Residual mica paste with large coarse mica schist aplastics. | 2109<br>2865<br>2989 | Highly Micaceous Residual<br>Highly Micaceous Residual<br>Fine grained micaceous |  |
| Paste Group 4 | Similar to Paste Groups 1 and 1a. Moderately dense paste with equal amounts ash and grit with sand dominated by granite and sparse volcanic lithics. | 2013<br>2864<br>3030 | Smudged interior/Mica slipped exterior<br>Smudged interior/Mica slipped exterior<br>Unpolished buff |  |
| Paste Group 5 | Similar to Paste Group 4 with ashy, somewhat sandy paste and finer granite temper. | 3200<br>3204 | Polished black<br>Polished black |  |
| Paste Group 6 | Similar to Paste Group 1a with dense ash, but with the addition of large devitrified tuff fragments. | 1793<br>1795<br>2029 | Plain Utility<br>Plain utility<br>Historic polychrome |  |

Table 5.11. Continued.

| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 7 | Similar to Paste Group 1 with dense ash and very fine sand, but with the addition of large devitrified tuff fragments | 2183 | Smudged Interior/Mica Slip Exterior |  |
| | | 2030 | Historic Polychrome | |
| | | 2861 | Historic Polychrome | |
| | | 2029 | Historic Polychrome | |
| | | 1792 | Plain Utility | |



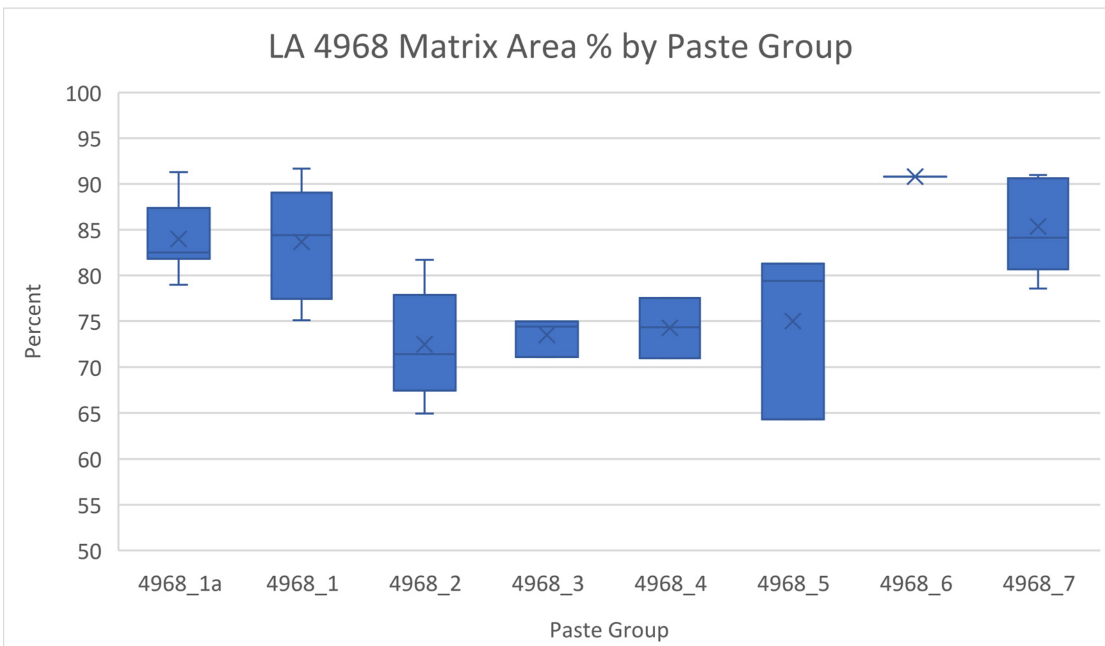



**Figure 5.9. LA 4968 boxplots of matrix area percentages, by Paste Group.**

Paste Group 1a is represented by eight specimens. It is a moderately dense paste with roughly equal amounts of very fine quartz-feldspar sand and vitric ash. The paste appears to be poorly mixed, with clay pellets that have altered to calcite in some cases. Very fine sand consists of monomineral grains of heavily weathered plagioclase, quartz, mica and rare hornblende, calcite, or augite. Paste Group 1 is represented by nine specimens. It is closely related to Paste Group 1a but has a higher ratio of vitric ash to very fine sand in the paste. The main difference between the two is that Paste Group 1a contains roughly equal or greater amounts of very fine sand to ash particles, whereas Paste Group 1 contains almost exclusively ashy particulate in the clay. Both clays are likely self-tempered. This suggests slightly different clay sources used by potters who otherwise maintained similar clay preparation practices.

Paste Group 2 is represented by eight specimens. It is a predominantly sandy, dense paste with little to no ash, and frequently mica. Added temper is evenly and moderately distributed and consists of primarily coarse subangular heavily weathered granite or monzonite with occasional volcanic or metamorphic lithics. Particles are an average of 607 microns long. Voids in this group are more common than in Paste Groups 1 and 1a and include both irregular and elongated shapes.

Paste Group 3 is highly micaceous residual paste with large coarse mica schist aplastics. The paste is highly porous with an average 73.51 percent clay matrix, 21.48 percent aplastics, and 5.01 percent voids. The mica is tabular and laminated muscovite, which is also predominant in the quartz-mica schist inclusions that are probably naturally included in the residual clay. There is some iron oxide weathering and evidence of burnt-out organics.

Paste Group 4 contains three specimens and is very similar to Paste Group 1. It is a sandy paste with vitric ash and moderately dense coarse granitic sand temper. The paste has an average of 74.28 percent matrix, 23.54 percent aplastics, and 2.18 percent voids. The temper is large-medium subrounded sand that is dominated by granite, but also includes sparse volcanics such as basalt and/or andesite, and possible sandstone and limestone. Paste Group 5 consists of two specimens and is very similar to Paste Group 4, but with slightly smaller, finer granitic sand temper. The paste has an average of 75.00 percent matrix, 22.00 percent aplastics, and 3.00 percent voids. Possible limestone and dolomite are also sparsely interspersed among the aplastics, suggesting sedimentary mixture in the sand source.

Paste Group 6 has very similar paste characteristics to Paste Group 1a, with dense amounts of vitric ash and a small amount of very fine sand. Temper in Paste Group 6, however, is differentiated by the addition of large, devitrified tuff fragments.

*Type and Form.* Like LA 160, vessel form could not be identified for a large proportion of the assemblage (59.76%). The rest of the assemblage is dominated by jars (23.03%, or 57.22% of the known vessels) and bowls (16.54%, or 41.12% of the known vessels) (Figure 5.10). Among rims, jars remain slightly more common than bowls, with 43.16 percent of rims identified as jars, and 38.82 percent identified as bowls. Because Historic Polychromes are the most common ware in the assemblage, they dominate both bowls and jars. Smudged Interior/Mica Slip Exterior wares are the next most common descriptive type represented among jars (11.02%), whereas Polished Black wares compose 13.13 percent of bowls. The assemblage also contains small amounts of other forms such as soup plates ($n$ = 252) and plates ($n$ = 16), candlesticks ($n$ = 8), feather boxes ($n$ = 7), and cloud blowers ($n$ = 3). Approximately 51 percent of soup plates are Polished Black, and candlesticks are also predominantly Polished Black.

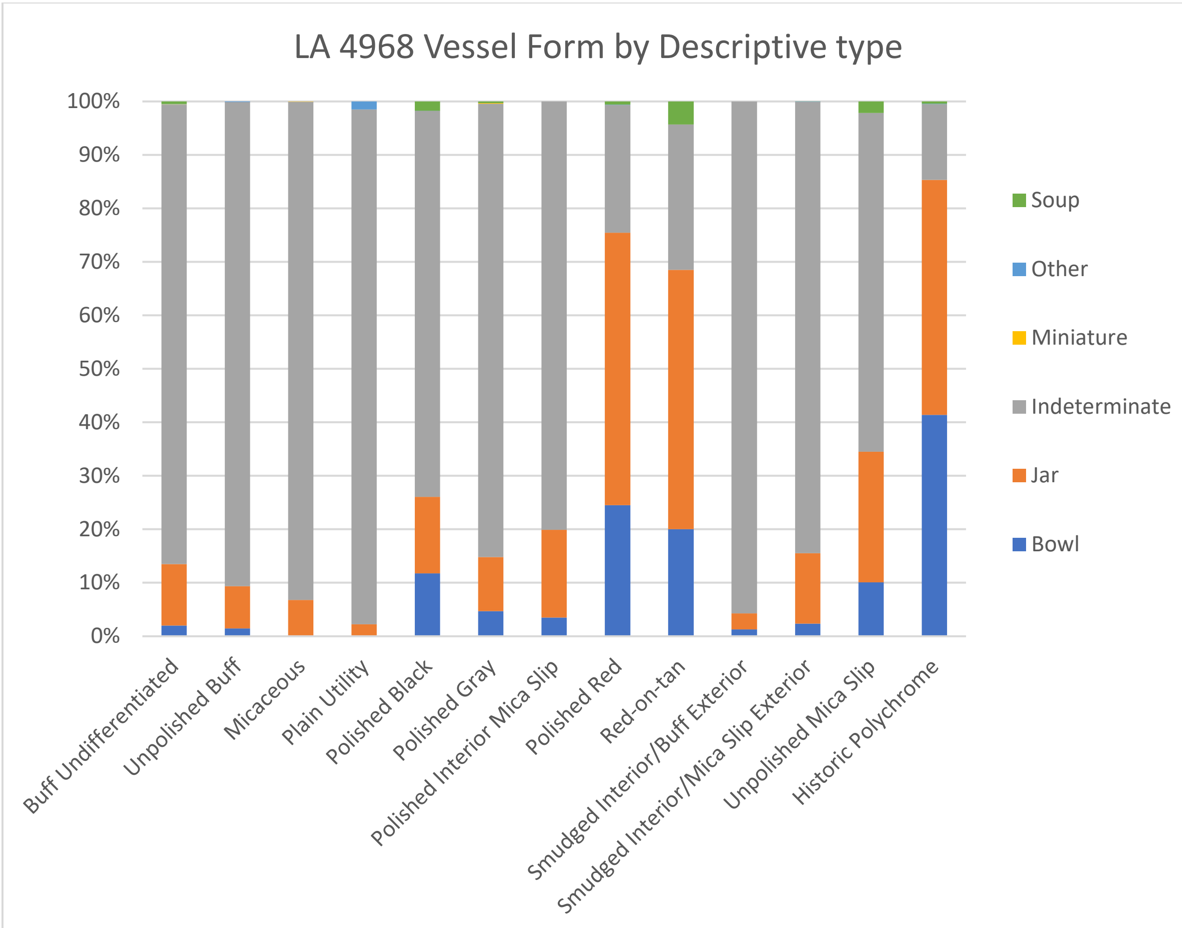



**Figure 5.10. LA 4968 vessel form by descriptive type.**

*Vessel Forming Techniques.* X-ray images of 39 sherds from LA 4968 were taken. In general, X-ray images from this site had similar clarity as LA 160. Large tuff inclusions could be differentiated in the X-ray images from granite and mica. However, like LA 160, few sherds showed definitive evidence of forming techniques. Eight sherds had evidence of possible striations visible in the X-ray images, possibly from scraping or burnishing, in movements parallel to the vessel rim. One sherd had both striations and possible coil shadows (but no seams), two sherds exhibited differences in wall thickness that suggest pinching, and two sherds appeared to show both pinching and coiling. A surprising result from the X-ray images, however, was that several sherds showed no variation in wall thickness at all—instead they exhibit a continuous color gradient across the entire sherd surface, which suggests impressive control by the potters to maintain even wall thicknesses. Sherds with this characteristic visible in X-rays were most commonly Polished Black sherds.

Like LA 160, matrix texture of sherds in the petrographic sample showed that most of the sherds had very few voids. When present, voids most often appeared equant rather than elongated, suggesting that they were oriented horizontally with respect to the vessel rim. This had been interpreted as possible evidence of coiling as a manufacturing method (Berg 2008). Nineteen sherds had no evidence of elongated voids, 13 had voids with random orientation (also evidence of coil manufacture), and eight had partial preferred orientation. No sherds had perfect preferred orientation associated with slab, wheel, or pinching in primary manufacture (Rye 1981).

*LA 160 and LA 4968 Summary and Conclusions.*

Results from the initial analysis and technological analyses of sherds from LA 160 and LA 4968 suggest that the two sites are very similar with regards to New Mexican ceramic consumption patterns. At each site, a range of descriptive types were identified, including polished plain wares, micaceous and micaceous-slipped wares, plain wares, and polychromes. These types were identified in slightly different proportions at each site, however. If one considers polished wares collectively to include red, black, gray, and buff varieties, they are the most common ware, and comprise 32.35 percent at LA 160 and 38.28 percent of the total ceramic assemblage at LA 4968. At LA 160, micaceous slipped wares with smudged and polished interiors were the next most common type, representing 28.83 percent of the assemblage, while LA 4968 was dominated by polychrome wares (24.83% of assemblage total, including Tewa, imported, and unidentified polychromes), followed by

Smudged Interior/Mica Slipped Exterior wares (18.23%). This difference may be a result of different sampling at the two sites, or it may suggest that more serving wares were used at LA 4968 and more cooking wares were used at LA 160.

Vessel forms are particularly difficult to identify during the historic period. As Wilson notes (2014:525), surface treatment does not appear to be patterned based on vessel form for most historic plain wares. Therefore, high numbers of sherds from each site had indeterminate vessel forms (59.76% at LA 4968, 70.14% for LA 160). Among identified sherds, jars and bowls appear to be evenly represented, with 50.05 percent bowls at LA 160 and 41.15 percent bowls at LA 4968. Painted and polished types are most common among the bowls, suggesting that they were preferred for serving activities. Wilson (2014b:544) notes similar patterns at Late Colonial sites in Santa Fe, and also points out that the bowl to jar ratio is very different from Late Classic period sites, which generally have closer to 80 percent jars represented. This may reflect a shift in cooking and eating practices at Hispanic sites after resettlement in the eighteenth century, which demanded more serving ware, and cooking methods that were more oriented towards stews and boiling liquids (D. Wilson 2014b:543). However, the numbers at LA 160 and LA 4968 are skewed because decorative motifs allowed vessel form to be identified much more often for polychrome sherds, and so this type dominates the bowl:jar ratios. Therefore, we may not have an accurate representation of the vessel forms present at the sites.

Paste and temper analysis suggests that the sites were quite similar in the variety of ceramic sources and production patterns reflected at each site. While different number of optically identified temper groups were identified for each site (15 for LA 160, 33 for LA 4968), petrographic analysis identified eight paste groups within each site, and it is likely that the paste groups identified at LA 160 are closely related to those identified at LA 4968. The petrographic and optical temper analyses demonstrate two main groups—micaceous utility wares are most frequently tempered with granite-based materials, most likely from crushed cobbles from the Sangre de Cristo mountains, and polished wares and polychromes are tempered with fine ash and tuff materials (Hill 2004a). These appear to represent two parallel local ceramic traditions, determined by vessel function. It is unknown if the same potting communities produced both types or if the two traditions were segregated among potters. These paste and temper results are similar to results of ceramic analyses at nineteenth century sites in the Santa Fe area, and our limited current knowledge of Tewa pueblo ceramic manufacturing during this period (D. Wilson 2012, 2014b).

Based on paste and temper characteristics, most of the sherds from the sites appear to have been manufactured locally within the Española Basin. Many very likely came from Pojoaque Pueblo or Nambé Pueblo, the two nearest Pueblo population centers (see Figure 4.6), although our current understandings of clay sources and temper characteristics make it difficult to differentiate utility wares or plain wares from individual Tewa pueblos. Many ceramics also could have been produced at Tesuque, Santa Clara, San Ildefonso, or Ohkay Owingeh. Mera (1939) notes that Nambé, San Ildefonso, and Tesuque each produced sand-tempered pottery with micaceous slip. By 1800, Ohkay Owingeh and Santa Clara had begun to only produce unpainted polished wares in red and black, while Nambé and Pojoaque continued to produce polychromes until approximately 1820, when they too began only producing plain polished wares (Frank and Harlow 1997). Frank and Harlow also noted that San Ildefonso began producing less and less pottery and by 1830 relied entirely on Nambé for their pottery. They state “It is well known that Nambé was a major polychrome and utilitarian trading center" (1997:39) although they do not provide clear supporting evidence for this claim.

Both mica-slipped ceramics and polished or polychrome wares at the two sites appear to have been made from similar clay sources. At both LA 160 and LA 4968, the majority of the refiring sub-sample turned a yellow-red 5YR hue after a 30-minute soak at 900° C. This suggests the ceramics were made using chemically similar clay sources. Wilson (2004) identified at least six clay sources immediately around Pojoaque Pueblo in a short survey. Three fired yellow-red in color, while three fired red.

Generally, the initial analysis and detailed technological analysis of ceramics from the Pojoaque area sites suggests that while the sites are closer to a major population center and hub of Santa Fe trade than the other sites in the sample, variation in New Mexican ceramics at the two sites is actually fairly low. New Mexican ceramics at LA 160 and LA 4968 reflect almost exclusively local production, and likely represent only a few potting communities. The statistical analysis of microstyles will be discussed further in Chapter 6, however, sherd analyses would appear to suggest that Hispanic consumers living at LA 160 and LA 4968 acquired their pottery from their nearest neighbors, and possibly maintained close relationships with a limited number of pottery producers. This indicates that although residents lived near the civic hub of the territory, they were more thoroughly embedded within their local networks of exchange.

*LA 8671*

I analyzed 749 historic sherds cataloged as New Mexican ceramics from LA 8671 for this project. This number does not appear to represent 100 percent of the sherds collected from the site, as Brody and Colberg (1966:17 Table 2) report 953 New Mexican ceramics in

1966 and Ferg (1984:77 Table 7) collected 143 sherds in 1983. However, it was not entirely clear from Maxwell Museum collection labels if the Ferg materials were available within materials analyzed, or if some materials were curated elsewhere. None of the provenience descriptions noted on the analyzed material seem to suggest they were from the trash pit feature excavated by Ferg. The majority of the New Mexican ceramics collected from LA 8671 came from surface collections by the 1966 field school prior to their excavations.[5] Most ceramics were recovered near the house or the trash mound, but no horizontal provenience was preserved for 280 sherds. Of the 749 sherds analyzed, nine were from pre-nineteenth century local glazewares, two were non-local Mexican glazewares, and two were non-local whitewares, leaving 736 historic New Mexican ceramics discussed in the analyses below.

Ferg, Brody and Colberg, and I used slightly different descriptive types in our analyses, so the studies are not necessarily directly comparable. Brody and Colberg seem to have grouped sand-tempered polished black sherds with other smudged or buff-colored sherds under "Yupa Plain" while they identified three different Polished Black types based on temper differences. Ferg used "Carnue Plain" as a descriptive type and separated black wares with sandy temper from Kapo Black, which is presumably black highly polished tuff-tempered wares.

Within this analysis of New Mexican ceramics from LA 8671 the Plain Utility descriptive type was the most common and accounts for 32.66 percent of the assemblage, followed by Polished Black (21.68%) and Historic Polychrome (13.82%). Polished Gray, which most likely represents a version of Polished Black, is 11.25 percent of the assemblage.

[5] The exact count is ambiguous, though some site notes indicate 533 surface sherds, and a combination of materials labeled 'surface' and 'level 1' in the assemblage comes to 545 sherds.

Plain Utility sherds were primarily sand-tempered (26.97%) followed by granite without abundant mica (12.45%). However, this descriptive type was highly varied, with 21 optically identified temper groups represented in small quantities. Both Polished Black and Polished Gray ceramics included a large percentage of fine tuff or ash-tempered wares (26.25% and 33.73%, respectively) while Polished Red wares were primarily tempered with sand (45.45%) (see Appendix B, Table B.6 and B.7).

Fine tuff-tempered wares were likely manufactured at Tewa pueblos near Santa Fe, where tuff and ash materials are common (as noted in the discussions of ceramics at LA 160 and LA 4968). Brody and Colberg had noted that the tuff-tempered Polished Black wares seemed to have higher polish than the sand-tempered black wares, which they noted tended to be merely wiped or smoothed on the interior. This appears to be the case, as 73.81 percent of the tuff-tempered Polished Black sherds were polished on the exterior (and 16.67% were highly polished), and 77.42 percent of those wares were also polished on the interior. Among the sand-tempered Polished Black sherds, 57.69 percent were polished on the exterior, while only 20 percent of those were also polished on the interior, whereas 66.67 percent were smoothed.

Brody and Colberg speculated that the sand-tempered Plain Utility wares were from more local pueblo village sources, such as Santa Ana and San Felipe (Brody and Colberg 1966), but that for serving wares residents may have preferred polished ceramics from the Santa Fe or Cochiti area. Atherton found similar results in her analysis of 5,082 ceramic sherds from San José de las Huertas. While 91 percent of Las Huertas utility wares appeared to be locally made with sand temper, 39 percent of the burnished wares had tuff temper, indicating they came from Tewa pueblos, and other non-local sources (Atherton 2013:163).

*Clay Preparation and Petrographic Results*. The Sandia Mountains are an eastward tilted fault block on the east side of the Rio Grande Rift. LA 8671 is located at the northeast end of the Sandia crest. The Las Huertas Canyon drainage, along which both LA 8671 and the earlier settlement of San José de las Huertas are located, follows a south-trending fault zone between the Montezuma Mountain block to the east and Sandia Mountains block to the west, providing the area with complex lithology. Within a two-mile radius of the town of Placitas, there are exposures of nearly 20 different formations (Kelley and Northrop 1975).

Most of the formations are dominated by granite or gneiss, as well as schist, quartzite, and greenstone. Sandia Granite is defined by a groundmass of quartz, feldspars, and micas with a distinctive porphyritic texture with microcline phenocrysts (Kelley and Northrop 1975:23). It is generally characterized as 35 percent quartz, 15 percent microcline, 35 percent albite and oligoclase, 10 percent biotite, and 5 percent micropherthite. Accessories may include sphene, magnetite, apatite with rare hornblende, muscovite, tourmaline, and pyrite, with alteration products such as hematite, chlorite, and epidote. Sericite is common throughout. Granite-dominated formations contribute to the local character of the Santa Fe Formation, the main body of sedimentary deposits along the Rio Grande depression north and west of LA 8671 and San Felipe Pueblo. Local sources contribute sandstone and coarse resistance gravels of quartzite, gneiss, and foreign volcanics to the alluvial sands. Other nearby formations contribute limestones, shale, sandstones, conglomerate, latite, and hornblende quartz latite to the locally available tempering material that area potters could have utilized (Kelley and Northrop 1975).

Given the geologic variety in the site area, it should not be surprising that LA 8671 proved to be the most petrographically diverse site in the sample. Local potters would have had access to a wide range of volcanic, plutonic and sedimentary materials described above to use as tempers, both in primary sources and as weathered sands. A total of 15 paste and temper groups were identified in the petrographic sub-sample from LA 8671. Full descriptions of paste groups and quantitative information for individual specimens are in Appendix B.

Petrographic analysis of aplastics and temper suggests that while LA 8671 may have a high level of variability in terms of the number of identified paste groups, the groups are not necessarily widely divergent from each other. Many of the paste groups identified at LA 8671 include differing amounts of very fine quartz-feldspar sand or fine vitric ash (Figure 5.11). The very fine sand generally appears to be a natural inclusion, suggesting that sandy clay sources were utilized for Paste Groups 2, 3, 8 and 10.

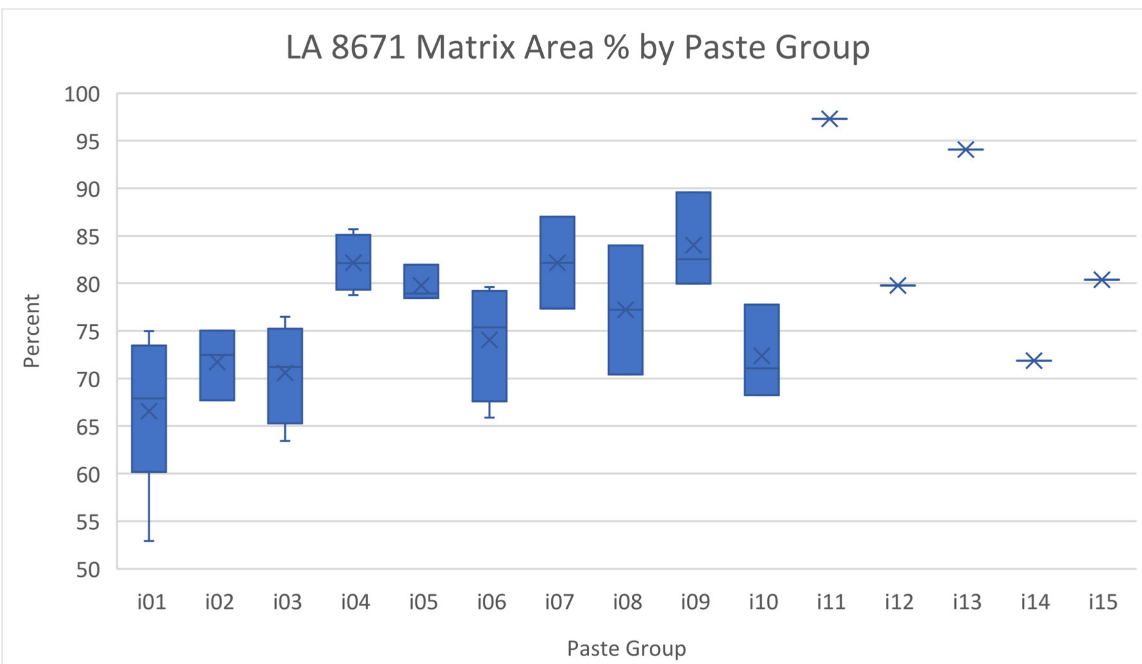



**Figure 5.11. LA 8671 Boxplots of matrix area percentages, by Paste Group.**

Paste Group 1 was the largest group, with six sherds (Table 5.12). This group is defined by dense medium to coarse sized mixed lithic sand, with rounded to sub-rounded particles consisting of predominantly quartz and plagioclase feldspar with some orthoclase,

Table 5.12. LA 8671 Paste Groups.

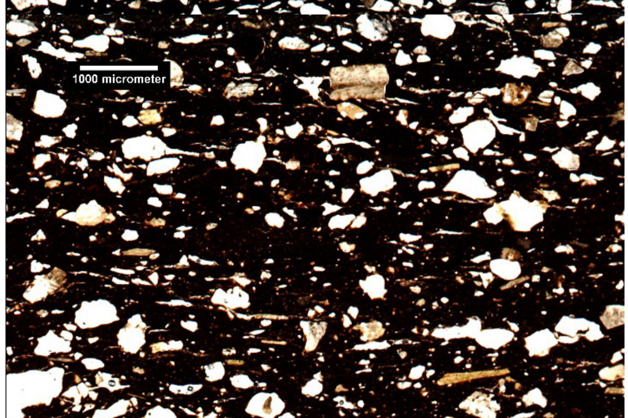
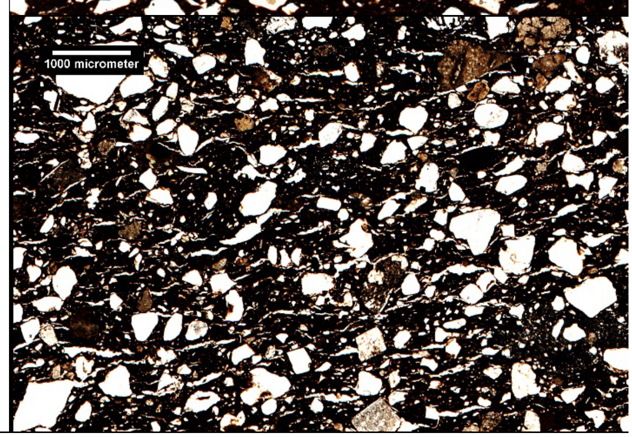
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 1 | Slightly Porous, silty paste with quartz-feldspar and mixed volcanic-plutonic sand temper | 747<br>750<br>779<br>833<br>951<br>1442 | Historic Polychrome<br>Historic Polychrome<br>Smudged Exterior/Buff Interior<br>Polished gray<br>Historic Polychrome<br>Plain Utility |  |
| Paste Group 2 | Porous, sandy paste with mixed volcanic-plutonic sand temper | 761<br>1113<br>1203 | Unpolished buff<br>Mica slipped interior<br>Unpolished buff |  |
| Paste Group 3 | Sandy paste with volcanic sand and coarse crushed granite/monzonite | 759<br>764<br>934<br>1202 | Plain utility<br>Plain utility<br>Historic polychrome<br>Plain utility |  |

Table 5.12. Continued.

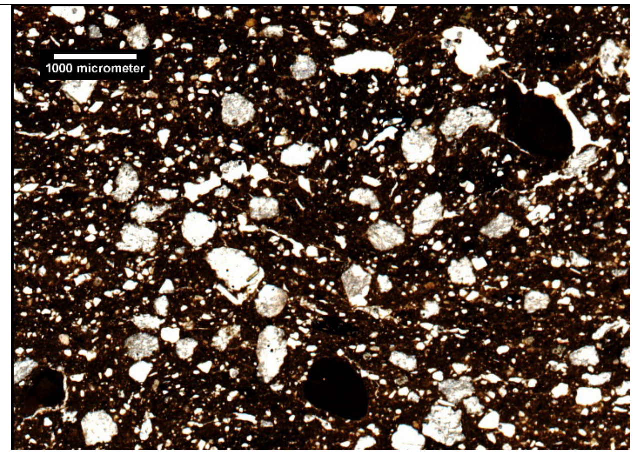
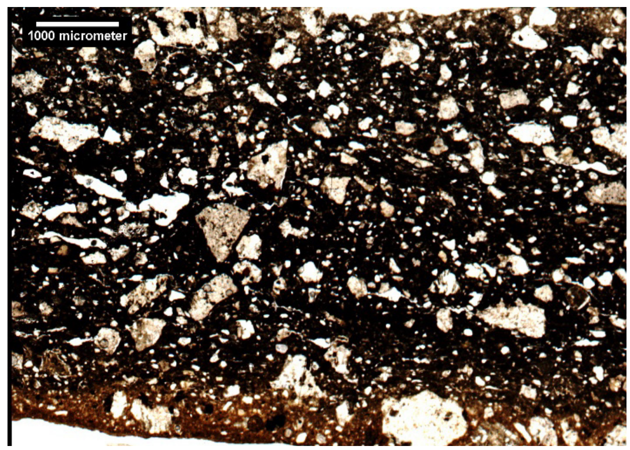
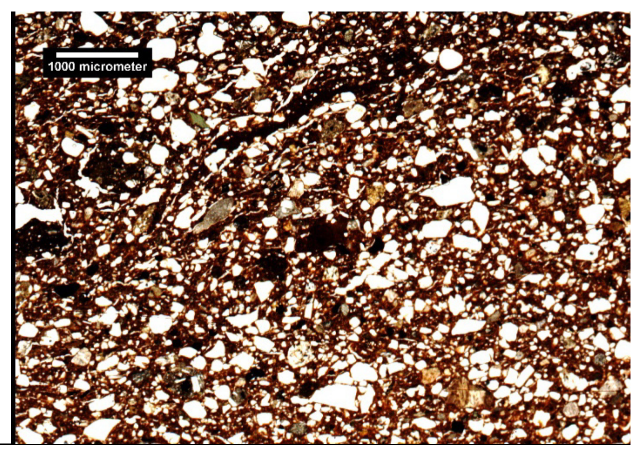
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 4 | Dense paste with coarse, rounded tuff temper | 743<br>846<br>1115<br><br><br>1367 | Polished black<br>Polished gray<br>Smudged Interior/Buff Exterior<br>Polished black |  |
| Paste Group 5 | Silty paste with crushed hornblende latite temper | 755<br>756<br><br>757 | Plain Utility<br>Brown glaze ware<br>Plain utility |  |
| Paste Group 6 | Crushed monzonite temper. | 762<br>883<br>1227<br>1481 | Plain utility<br>Polished gray<br>Plain utility<br>Mica slipped |  |

Table 5.12. Continued.

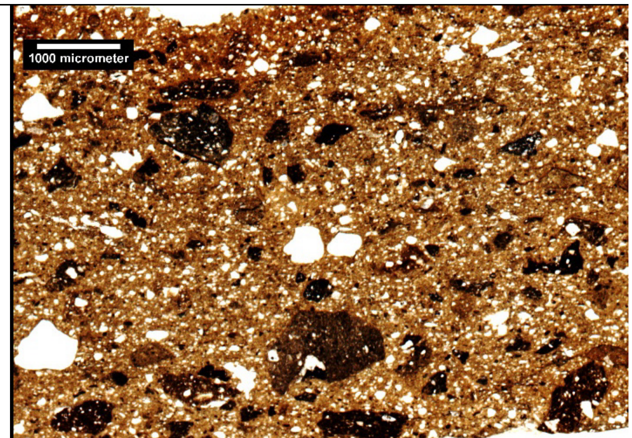
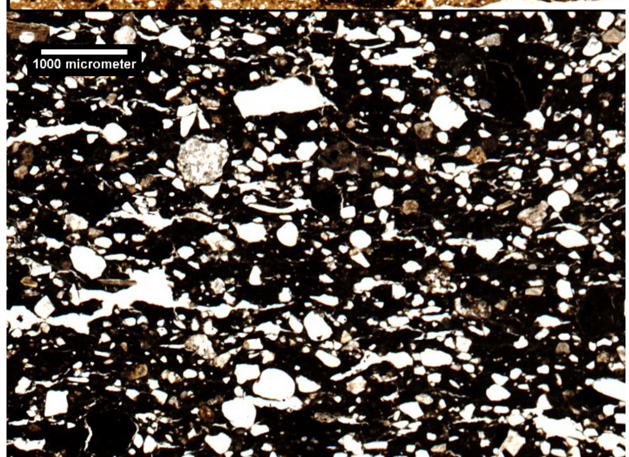
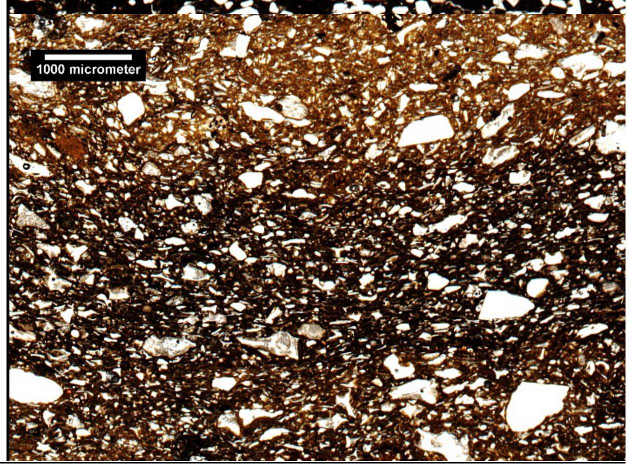
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 7 | Sandy paste with crushed sherd temper. | 767<br>1358 | Unpolished buff<br>Mica slipped interior |  |
| Paste Group 8 | Porous sandy matrix and coarse mixed volcanic-plutonic sand temper. May be related to Paste Groups 1-3. | 772<br>1056 | Historic Polychrome<br>Buff Undifferentiated |  |
| Paste Group 9 | Coarse vitric ash matrix with rounded tuff and basalt temper. | 840<br>957<br>1260 | Unpolished buff<br>Historic polychrome<br>Plain utility |  |

Table 5.12. Continued.

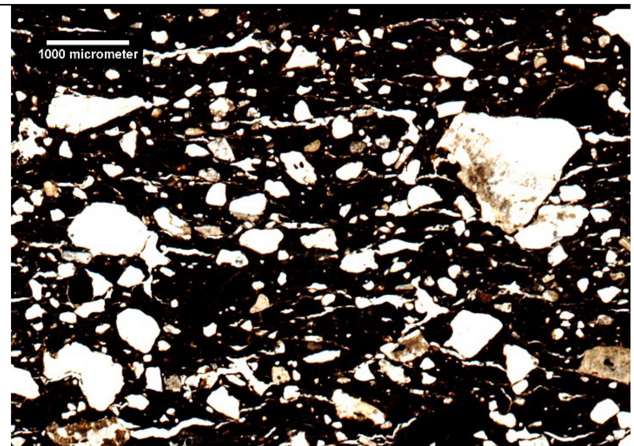
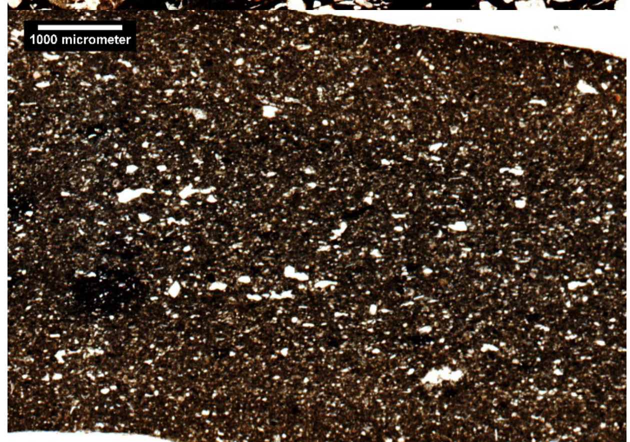
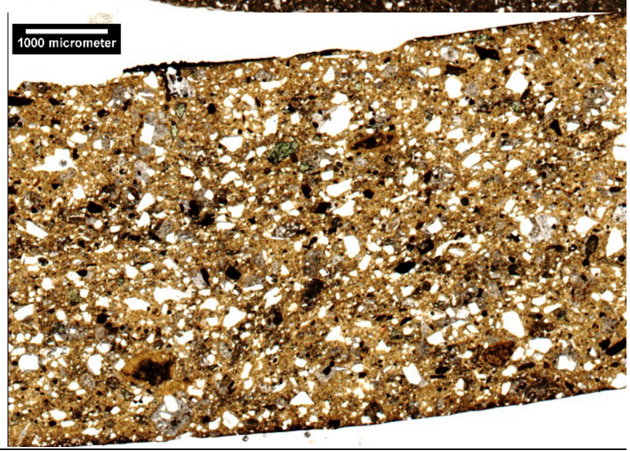
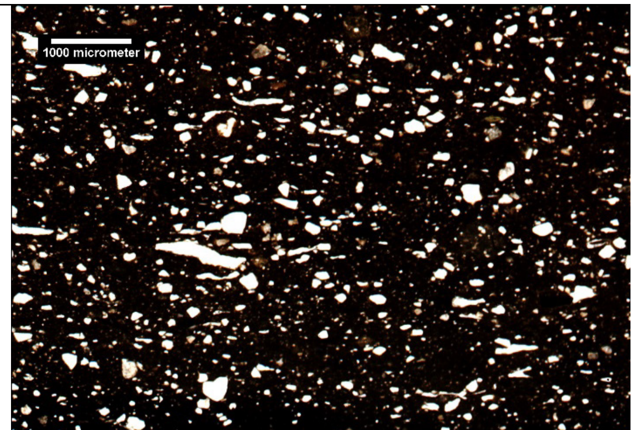
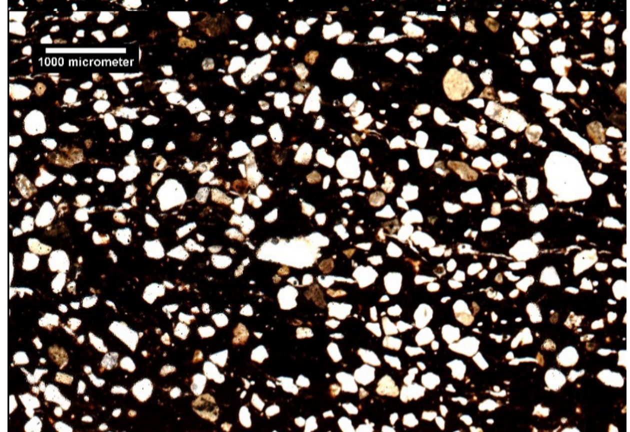
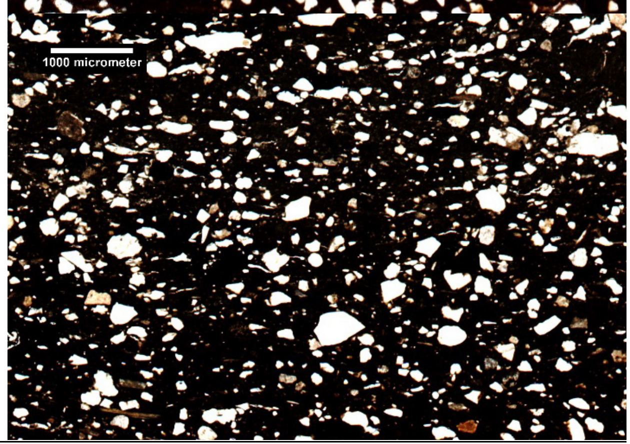
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 10 | Sandy paste with coarse plutonic inclusions that may be crushed or sand. May be related to Paste Groups 1-3 | 775<br>1211<br>1293 | Plain utility<br>Plain utility<br>Plain utility |  |
| Paste Group 11 | Dense, very fine ashy matrix with few aplastics. | 785 | Historic polychrome |  |
| Paste Group 12 | Sandy paste with ash, mica, and conglomerate tuff aplastics. | 941 | Historic polychrome |  |

Table 5.12.  Continued.

| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 13 | Sandy dense paste with small tuff aplastics | 838 | Polished black |  |
| Paste Group 14 | Silty matrix with sparse voids and very fine volcanic sand temper | 773 | Red-on-tan |  |
| Paste Group 15 | Silty matrix with moderate voids and medium-sized volcanic sand temper. | 1347 | Polished red |  |

and approximately 30 percent mixed plutonics such as granite and/or monzonites and fine-grained volcanic lithics such as tuff, rhyolite and andesite. All of these materials were weathered and would have been available as fluvial sand in the Las Huertas drainage, or from nearby drainages, or within the Rio Grande member. Paste Group 2, with three specimens, is essentially the same, with the addition of more very fine quartz –feldspar sand, which is likely natural to the clay source. Paste Group 8, with two specimens, is also very similar, but the particles in the volcanic-plutonic sand temper tended to be smaller, on average.

Another common inclusion type observed at LA 8671 is crushed granite or monzonite. This temper is found in Paste Groups 3, 6, and 10. Paste Group 3, with four specimens, has a matrix with what is probably natural very fine quartz-feldspar sand, and coarse mixed granitic sand. The larger grains are subrounded to subangular and may be sand or crushed rock. The coarse fraction is dominated by granite/monzonite, but also includes some basalt, tuff and porphyritic andesite. Paste Group 6, which also has four specimens, contains very fine quartz-feldspar sand in the clay matrix and the added temper is made up of medium-sized angular to sub-angular plagioclase, with small amounts of hornblende, mica, and pyroxenes. These appear to be the particulate accessories to coarse crushed plutonic temper, which was probably monzonite. The specimens in the group are variable, however, and some include greater amounts of basalt, tuff, hornblende latite, or other fine-grained volcanics.

Paste Groups 4, 9, 11, and 12 each have some portion of very fine vitric ash or tuff in the matrix. These groups may be related to production in the Española Basin north of Santa Fe. Shepard (1942:164) noted an exceptionally fine vitric tuff with equally fine biotite associated with late glazewares from the Chama valley and areas north of Santa Fe. In historic matte paint polychromes, Shepard (1936) noted that volcanic ash from secondary sources used in pottery from San Ildefonso, Santa Clara, and Okay Ohwingeh was “light gray, exceedingly fine textured, free from mineral inclusions” whereas tuff used by Santo Domingo and Cochiti potters was from tertiary sediments and “coarser, less consolidated, and contains more mineral inclusions” (Shepard 1936:450). Paste Group 4 has a matrix with fine vitric ash/tuff, and coarse tuff or pumice temper. The grains are euhedral, with jig-saw edges, and average 736.95 microns in size. Macroscopically this temper is sometimes visible as large opaque gray particles in the paste and 8.2 percent of the assemblage was identified as having coarse tuff temper in the initial analysis. However, during petrographic analysis additional temper types from the initial analysis were found to contain the large euhedral tuff/pumice particles that define this Paste Group (four specimens total). The texture and composition of the tuff/pumice particles is different from tuff observed in sherds from LA 160 and LA 4968. It is frothy and vitric, with few lithic inclusions, and the particles are much larger. This may indicate a different source for the temper, possibly outside the Española Basin. Brody and Colberg (1966:16) had at least one thin-section made for petrographic analysis, and the temper was tentatively sourced it to Frijoles Canyon near Los Alamos. Warren (1976) summarized the temper types observed at historic sites in the Cochiti Dam excavations, which spanned the seventeenth through nineteenth centuries. She noted that vessels from the Española Valley were tempered with vitric tuff with black glass, while sherds made locally near Cochiti were tempered with crushed crystal pumice with clear quartz phenocrysts. Macroscopically the large pumice particles in Paste Group 4 appear dull white and soft rather than crystalline, however the pumice material may still be from near the Pajarito Plateau where pumice is abundant. Hill (2004b) observed glassy pumice temper in one Kuia Polychrome sherd from the petrographic sample from LA 24, near Tijeras. He speculated that this material would have been easy to access in the Abiquiu formation near Santo Domingo or Cochiti.

Paste Groups 9 and 12 also contained small particles of tuff in addition to vitric ash. This tuff however, is more similar to materials from the Española Basin. Paste Group 12, with one specimen, has an ashy matrix with very fine quartz-feldspar sand that is probably natural, and crushed tuff temper. The tuff has a high percentage of lithic accessories, including plagioclase, augite, mica, and pyroxenes. Paste Group 9 contains three specimens. The paste contains very fine vitric ash as well as small tuff grains and volcanic grains that are probably basalt and rhyolite.

Paste Group 7 contained one specimen and is defined by having crushed sherd temper. Paste Group 5 contains three specimens and is defined by hornblende latite temper, and includes one specimen with brown glaze, which may be an eighteenth century intrusive. The other specimens in the group are Plain Utility wares. Hornblende latite has been associated with glaze ware production at Tonque Pueblo (Warren 1969) and the Galisteo Basin (Nelson and Habicht-Mauche 2006).

*Type and form.* Vessel forms at LA 8671 were dominated by bowls ($n$ = 360, 48.78%) and jars ($n$ = 353, 47.83), with small numbers of comal fragments ($n$ = 4, 0.54%), plate fragments ($n$ = 4, 0.54%), one possible cup, and indeterminate sherds ($n$ = 15, 2.17%). Figure 5.12 summarizes vessel forms by descriptive type. It shows that while bowls and jars are roughly evenly represented in the assemblage, they are not evenly distributed across types. Bowls tend to dominate the Smudged Interior/Mica Slip Exterior type, all four of the polished types (red, black, buff, and gray), and all red-on-tan vessels were identified as bowls. Alternatively, jars dominated the Mica Slipped Interior type, as well as a range of unpolished utility wares, such as Smudged Interior/Buff Exterior, Unpolished Buff, and Plain Utility. Historic Polychrome was the only type with extensive surface treatment or decoration to be dominated by jars. The few examples of plates were only observed in the two buff ware types, and one Historic Polychrome example.

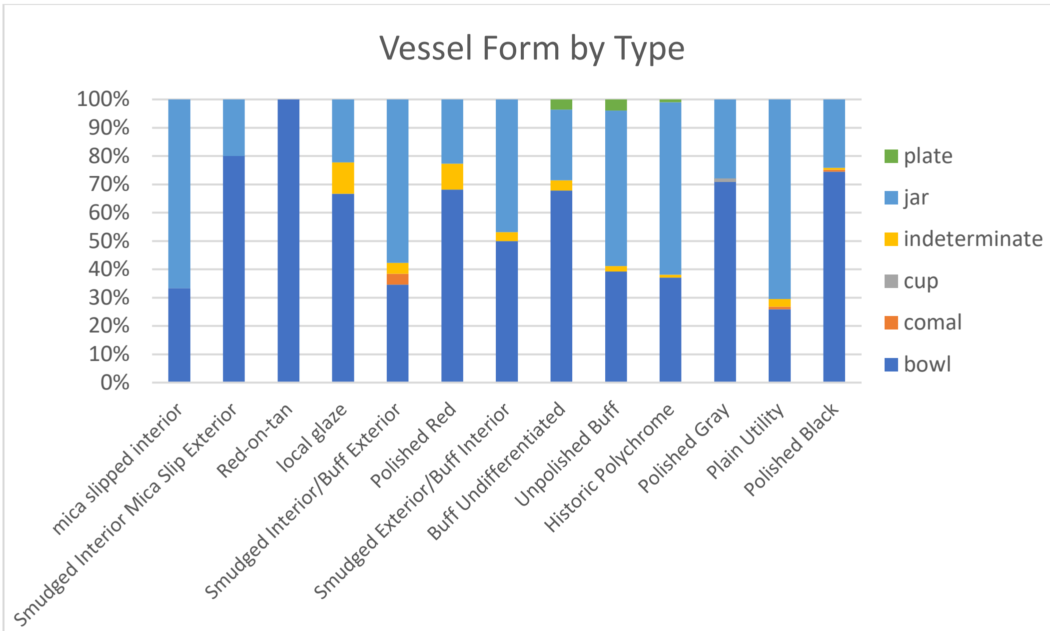



**Figure 5.12. LA 8671 vessel forms by descriptive type.**

It appears that polished wares were preferred as serving vessels, since 59.54 percent of the bowls found at the site were polished and 11.11 percent were polychromes. The polished wares also had the highest percentage of tuff-tempered pastes, which are very similar to the pastes from the Española Basin and likely represent Tewa-made ceramics imported from that area. Not only were polished wares preferred for bowls and serving, but highly polished tuff-tempered polished black ceramics from the Santa Fe area were especially preferred for bowls while a coarser-textured sand-tempered version of Polished Black was used for jars. Brody and Colberg (1966) also noticed this pattern in their initial ceramic analysis. In contrast, Plain Utility wares were almost entirely sand-tempered and represent 49.01 percent of the jar sherds at the site, while polished sherds were only 20.39 percent of the jars. However, this pattern is not necessarily maintained when only sherds identified to form with a high degree of confidence were considered; Plain Utility wares were 38.33 percent of the jar sherds, while polished wares were 33.34 percent for these ceramics. Among bowl rims, polished wares represent 66.67 percent and Plain Utility represents 17.24 percent.

*Vessel Forming Techniques.* X-ray images of 33 sherds from LA 8671 showed manufacturing methods more frequently than other sites in the sample. While sherds from this site also contained equant inclusions which generally did not demonstrate specific orientation visible in X-ray images, and features such as coil seams were never visible, some sherds did clearly have shadows associated with obliterated coils, and clear pinch marks. Specimens 753, 754, and 755, for example, which were all sherds from a single micaceous jar, each showed horizontal coils and perpendicular pinch marks (Figure 5.13). The pinch marks suggest that this secondary forming technique was used to draw up the vessel walls after initial shaping with coils. Striations from scraping, relic coils, pinch marks, and larger depressions that were likely from paddle and anvil techniques were all observed within the X-ray sample. Most sherds, however, did not show any forming techniques.

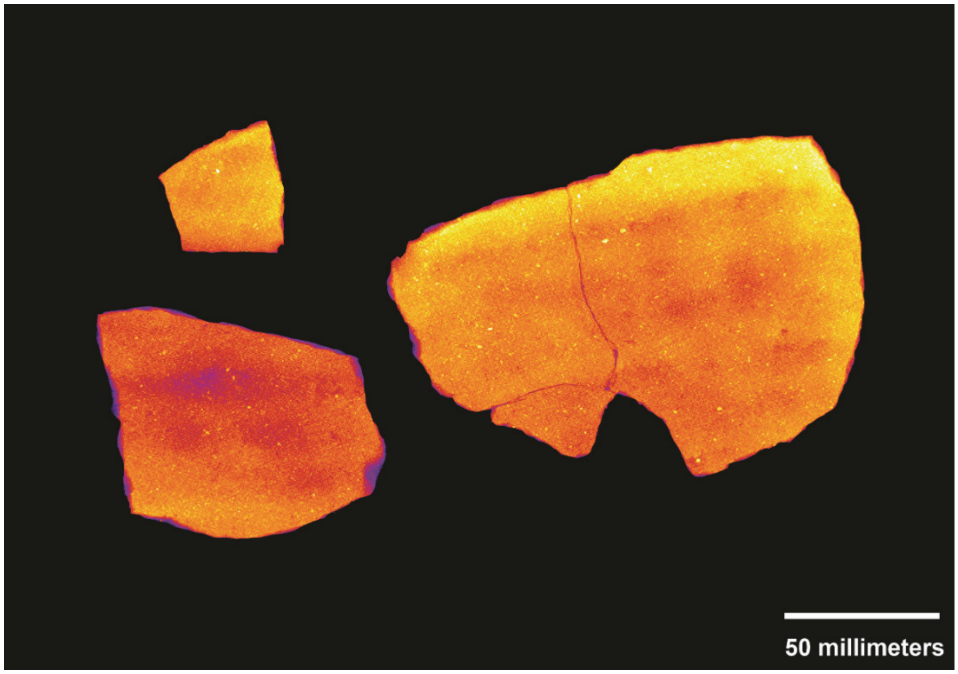



**Figure 5.13. LA 8671 specimens 753, 754, and 755. X-ray image with altered color, showing coil lines and pinch marks. Vessel is partially reconstructed jar made with micaceous clays and is likely an Ocate Micaceous vessel. This type is associated with Jicarilla Apache potters (Eiselt 2006).**

Within the thin-section sample, five sherds displayed perfect preferred orientation of voids, 14 showed partial preferred orientation, and 20 showed either random orientation or did not have elongated coils. This suggests that while the primary forming technique for most vessels in the sample was coiling, some vessels were also produced using either slab, pinch, or wheel techniques, which align voids in a vertical manner parallel with vessel walls. In general, the sample assemblage from LA 8671 displayed more variation in possible vessel forming techniques than the other three sites in the study.

*Type and firing.* In refiring experiments, the highest number of the LA 8671 sub-sample (81.82%) experienced a color change immediately at 500° C, suggesting that the majority of the sherds were initially fired at low temperatures that had not removed all of the carbonaceous materials in the clay (Figure 5.14). At all other temperatures, relatively small numbers of sherds experienced color changes. After the 950° C soak, 36.36 percent of the sherds were within the 2.5YR hue, and 36.36 percent were within the 5YR hue (Figure 5.15). The similar post-soak colors suggest that most of the sherds were from mineralogically similar clays. There were a few outliers, such as one sherd that fired to 10YR and one that fired 10R, both of which were Historic Polychrome sherds, most likely Santa Ana Polychrome. Overall, Historic Polychrome sherds showed the greatest variety of post-soak hues (4 hues), followed by Plain Utility wares (three hues), although Plain Utility only had one specimen fall into the 7.5YR hue. Franklin (2007) conducted a refiring experiment using sherds from the Late Colonial Los Ranchos site, located approximately 34 kilometers southwest from LA 8671. Franklin also hypothesized that most of the plain wares from the late colonial site were locally made. In his sample of 44 sherds, 50 percent were within 2.5YR hue, 43.1 percent were within the 5YR hue, and 6.8 percent were within the 7.5YR hue. In his sample, Polished Black sherds showed the greatest variety in paste colors, with more representation within 7.5YR.

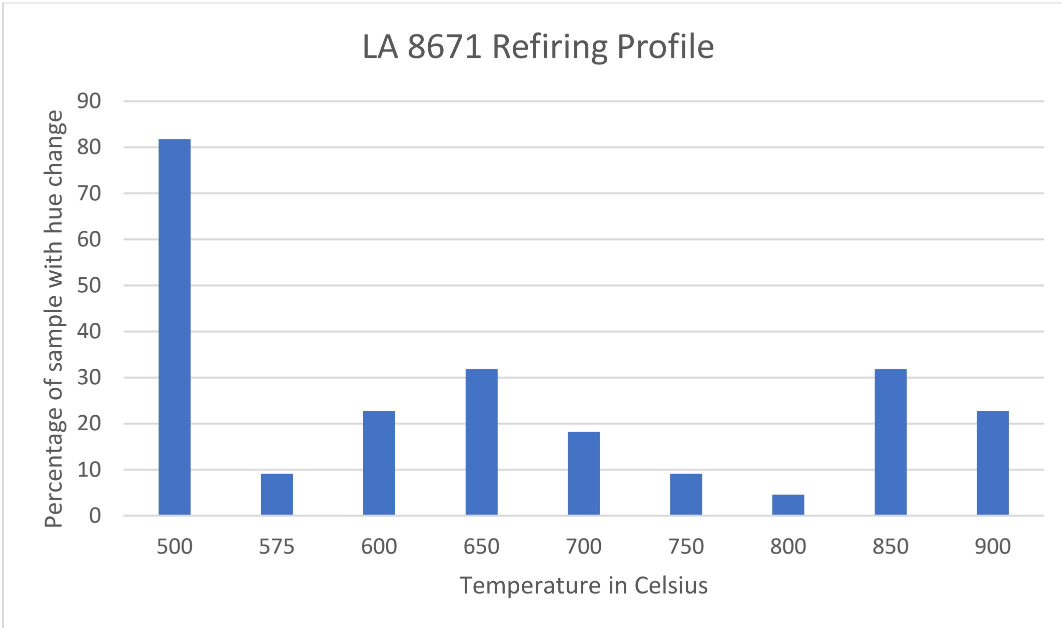



**Figure 5.14. LA 8671 refiring profile.**

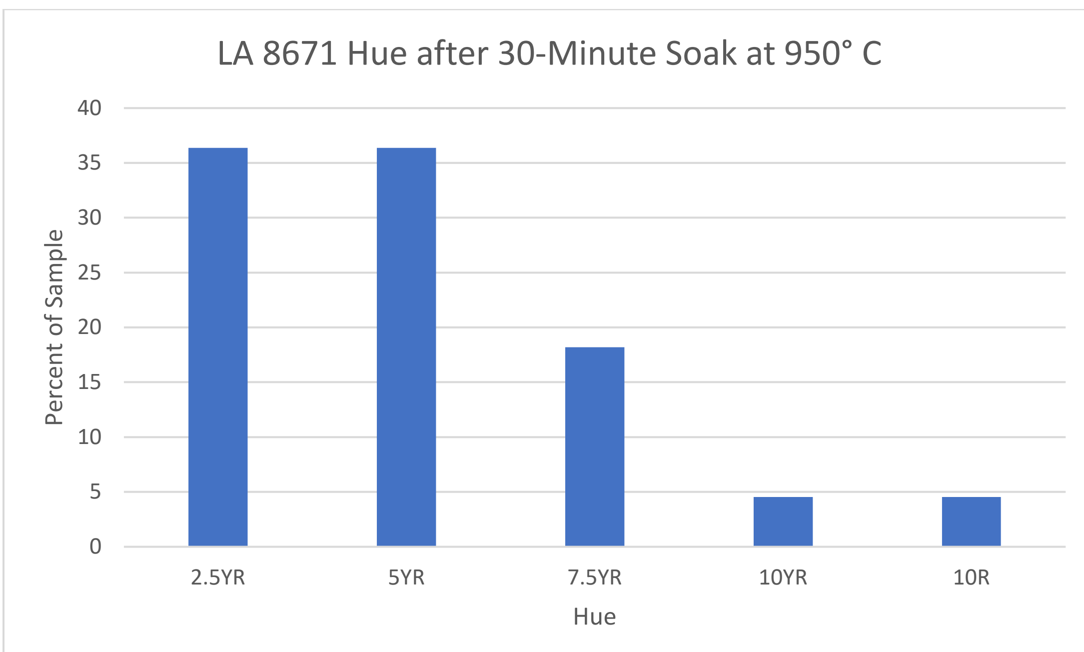



**Figure 5.15. LA 8671 post-950° C soak.**

*LA 8671 Summary and Conclusions*

Results from the initial analysis and technological analyses of 736 historic New Mexican sherds from LA 8671 suggest that this site may have the highest level of variability in the sample and that resident consumption patterns were distinct from those represented at the Cuyamungue area sites. A full range of descriptive types were present at the site, but the ceramic assemblage at LA 8671 was dominated by polished wares (including black, gray, red, and buff colors), which collectively represent 39.70 percent of the total New Mexican ceramics. Plain Utility was the next most common type found at the site, with 32.66 percent.

While they may have imported some polished black serving wares from Tewa potters, residents at LA 8671 do not appear to have imported much micaceous or mica-slipped pottery, which only comprised 2.31 percent of the assemblage. This may indicate that Tewa potters were producing some types of vessels (polished and polychrome wares) for export, while the parallel mica-slipped tradition was either not made widely available, or its appeal with Hispanic consumers was more localized in scope.

The higher level of variation in the LA 8671 assemblage is best seen in the greater variety in aplastic types and clay constituents. Twenty-six paste groups were identified during optical analysis and 15 during petrographic analysis. Within the petrographic groups, there may be at least six to eight unique clay recipes represented. This variation is in part thanks to the geological variation present in the site area, with materials from the Sandia Mountains and the Santa Fe Group available in the Rio Grande floodplain, and additional alluvial materials along the Las Huertas drainage.

Little petrographic or clay sourcing work has been done with historic era decorated or plain wares in the central New Mexico/Albuquerque area for use as comparison to this study.

Work has primarily consisted of optical analysis by Warren (1979, 1976, 1980; Warren and Warren 1995). David Hill (2004b) examined 50 thin-sections of sherds from excavations at San Antonio de Padua in Tijeras Canyon, including four early historic striated utility wares, three Santa Ana Polychrome sherds, one Kiua Polychrome sherd, five black ware sherds, and one Puname Polychrome sherd. In addition to a prehispanic pueblo, the site contained a late fifteenth-early sixteenth century occupation and an early nineteenth century occupation. Hill noted that the three Santa Ana Polychrome sherds appeared to be from three different sources based on the lithics present in the sand, the Puname sherd was probably from the Zia area based on its basalt temper, and glassy pumice suggested the Kiua Polychrome sherd was produced near Cochiti or Santo Domingo pueblos. The black wares from San Antonio de Padua all contained subarkosic sand temper with some volcanic lithics, however differences in pastes and lithic types suggested that they came from at least four different sources. In looking at historic materials from testing at the same site in the 1970s, Warren (1980) had also hypothesized the ceramics had come from at least 11 sources. This indicates that the variability observed at LA 8671 may not be unusual for this region.

The geological variety demonstrated in the paste and temper groups at LA 8671 and San Antonio de Padua most likely reflects, at least in part, the geological variety of the region. Arnold (2000) notes that geological factors, the areal distribution of clay or temper sources, variability of raw material and the distance that potters travel can all effect the variability of paste recipes within a single community. However, because so little work has been done to petrographically or chemically characterize the historically used sand and clay in this region, it is unclear how distinct the different sources identified by this study, by Warren (1980), and by Hill (2004b) may be. They could represent distinct potting communities, or multiple sand temper sources used by the same potters, and this cannot be determined without a larger regional sample from more sites, especially from the pottery producing pueblos in the area. While rounded sand temper is often associated with Santa Ana Pueblo, it is likely that Sandia Pueblo, Isleta Pueblo, and San Felipe Pueblo all produced some sand-tempered pottery (Frank and Harlow 1997; Marshall 2008, 2015). Furthermore, if Hispanic or mestizo communities were also producing pottery for household use, sand is an easily accessed tempering material that was clearly adequate to manage the physical characteristics of the local clays. Additional study to identify distinct sand characteristics, like those conducted in the Tonto Basin (Heidke et al. 2002; Heidke and Miksa 2000; Miksa and Heidke 2001) or a combination of petrographic studies with INAA could help clarify this issue.

Overall, the refiring analysis demonstrates that LA 8671 pastes, like the added tempers, have greater variety than those observed at the other three sites in the sample. The pastes represent a greater number of post-soak hues (five, as opposed to three at LA 160 and LA 4968, and two at the Barela-Reynolds house) and the greatest distribution among the hues (a total of 6 sherds fell outside the 2.5–5YR range). The variety observed at LA 8671 at both technological stages supports the conclusion that residents at LA 8671 drew on a wider range of potting communities to acquire the ceramics that make up the New Mexican ceramic assemblage at the site.

Results from the initial analysis and technological analysis of sherds from LA 8671 revealed more variety than initially expected. LA 8671 is, in many ways, the most "remote" site in the sample. The Hispanic settlements along the Las Huertas drainage and the San Antonio de las Huertas land grant were small in the early nineteenth century. While nearby San José de las Huertas (occupied 1765 to 1826) had been a clustered village with a small plaza layout, LA 8671 appears to have been part of the next wave of settlement in the area, as families began to return to the region after fleeing Navajo and Apache raids in the 1830s. The Ideal Site was not within a traditional village cluster, nor was it located near a major trading center like Mesilla. The area was not unpopulated, however. Surveys along the Las Huertas drainage identified a distributed settlement pattern, rather than clustered villages. In 1843, Placitas (2.4 km to the south) had 16 families, Tejón (approximately 9.7 km south) was founded in 1840, and La Madera was founded by Las Huertas ancestors in 1844 (Atherton 2013). Tecolote and Ojo de la Casa were founded in the late 1850s (Atherton 2013:39). So, while the Ideal Site may not have been within an "urban center" or directly along the Camino Real or Santa Fe Trail, there were a range of Pueblo and Hispanic settlement groups nearby for consumer relationships. Furthermore, the Las Huertas drainage is well-located along an access corridor across the mountains and onto the eastern plains. The diversity in New Mexican ceramics at this site suggest that residents may have had a strategy to maintain many diverse consumer relationships that stretched long distances in the territory.

*Barela-Reynolds House*

The Barela-Reynolds house is located within the Rio Grande corridor, but outside of the main Puebloan cultural sphere, and separated from the main Hispanic settlements at Santa Fe by approximately 483 km (300 miles) and the Jornada del Muerto. Travel, communication and trade between the two centers did occur, but generally residents in Mesilla drew on different communities of potters to supply their daily ceramic needs. I analyzed 659 sherds (100%) from test excavations at the Barela-Reynolds house.

*Clay Preparation and Petrographic Results*. Twenty temper groups were identified with optical examination during the initial analysis. This was the first site analyzed in the sample, which may have caused some proliferation of temper groups to be identified. The dominant temper groups were 'sand' (34.87%) and 'mixed sand' (23.74%). The next most common temper groups were 'fine tuff and sand' (12.21%), followed by granite and sand without abundant mica (6.38%). All other temper groups represent less than five percent of the initial sample. The three most common descriptive types in the initial sample: Plain Utility (29.31%), Unpolished Buff (20.08%) and Smudged Exterior/Buff Interior (10.72%) were each dominated by Sand and Mixed Sand temper groups (Appendix B, Tables B.8 and B.9).

Mixed Sand is not a temper group included in the OAS analyses used as the model for this project, however it was created for the Barela-Reynolds assemblage to describe optically-observed rounded sand inclusions that are very fine, and, unlike the granitic and quartz-based sands observed in the Española Basin sites, contain a high number of dark colored grains, presumably mafic igneous materials. This group was also identified within the LA 8671 analysis.

The historic settlement of Mesilla is located along the Rio Grande in the northeastern portion of the Mesilla Basin, an incised stretch of the Rio Grande. Much of this geologic discussion comes from Hawley and Lozinsky (1992:13–20) and Hawley and colleagues (Hawley et al. 2001). Like the Cuyamungue sites and the Ideal Site, the area's geology is characterized by the Rio Grande Rift and basin fill and fluvial deposits from the Rio Grande. The Mesilla Basin is framed by Robledo and Doña Ana Mountains to the north and adjacent to Mesilla, the Organ-Franklin-Juarez mountain chain to the east, the Bolson de los Muertos plains to the south, which is the least well-defined boundary of the basin, and the fault block and volcanic uplands of the East Portrillos and West Portrillo Basalt Field to the west (Figure 5.16).

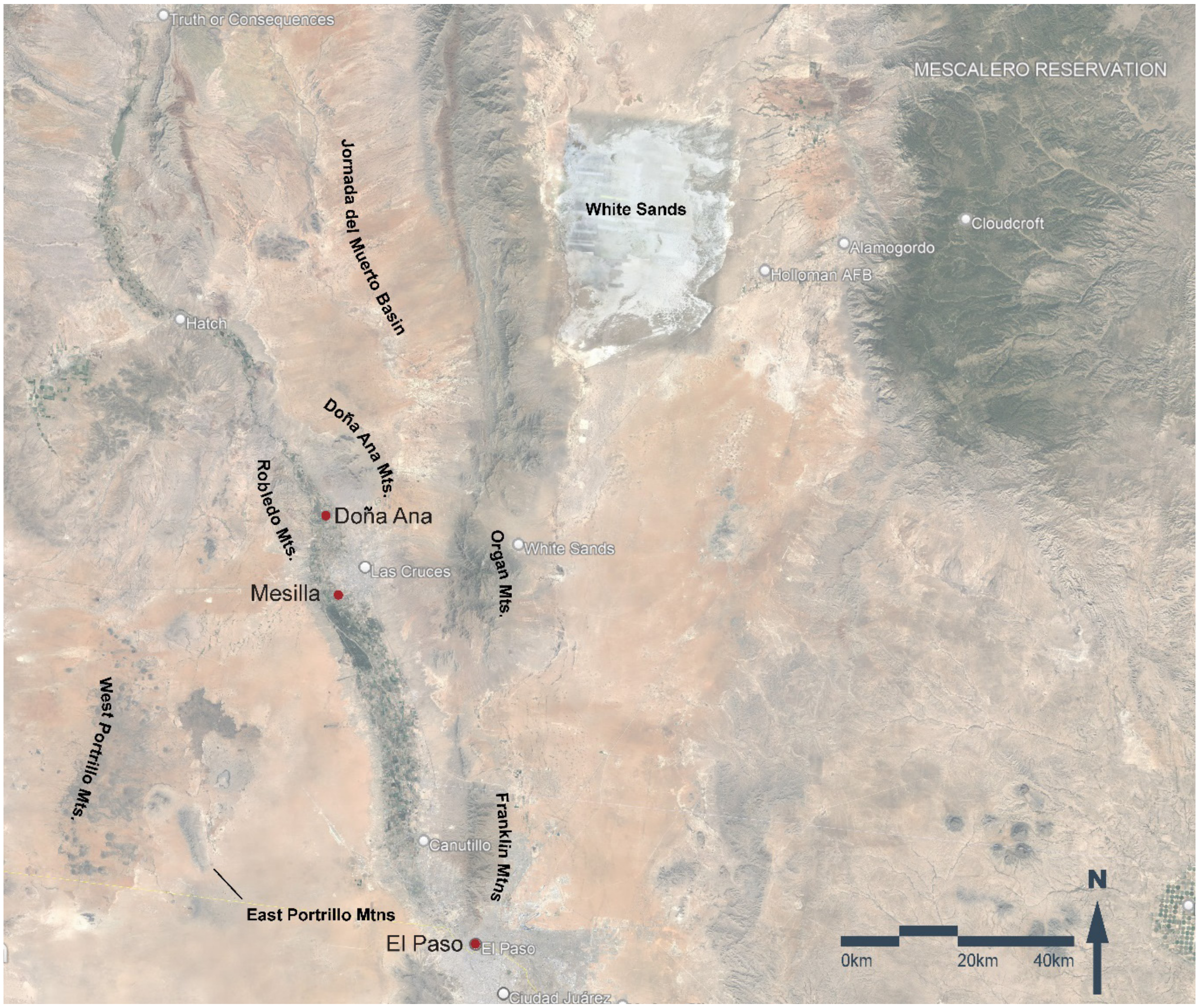



**Figure 5.16. Mesilla Basin area, with mountain ranges mentioned in text. Base map from GoogleEarth.**

The northeast portion of the Mesilla Basin is transitional to the Jornada del Muerto Basin, which has generally received more archaeological interest over the last two decades. The flanking mountains are largely volcanic materials to the north and sedimentary carbonates to the south. The Doña Ana and southern Organ Mountains contribute tertiary igneous intrusives such as granites and monzonites as well as volcanics such as rhyolites to andesites (Gile 1994). The Tortugas, Bishop Cap, Franklin, East Portrillo and Robledo uplifts are primarily marine carbonates, although the Franklin Mountains are also known to have intrusive granite exposures (Seager and Mack 1994).

A total of eleven distinct paste groups were identified in the petrographic sub-sample from the Barela-Reynolds house (Table 5.13). Full descriptions of paste groups and quantitative information for individual specimens are in Appendix B. The subsample was predominantly variations of sand tempers, most likely representing locally produced wares using sandy clays or temper drawn from Santa Fe Group alluvium.

Paste Groups 1–3, 5 and 6 appear to be variations based on clay tempered with different amounts of local quartz-feldspar sand that includes high amounts of weathered volcanic and plutonic lithics. Differences among these paste groups are primarily based on the size, angularity, and density of the sand particles, or in the size and orientation of voids, which may suggest different temper preparation, clay wedging, and preparation practices among the groups. All of these ceramics appear to be local in nature and the combined groups account for 22 of the 40 petrographic specimens in the sample.

Paste Group 4 has particles of grog in addition to volcanic sand. The grog appears to have similar paste and temper characteristics as the surrounding matrix, suggesting that similar local sherds were recycled into the clay. Paste Group 11 is composed of three sherds. It has a very dense silty matrix with almost no voids. In this regard the sherds were almost

Table 5.13. Barela-Reynolds House Paste Groups.

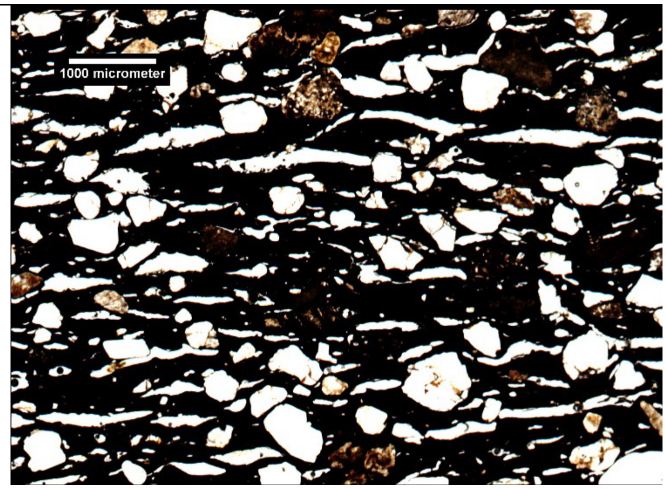
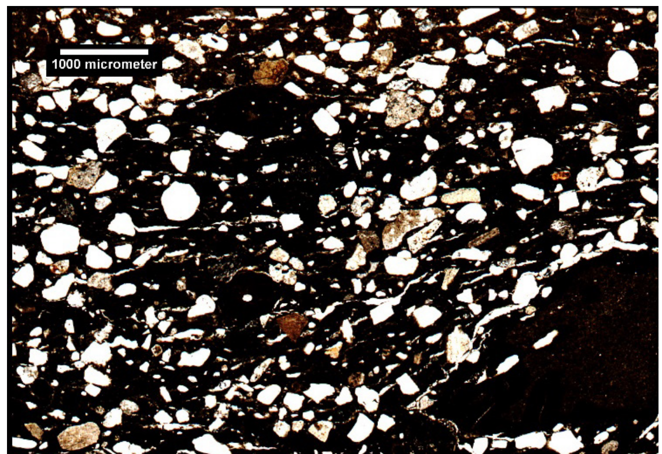
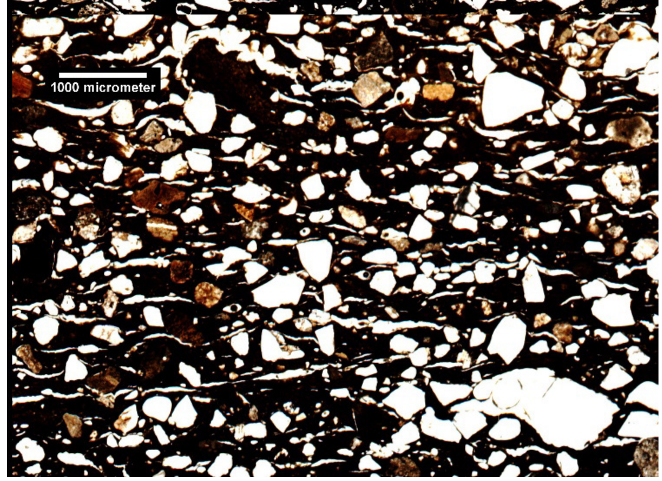
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 1 | Porous, badly mixed clay with volcanic sand temper. | 19 | Red-on-tan |  |
| | | 20 | Red-on-tan | |
| | | 136 | Buff undifferentiated | |
| | | 160 | Smudged Exterior/Buff Interior | |
| | | 162 | Smudged Exterior/Buff Interior | |
| | | 347 | Plain Utility | |
| | | 369 | Smudged interior/Buff Exterior | |
| | | 590 | Unpolished buff | |
| | | 663 | Buff undifferentiated | |
| Paste Group 2 | Porous, with very fine volcanic sand temper. | 372 | Mica slipped |  |
| | | 373 | Unpolished buff | |
| | | 685 | Smudged Interior/Buff Exterior | |
| Paste Group 3 | Moderately porous, well-mixed clay with volcanic sand temper. | 53 | Red-on-tan |  |
| | | 205 | Smudged Exterior/Buff Interior | |
| | | 227 | Plain Utility | |
| | | 269 | Smudged Exterior/Buff Interior | |
| | | 297 | Smudged Exterior/Buff Interior | |
| | | 398 | Plain Utility | |
| | | 535 | Unpolished Buff | |
| | | 613 | Smudged Exterior/Buff Interior | |

Table 5.13. Continued.

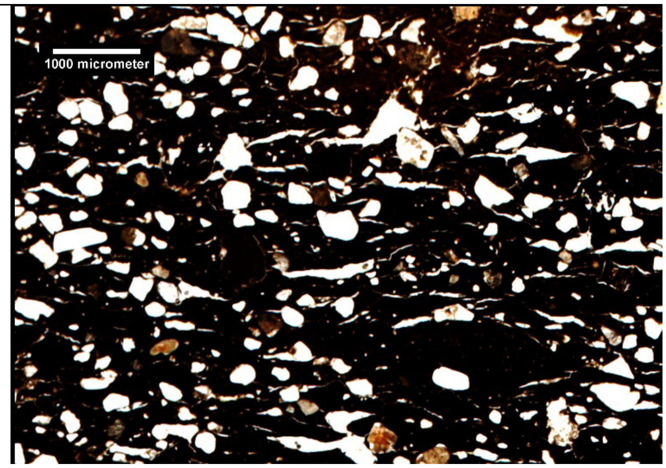
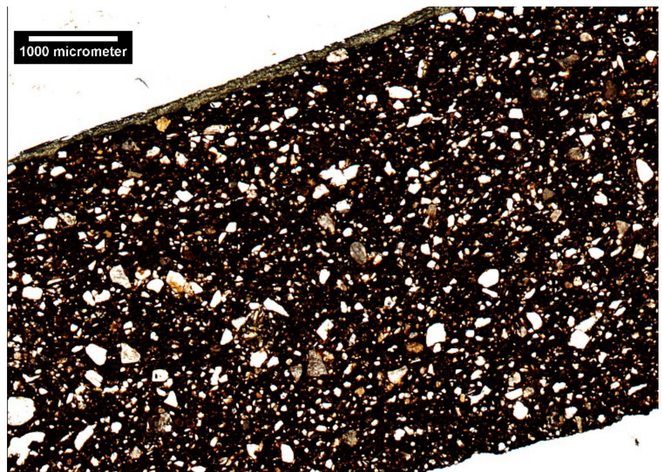
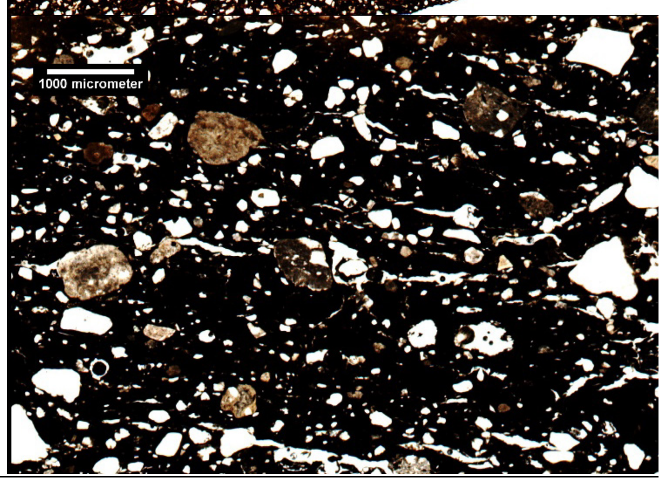
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 4 | Porous with volcanic sand and grog temper | 153<br>420<br>429<br>464<br>493<br>508 | Buff Undifferentiated<br>Smudged Exterior/Buff Interior<br>Plain Utility<br>Smudged Exterior/Buff Interior<br>Smudged Exterior/Buff Interior<br>Plain Utility |  |
| Paste Group 5 | Dense paste with fine-grained sand temper. | 165 | Plain Utility |  |
| Paste Group 6 | Porous, with volcanic sand | 250<br>320<br>466<br>632 | Smudged Exterior/Buff Interior<br>Smudged Exterior/Buff Interior<br>Plain Utility<br>Smudged Exterior/Buff Interior |  |

Table 5.13. Continued.

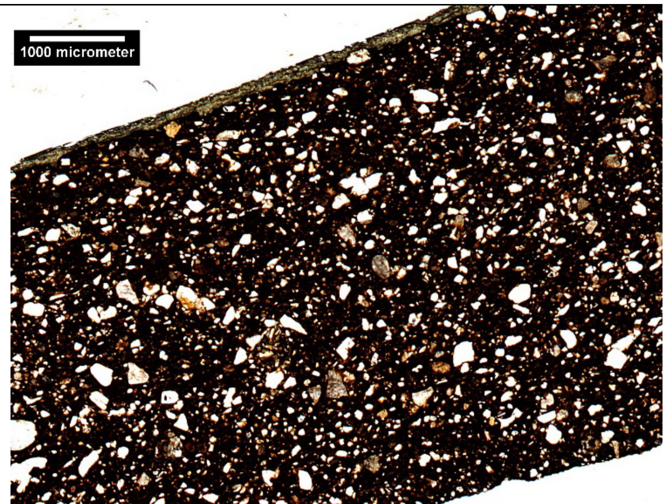
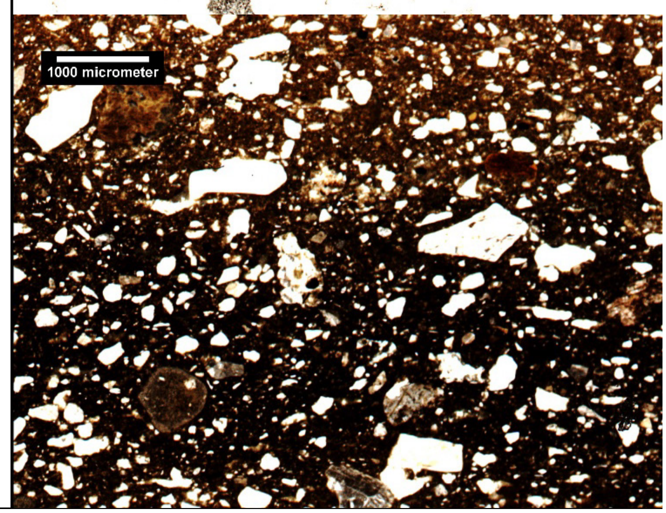
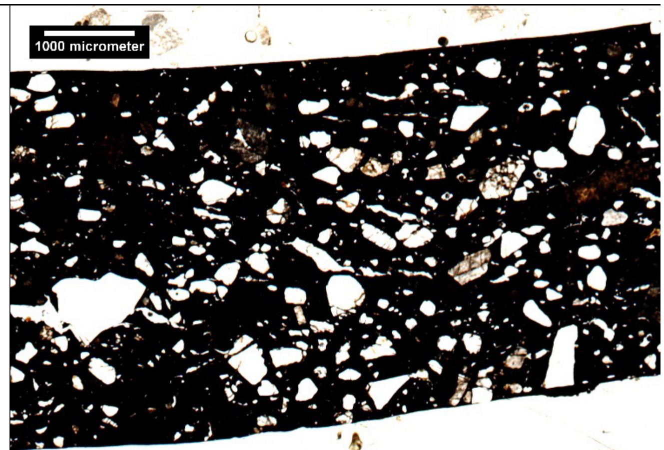
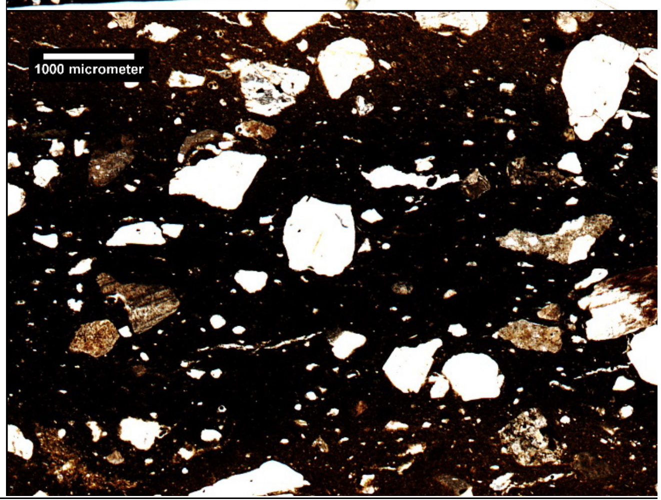
| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 7 | Very dense non-local paste with fine-grained sand temper | 64<br>110<br>121 | Green glazed exterior<br>Dark green glazed exterior<br>Light brown glazed exterior |  |
| Paste Group 8 | Very dense non-local paste with no apparent temper and few small quartz and granite aplastics | 128 | Dark brown glazed exterior. |  |
| Paste Group 9 | Dense paste with view voids and bimodal distribution of subangular granite and volcanic inclusions. | 362<br>687<br>693 | Polished gray<br>Unpolished buff<br>Polished red |  |

Table 5.13. Continued.

| Paste Group | Description | Specimens | | Example Photo |
|---|---|---|---|---|
| Paste Group 10 | Dense, coarsely grained paste with crushed rock temper | 416 | Polished black |  |
| Paste Group 11 | Silty paste with crushed granite temper and mudstone inclusions. | 41 | Red-on-tan |  |

similar to some of the Tewa sherds from LA 160 and LA 4968, but it is unclear if Paste Group 11 represents a local variant of a Puebloan tradition of clay preparation.

Paste Groups 7 and 8 were identified for four lead-glazed sherds that appear to be from four different vessels. Often called olive jars, or green-glazed ware or Guanajuato Green Glaze, lead-glazed earthen wares such as these were probably imported from Mexico, although the precise source of these sherds is unknown (Barnes 1980). Fournier (1999) discusses many production locations for lead-glazed earthenwares, including along the Texas border near Goliad. Potters tended to produce these wares along trade routes and near mining towns where they could access the materials for the pigment and glaze. The Parral mining district was well-connected with the New Mexico Territory and sent out material from Puebla, Michoacán, and Cuauhtitlán. One lead-glazed ware that Fournier examined petrographically contained more than 50 percent paste and volcanic-andesitic inclusions, whereas pastes from central Mexico tend to be tempered volcanic lithics or volcanic ash (Fournier 1999). The pastes observed in the Barela-Reynolds house lead-glazed earthenware sherds are very fine grained with almost no inclusions larger than silt size (especially in Paste Group 8).

Paste Groups 12 and 13 were each represented by one sherd. The sherd in Paste Group 12 was heavily carbonized, making it difficult to determine many characteristics about the clay matrix. Aplastics appear to be angular granite or monzonite with heavily weathered microcline and orthoclase feldspars, felty mafic lithics, and sparse basalt and rhyolite. Paste Group 13 is represented by one red-on-tan sherd with few voids and rounded to sub-rounded volcanic aplastics. These may be sand, but there is a higher ratio of volcanic lithics to quartz-feldspar grains than observed in the other sand-dominated paste groups. This sherd may represent a different sand temper source.

Overall, the results of the petrographic analysis indicate that the paste and temper variation observed optically during the initial analysis may be more related to the range of mixed sand visible in the paste during visual inspection, rather than actual technological variation. The vast majority of ceramics were produced using locally available volcanic sand temper and fine-textured clays that experienced high rates of shrinkage. Variation was primarily confined to the amount and fineness of the sand and possible minor variations in sand sources, based on differing proportions of certain lithics such as rhyolite/tuff or spherulites. Future work that includes extensive raw material sampling may be better able to identify individual sand lithofacies and more closely source some of these local sand-tempered wares (Heidke et al. 2002; Miksa and Heidke 2001).

*Type and form.* The Barela-Reynolds house assemblage is dominated by bowl (43.87%) and jar forms (22.69%), although vessel form could not be determined for a high number of sherds (32.68%). There is no type that is predominantly jars, but this may be due to the difficulty in distinguishing bowls from jars on small sherds in type groups that have little differentiation between interior and exterior surface treatments. Two Descriptive type groups that dominate the Barela-Reynolds house assemblage, Plain Utility (*n* = 147) and Smudged Interior/Buff Exterior (*n* = 115) generally reflect the same proportions of forms as the full assemblage, with approximately 40–42 percent for bowls and 20–28 percent for jars. Unpolished Buff, another dominant type in the assemblage (*n* = 142) is more evenly distributed between bowls and jars, at approximately 35–36 percent each. Types more likely to be associated with serving wares, such as polished types, only represent a small portion of the assemblage (19.51% total for buff, red, gray, and black polished types), but are, not surprisingly, strongly dominated by bowl forms (Figure 5.17).

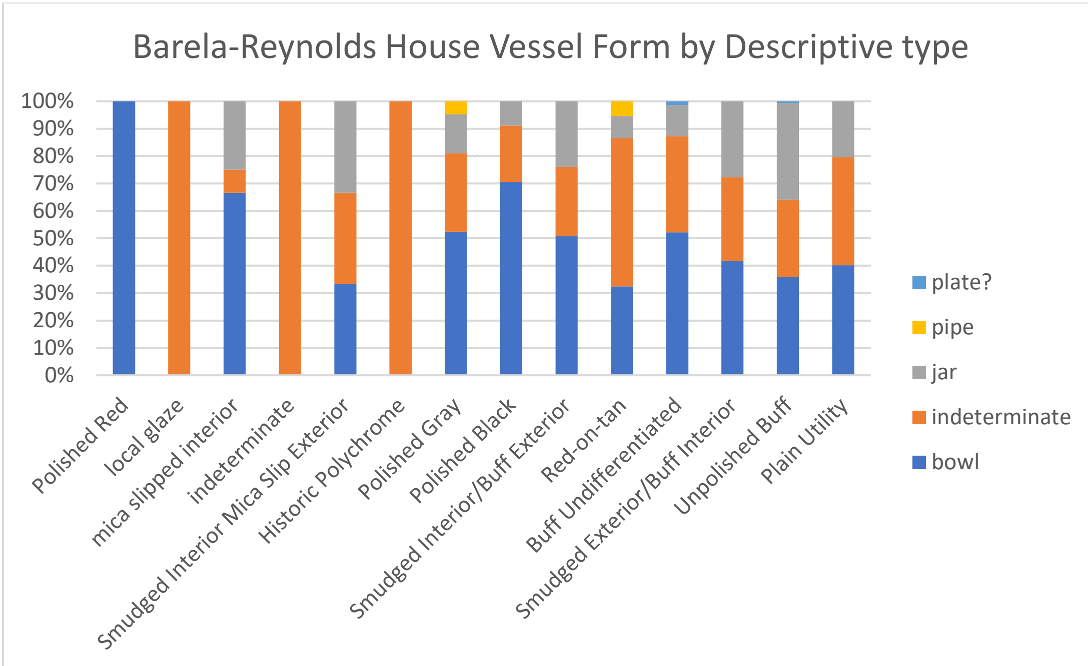



**Figure 5.17. Barela-Reynolds house vessel forms by descriptive type.**

*Vessel Forming Techniques.* X-ray images of 28 sherds from the Barela-Reynolds house demonstrate the frequency of sand-tempered sherds in the assemblage, as well as a general trend towards less-carefully finished vessels. X-rays exhibit more variation in wall thicknesses than the other three sites, though not always in ways that can be interpreted as forming techniques. Specimen 205 has coils clearly evident in the X-ray image (though not coil seams) and Specimen 64, a lead-glazed earthenware jar sherd from Mexico, has characteristics of a wheel-made vessel. Some sherds demonstrate paddle and anvil shadows, as well as compression cracks around large pieces of temper.

Thin-sections of 40 sherds from the Barela-Reynolds house also contain information regarding forming techniques. The voids observed in Barela-Reynolds house sherds were the largest and more frequently elongated than any other site in the study, which indicates that the clays were probably not well kneaded or wedged before vessel production, and that they had a high degree of shrinkage. Unlike the other sites in the study, 15 sherds demonstrated voids with perfect preferred orientation, 7 showed partial preferred, 8 were random and 9 did not have elongated voids or had very few voids. At least three sherds (sp 362, sp 398 and sp 466) showed clear examples of relic coils in thin-section. Together this suggests that while coils were less thoroughly obliterated in vessels at the Barela-Reynolds house, coiling was generally not the most common forming technique. X-ray evidence suggests that paddle-and-anvil strategies, possibly over a mold-formed or slab formed vessel, was more common in the plain wares at this site.

Paddle-and-anvil forming techniques are not common in the New Mexico Territory and are not well-known among Puebloan pottery traditions. However, Mesilla was not particularly close to the larger pottery-producing pueblos during the nineteenth century, and Barela-Reynolds house residents likely procured at least some, if not much of their pottery from other sources. Ceramics formed with paddle-and-anvil techniques during the historic period in the southwest include Papago Plain and Sobaipuris Plain, both of which are abundant at nineteenth century sites in Tucson. Fontana and colleagues describe Papago pottery forming techniques as starting on an everted bowl mold, and using a wooden paddle and stone anvil to shape and thin the vessel walls (Fontana et al. 1962:58). Sobaipuris Plain was most likely produced by Tohono O'odham peoples. Heike (Heidke 2005) notes that the pottery was mostly tempered with sand, sand and grog, or sand and manure, but that the ratios and sources of sand changed over time. Alternatively, Seymour (2008) notes that southern Chiricahua and Mescalero Apache pottery types, often grouped under the umbrella term Sierra Plain, are also formed with paddle-and-anvil techniques.

*Type and firing.* In refiring experiments, the greatest proportion of the Barela-Reynolds house sub-sample (56.25%) experienced a first color change at 600° C (Figure 5.18). At all other temperatures, between 12.5 and 31.5 percent of sherds exhibited a color change. Nearly 69 percent of the sub-sample also exhibited a color change at 900° C, suggesting that most of the pastes in the Barela-Reynolds house sub-sample contained carbonaceous material that was finally burned out at this temperature.

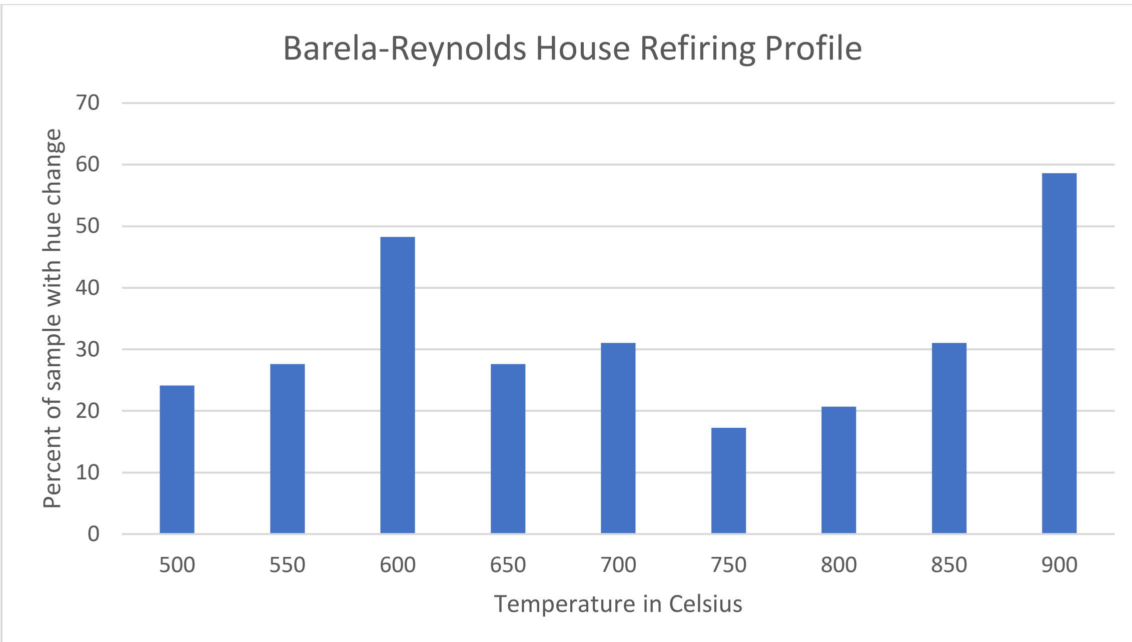



**Figure 5.18. Barela-Reynolds house refiring profile.**

The 950° C soak supports this: almost all sherds were within the 2.5YR hue after the 30-minute soak (Figure 5.19). The similar post-soak colors also suggest that the sherds were from similar clay sources. Only two hues were well-represented after the soak, and only three descriptive types in the sub-sample—non-local glaze, Smudged Exterior/Buff Interior and Unpolished Buff—exhibited more than one hue. On the whole, the Barela-Reynolds house

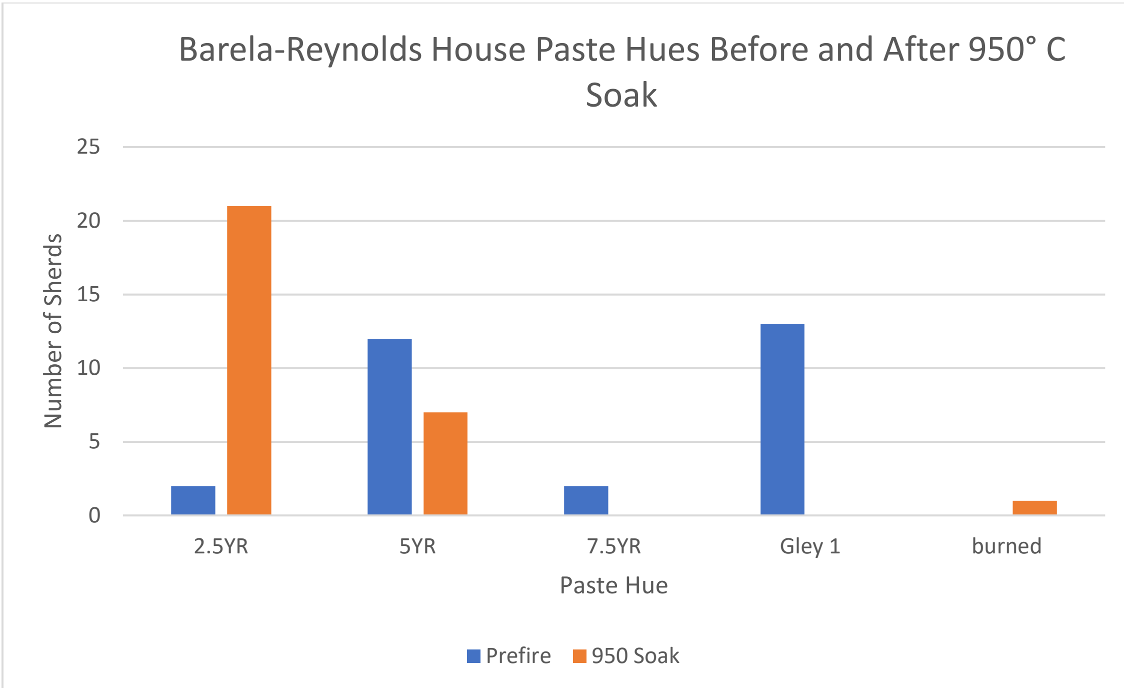



**Figure 5.19. Barela-Reynolds house, paste hues before and after 950° C soak.**

sub-sample suggests that fairly homogeneous pastes and firing profiles are represented within the site assemblage.

*Barela-Reynolds House Summary and Conclusions*

Although the Barela-Reynolds house is located on the main plaza of what became an important trading center between the 1840s and 1880, the New Mexican ceramics from the test excavations on the property generally demonstrate low variability compared to the other three sites in the study sample. This may be due to more limited numbers of ceramics producers in the southern New Mexico sub-region, or because residents were able to meet more of their dishware needs using materials imported from Mexico and the United States (see Chapter 7). Furthermore, while some early 1840s features may have been uncovered in the Barela-Reynolds house excavations, the assemblage generally reflects the later nineteenth century occupation of the site, unlike the Cuyamungue sites or LA 8671. It may be that local

New Mexican ceramics were already being replaced by imported materials at this time. New Mexican ceramics only represent 14.8 percent of the total assemblage at the Barela-Reynolds house, whereas they were between 73 and 96 percent at the other sites in the sample.

Only four Historic Polychrome sherds were observed in the New Mexican ceramic assemblage at the Barela-Reynolds house, and descriptive types were predominantly those with minimal surface treatments, such as Plain Utility, and Unpolished Buff ceramics. Together these two minimally treated types are 55.08 percent of the New Mexican ceramic assemblage recovered from the Barela-Reynolds house. Polished wares, which were moderately common in the other three sites in the sample, were some of the least common at Mesilla. Buff Undifferentiated accounted for 10.17 percent, Polished Black for 5.77 percent, and Polished Red, which could have been portions of all-over red vessels or lower portions of polychrome types, was represented by only three sherds (0.46%).

Although polished types were less common at the Barela-Reynolds house, it seems that Mesilleros still had greater need for bowls forms than jar forms. Bowls were the most common identified form at the site, representing 44.01 percent of the assemblage, when all sherds are considered, and 52.78 percent of the assemblage when only rims are considered. This is a greater percentage of bowls than the Española Basin sites, but similar to LA 8671. While Plain Utility and Unpolished Buff types dominate both the bowl and jar forms, polished types were still more commonly bowls (71.05% of Polished Black sherds were bowls), reflecting their preferred use as serving wares, similar to other sites in the sample. It seems that Mesilleros were using local ceramics more for utilitarian and cooking purposes than for serving wares, or that they had different aesthetic requirements than Hispanic households in northern New Mexico.

Eleven paste groups were observed within the Barela-Reynolds petrography sub-sample, most of which were characterized by varying amounts of local sand temper. Within the paste groups, it seems likely that approximately six distinct clay recipes may be represented, two of which are defined by lead glazed jars from Mexico. Twenty-two of 40 sherds contained local sand temper, with minor variation in clay mixing and voids among the paste groups, one group had sherd temper in addition to sand, one group had primarily silty un-tempered clay, and one sherd was highly carbonized and difficult to assess. With four likely local clay recipes, the Barela-Reynolds house appears to have the lowest level of paste variation in the sample.

The temper types observed in the Barela-Reynolds house assemblage are similar to other earlier historic plain wares observed in Colonial and Mexican Republic (Mexican Territorial) period excavations from mission sites in El Paso, and western Texas (Fox and Ulrich 2008; Marshall 1997). Previous petrographic analysis of historic plain wares in this region has primarily consisted of small samples from Colonial Period excavations at Ysleta Mission and surrounding sites, and from Socorro Mission, located southwest of El Paso, Texas, approximately 74 km away at the southern end of the Mesilla Basin. Petrographic analysis of prehispanic sherds of El Paso Brown and El Paso Polychrome types also provides clues as to the geological variability in materials available to potters in southern New Mexico, including the adjacent Jornada del Muerto and Tularosa Basins (Hill 2009; M. Miller 1995; Reed et al. 2002).

Colonial Period (1580s–1830) ceramics from the Ysleta and Socorro Mission sites represent a break from the pre-contact El Paso Brown tradition, probably due in part to the new forms of cultural contact between indigenous groups that occurred in mission settings (not unlike in California). Ceramics from this period have been identified as Ysleta Brown or Valle Bajo Brown (Hill 1994; Miller and O'Leary 1992), as well as later San Elizario Phase sherds (1789–1920) (Marshall 1997). While pre-contact El Paso Brown ceramics were dominated by granite and crushed granite tempers, historic brown wares were most commonly tempered with sand. Miller and O'Leary (1992) noted rhyolite, andesite, and felsite sands in Colonial Period Ysleta Clinic brown wares, while Marshall (1997) described sand, or chert and sand temper. Hill (2005) noted primarily sand temper in Socorro Brown ware or Socorro Red-on-brown ceramics, with variations including crushed sherd, tuff, and fine-grained felsic rock fragments in trace amounts (Brown et al. 2004; Hill 1994). In most descriptions of sand temper in sherds from El Paso area mission contexts, lithics within the sand included basalt, rhyolite, andesite, altered tuff, quartz, orthoclase and plagioclase feldspars in varying amounts (Hill 1994; Kamilli 1997; Marshall 1999; Miller and O'Leary 1992). The presence of varied intermediate volcanics in the sands indicates they are at least partially composed of eroded materials from the surrounding uplands of the Mesilla Basin, and therefore likely to be local in nature.

Refiring analysis conducted on 16 sherds from the Barela-Reynolds house assemblage continued to emphasize the low levels of technological variation in sherds at the site, and the differences from northern New Mexico. Eleven sherds had pastes that refired to 2.5YR after the 30-minute soak at 950° C and five sherds refired to 5YR, whereas the majority of sherds from LA 160 and LA 4968 refired to a 5YR hue. Over half of the Barela-Reynolds house refiring sub-sample experienced a color change at 600° C whereas the Cuyamungue sites tended to experience color changes at 650 or 750 degrees. These results emphasize that the New Mexican plain wares in the Barela-Reynolds assemblage were locally made within a unique technological tradition, and that very minimal amounts ceramics appear to have been imported to this site from the Tewa region. This may be typical for the region and the Territorial periods. In his excavations of the Paraje de San Diego along the Camino Real near Las Cruces, Staski (1998) noted a considerable drop in “northern” ceramics after 1700, with only 12 sherds (1.11%) from the 1700–1800 period. Staski’s excavation results, in combination with a resurvey of the site and surface documentation recovered a total of 101 Tewa red-slipped wares (9.14% of the combined ceramic assemblage) (Jenks et al. 2019).

Overall, the results of the initial analysis and technological analysis of 659 historic New Mexican ceramics recovered from test excavations at the Barela-Reynolds house indicate that consumers at this site appear to have utilized limited local networks to acquire their New Mexican ceramics from fewer sources than the other sites in the sample. There were not enough ceramics recovered from the site to suggest that the merchant families who owned the property over time were storing New Mexican ceramics for sale or trade, and it appears that only enough material for household use was present, possibly by early occupants of the site prior to the construction of the formal Barela-Reynolds house, or by servants who lived on the property and helped maintain the store.

## Conclusions

This chapter detailed the results of an initial analysis of 58,942 sherds from LA 160, LA 4968, LA 8671 and the Barela-Reynolds house, and technological analysis of a sub-sample of sherds from the four sites. Initial analysis included identification of a descriptive type for each sherd, based on categories defined by OAS for their Pojoaque Corridor project, vessel portion and type, and details of optically identified paste type and surface treatments for each sherd in the sample. Technological analysis included petrographic analysis of 148 sherds, X-ray images of 139 sherds, and refiring analysis of 78 sherds. Results indicate that there was a range of variability present at each site in the sample. Although the "end product" was a palette of aesthetically and functionally similar pottery for daily use, there was variation in technological strategies, and potentially the number of communities of practice represented at each site. LA 8671 appears to have had the greatest level of variation at several stages of ceramic production. For example, potters appear to have used at least 15 different paste and aplastic combinations to prepare the ceramics consumed by Ideal Site residents. Alternatively, the Cuyamungue sites and the Barela-Reynolds site appear to have more homogenous assemblages, with fewer paste groups identified in both petrographic and refiring analyses. This result was somewhat surprising, as both the Cuyamungue sites and the Barela-Reynolds site were closer to large trade centers at Mesilla and Santa Fe and located along major trade corridors. Therefore, they were presumed to have greater market access, and expected to exhibit greater variation in New Mexican plain wares and ceramic sources.

The following chapter will refine these initial results using statistical cluster analyses to use the technological characteristics for each sherd to identify microstyles, which may indicate communities of potters who supplied Hispanic residents at each site in the sample. The number of communities that residents used to meet their basic ceramic needs has implications for the types of consumer relationships they needed to maintain and how these relationships reflect on their local or regional identities.

# Chapter 6: Exploratory Statistics and Technological Style Groups

The technological analyses presented in Chapter 5 demonstrated some of the considerable variety that existed within historic New Mexican plain wares and matte paint polychromes across the New Mexico Territory in the nineteenth century. Previous research on New Mexican plain wares has also shown that a small suite of aesthetically similar types, such as red-on-tan, and polished black wares were produced by multiple ethnic groups and in many production centers throughout the territory, and that different production groups likely had variations in their technological styles (Harlow 1973; Mera 1939; Sunseri 2009; Wilson 2018). However, much of this research is descriptive only, and very few technological analyses of New Mexican historic plain wares to identify technological styles have been completed (exceptions are Eiselt 2006; Sunseri 2009).

This chapter summarizes a series of exploratory clustering analyses of the New Mexican plain wares found at each site, using some of the technological traits discussed in Chapter 5. Polychromes are not discussed here. The proposed clusters presented give us some idea of how many technological styles—what I am calling microstyles (Dietler and Herbich 1998; Herbich 1987)—are present within the plain ware assemblage at each site in the sample. In some cases the microstyles may represent distinct ceramic production groups, or communities of practice. However, more work and a larger program of study is needed to associate microstyles with specific pueblos or cultural groups. The results presented here are an exploratory study, evaluating if there is structure within the variation among historic New Mexican plain wares, and assessing what that variation can tell us about the consumption patterns and consumer networks of nineteenth century New Mexican Hispanics.

## Summary of Theory

Residents at the four sites in the project sample likely obtained their New Mexican ceramics from a variety of sources. However, New Mexican plain wares have not been sufficiently studied to be able to identify these sources based on ceramic traits alone. As shown in Chapter 5, there is considerable technological variation within traditional and descriptive types for this period. "Polished black" ceramics may have been slipped or unslipped, sand-tempered or tuff-tempered, highly polished or barely burnished (Brody and Colberg 1966). "Red-on-tan" ceramic types sometimes had red slip applied to the interior or exterior, with red bands continued over the rim or only applied below it, and the bands had differing widths applied with rags, brushes, or fingers (Kurota and Rogers 2019). Thus, while we know that polished black or red-on-tan or micaceous pottery was produced by Hispanic, Puebloan, Apachean, and *genízaro* potters up and down the Rio Grande corridor, it is difficult to interpret what this variation means when it is observed in site assemblages.

As discussed in Chapter 3, technological styles, as defined by Lechtman (1977) can be used as a material signature for different potting communities of practice. Groups who learned and produced pottery together would have had their own ways of preparing clay, forming vessels, treating vessel surfaces, and firing pottery. Technological differences defining microstyles may have occurred at any stage in the ceramic production process. Many archaeologists are finding it productive to examine technological styles as material evidence of communities of practice. However, it can be extremely difficult to define technological styles within ceramic assemblages. Most researchers take a 'chaîne opératoire' approach and examine technological choices made by potters at each stage in the ceramic production sequence (Sillar and Tite 2000). Researchers then chart the range of choices at each stage, often as a flow chart (Echenique et al. 2021; Peelo (Ginn) 2011; Roux 2016). This strategy makes clear the range of decisions made by different communities of potters and the potting practices that may be salient in defining community boundaries or that may be environmentally constrained.

Alternatively, archaeologists may examine each stage of ceramic production in their technological analysis, but, using extensive knowledge of existing variation and patterning within a ceramic type or ware, focus on only one or two ceramic traits, for example temper/paste group and slip (Eckert 2008) or paste groups and lip-forming (Sunseri 2009). This is in part because it is very difficult for humans to intuitively perceive and interpret patterns in more than three dimensions. Beyond this, statistical techniques are needed.

A few researchers have begun using multivariate clustering to look at larger suites of traits, in some cases the whole ceramic production sequence. For example, Harush and Grosman (2021) created cluster trees reflecting patterns in neck and rim morphology of storage jars from the Intermediate Bronze Age and Iron Age II of the southern Levant. The authors then mapped the identified groups onto the landscape to understand spatial relationships among communities.

Matt Peeples (2011, 2018) has conducted studies that examine a suite of ceramic traits collectively to identify technological styles indicative of communities of practice. Peeples used unsupervised cluster analysis to identify consistent groupings of technological traits in corrugated wares from the twelfth through fourteenth centuries in the Cibola region in eastern Arizona and western New Mexico. He conducted k-medoids clustering using thirteen technological traits reflecting each stage of ceramic production. Much of the statistical methodology described below is based on Peeples' work as an example of exploratory cluster analysis to identify potting communities of practice using plain ware ceramics (Peeples 2011: 186-192).

## Methods

### *Statistical Analysis*

Cluster structure was explored in sample data using both Euclidean (k-medoids) and non-Euclidean (k-modes) clustering techniques. Each method has advantages and disadvantages. Both clustering techniques work in a similar manner: a set number of initial "cluster centers" are chosen randomly, and, based on a dissimilarity measure of each specimen to all other specimens (in this case, sherds), specimens are grouped together around these centers in such a way to minimize the within cluster dissimilarity and maximize the between cluster dissimilarity. After the initial clusters are formed, cluster centers are updated and samples are reassigned to improve the within-cluster similarity. This process is repeated until the clusters stabilize and there are no changes to clusters in repeated iterations. The R Project for Statistical Computing and several previously developed R packages with algorithms for clustering and cluster evaluation were used to conduct the analyses (Charrad et al. 2015; Dray et al. 2021:4; Hennig 2020; Kassambara and Mundt 2020; Roberts 2019). Appendix C contains the full R code used. These methodologies are designed for very large data sets, primarily categorical or mixed data variables, and are exploratory rather than explanatory in nature. They aim to find structure in the data, if it is present, rather than sort samples into previously identified groups.

An advantage of k-medoids is that as a Euclidean technique; k-medoids solutions can be displayed graphically, usually as biplots of principal components or principal coordinates, and the analyst can quickly and intuitively see how well clusters are defined, and where they may overlap or show 'loose' clustering. K-medoids is a variation of the more commonly used k-means clustering method, but it is more robust against outliers and noise (Kantardzic 2003; Kaufman and Rousseeuw 1990; Kintigh and Ammerman 1982). However, because k-medoids only uses a dissimilarity coefficient to determine distances between points and form clusters, it is not easy to quickly see the relationship between the clusters and the characteristics of each sample. Second, k-medoids, like k-means, is best suited to find spherical, compact clusters. It does not perform as well when the data are in elongated groups, tend to overlap, or have loose clusters (Han and Kamber 2006; Kantardzic 2003).

The methodology for k-medoids analysis, following Peeples (2011, 2018) is as follows: 1) the inverse of Gower's coefficient of similarity (Gower 1971) is used as a dissimilarity measure, which produces an $n$ x $n$ matrix where $n$ is the number of sherds in the sample. The matrix shows the dissimilarity of each sherd to every other sherd in the sample as a number between 0 and 1, where 0 is perfect similarity and 1 is perfect dissimilarity.[6] Second, Principal Coordinates Analysis (PCoA) is used to reduce the data into a lower number of dimensions that demonstrate a large proportion of the variance in the distance matrix. This helps highlight the strongest groups in the sample. Scatterplots from the PCoA also provide an opportunity to look for any initial structure within the data because they are a

[6] Gower's coefficient of similarity is designed to deal with mixed data and applies slightly different techniques for each variable in the data, depending on the data type, then wraps these results into a single coefficient for each sample-pair. For unranked categorical data, it applies a simple matching measure, like that used in k-modes. Thus, the dissimilarity measure used in the k-medoids and k-modes techniques for this analysis are equivalent.

graphical representation of the distance (dissimilarity) between sherds in the sample. Third, k-medoids analysis is conducted using the first three coordinate scores of the PCoA. Then, the results can be projected back onto the PCoA scatterplots, with clusters assignments for each sherd symbolized with different colors.

Alternatively, k-modes analysis is designed to work with only categorical data. K-modes was developed by Huang (1998) as an alternative to Euclidean k-means clustering. It was developed as an unsupervised clustering method for data mining in market analysis, which often aims to identify clusters in the market based on consumer practices. K-modes uses a simple matching dissimilarity measure. For each variable, a match or not-match is computed, then the sum of matches divided by the number of variables is the measure of dissimilarity for the two specimens. Missing data are treated as a not-match. Next, a set number of modes is chosen randomly, and specimens are clustered according to their similarity to the modes. Then, the modes are updated to the most common characteristics in the cluster, and the process iterates until clusters stabilize. K-modes cluster solutions cannot be easily displayed graphically, and often trying to force the results into Euclidean form does not represent the clusters well because distance in geographic space does not reflect similarity between samples for categorical data. However, part of the output of k-modes is the mode of each cluster—a specimen that is representative of the most common traits within the cluster--which allows the analyst to interpret what characteristics might be important in partitioning their data and further interpret the results.

*Evaluating Cluster Solutions*

Both k-modes and k-medoids require the analyst to set the number of clusters to be identified. This can be particularly challenging, and rather than applying a set of rules, this is often an interpretive process that strikes a balance between the results of several cluster validation methods, what the analyst knows or suspects about their data, and what might be considered a 'reasonable' solution given this information.

Three main cluster validation methods were used in this analysis: the Silhouette statistic, the 'elbow method,' and the gap statistic method were used. These were all calculated and plotted using the R package 'factoextra' (Kassambara and Mundt 2020). The Silhouette statistic (Kaufman and Rousseeuw 1990) uses the distance between points in different clusters as a measure of the quality of the cluster solution. Here, a greater average distance implies better cluster separation and a better solution.

The elbow method measures compactness of clusters using the within cluster sum of squares (WSS), also called the sum squared error, which is the sum of the squared distance between each cluster point and its medoid or mode. The WSS will decrease as the number of clusters increases. If this is plotted, there is often an 'elbow' shape to the line where after a sharp decrease, the WSS becomes more level with the addition of more clusters (Figure 6.1). This elbow is the optimal cluster solution. For the k-modes analysis, a form of the elbow method was used, where the WSS (computed using a simple matching distance between cluster points and the mode) is plotted against the number of clusters, and the optimal cluster solution is again indicated by an elbow.

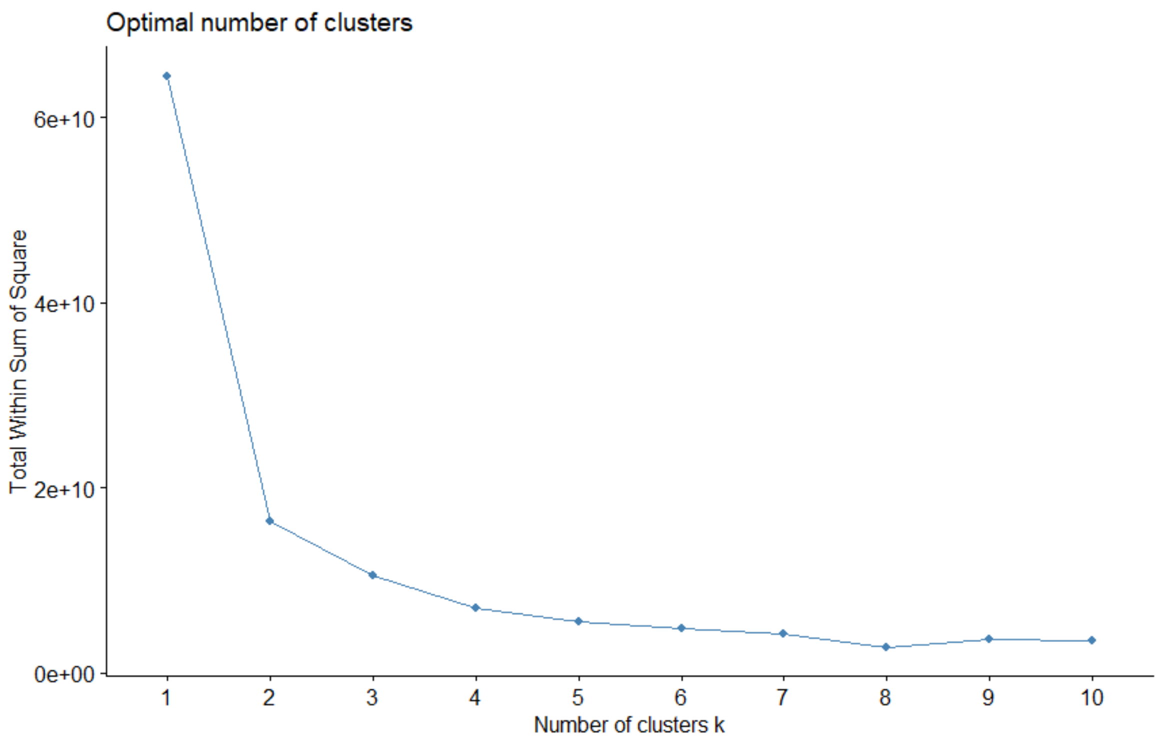



**Figure 6.1. Example of a WSS elbow plot.**

The gap statistic is similar to the elbow method, except it measures the difference in the WSS of the sample data against a set number of bootstrapped random data sets. In both cases the WSS will decrease as the number of clusters increases, but at the optimal cluster solution there will be a large 'gap' where the sample data WSS decreases more rapidly than the randomized data. This is displayed as a 'peak' when the gap size is plotted against the number of clusters (Figure 6.2). Many analysts select either the first peak as the optimal cluster solution, the highest peak, or the first peak that is less than one standard deviation from the next highest point, which indicates the decrease in WSS is 'leveling off' and adding clusters will not improve the quality of the solution. The *factoextra* algorithm automatically recommends the first peak as the optimal cluster solution, although this setting can be modified. The gap statistic validation method is formally presented by Tibshirani and

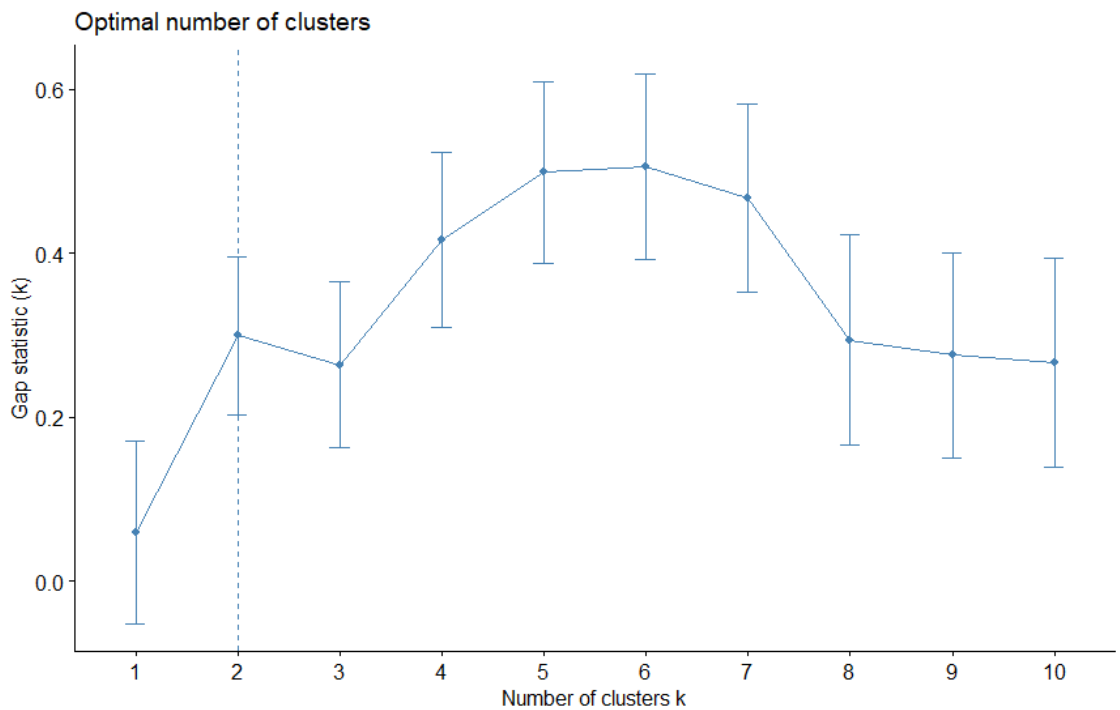



**Figure 6.2. Example of a gap statistic plot.**

colleagues (2001) and is described for archaeology by Kintigh and Ammerman (1982). The gap statistic is also the cluster validation technique used by Peeples (2011, 2018).

Using the results of these four cluster validation tests (three for the k-medoids clusters and one for the k-modes clusters) and knowledge of the variation in each sample gained by the analyses discussed in Chapter 5, and optimal cluster solution was selected for k-medoids and k-modes algorithms, which suggest a likely range of microstyles indicated in the undecorated ceramics at each site.

*Ceramic Traits*

Two sets of cluster analyses were conducted for each site: the first using data from the initial analysis on a large sample of sherds, and the second using data from the detailed analysis, on a much smaller sample of sherds from the detailed technological analyses. The statistical analysis on the detailed subsamples returned the nearly same result for all four sites: 4–5 clusters for k-medoids and 4–6 clusters for k-modes analyses. This indicates that the detailed sub-samples were too small and diverse to be useful for cluster analysis. This is because the detailed sub-sample was originally selected to sample the greatest diversity of descriptive types and optical temper groups possible, as well as large sherds with evidence of forming techniques. Thus, the detailed sub-samples were unlikely to form reliable clusters. While conducting statistical analyses on the sub-samples was informative from a methodological perspective, the results are unlikely to accurately represent microstyles and these clustering results will not be discussed in detail. Optimal cluster solutions for each data set are compared and discussed in the context of each site region and the more traditional understandings of variation in the ceramic assemblages, discussed in Chapter 5.

The seven ceramic traits used in the cluster analysis of the large initial analysis samples are: temper and/or inclusion type (optically identified), interior and exterior surface treatment, interior and exterior firing treatment, and interior and exterior surface textures. These are all categorical variables. Six of the seven traits are visible traits that could be identified and replicated by potters even without close contact or learning communities. It is expected that they may cluster somewhat like the descriptive types. And they may more closely reflect aesthetically similar groups of ceramics produced in different regions (with different temper and/or inclusions). The seventh trait, temper and/or aplastic inclusion type, is a low-visibility trait and may be constrained by the local availability of raw materials.

Ceramic traits used in the cluster analysis of the small, detailed analysis samples are: the six interior and exterior treatment traits discussed above, paste group (petrographically identified), Munsell paste color after the 950° C firing with a 30-minute soak, and vessel forming technique identified in X-ray analysis. However, not all detailed technological analyses could be conducted on every sherd in the sample. In these cases, where temper or paste group data were missing, they were populated with the optical temper type, and where vessel forming data were missing, they were populated with data from the tactile analysis. Where refire data were missing, data fields were left empty as this information cannot be reconstructed. Finally, in cases where a trait in the detailed analysis was indeterminate, the field was also left blank. The Gowers similarity coefficient handles missing categorical data in a simple matching manner, where a match is only recognized if the variable is populated and matching for both sherds in the pair, and missing data are always coded as a mismatch. Table 6.1 presents the ceramic traits used to identify groups of similar sherds at each site.

Table 6.1. Ceramic Traits Recorded for Each Sherd in the Analysis.

| Trait | Ceramic Production Stage | Collection Method |
|---|---|---|
| Temper | Clay Preparation | Optical analysis |
| Internal Treatment | Vessel Finishing | Visual analysis |
| Internal Texture | Vessel Finishing | Visual analysis |
| External Texture | Vessel Finishing | Visual analysis |
| External Treatment | Vessel Finishing | Visual analysis |
| Internal Firing Treatment | Firing | Visual analysis |
| External Firing Treatment | Firing | Visual analysis |
| **Additional Features Considered in Detailed Analysis Subsample** | | |
| Paste and Temper Group | Clay Selection and Preparation | Petrographic analysis |
| Forming Technique | Vessel Forming | X-ray and petrographic analysis |
| Refiring Color | Clay Selection | 30-min soak at 950° C |

*Sample*

As described above, the data for cluster analysis at each site consists of a large sample using traits from the initial analysis, and a smaller sub-sample using traits from the detailed technological analysis. For the large sample, only sherds where all ceramic traits could be collected were used. Therefore, sherds with missing surfaces or indeterminate treatments were removed from the sample. Additionally, both k-medoids and k-modes clustering methods are sensitive to outliers and noise (though less so than k-means). Therefore, cases where there were fewer than five examples of a ceramic trait (for example, uncommon temper types) were removed from the sample. Finally, due to some differences between OAS' methodology and my methodology in how interior and exterior treatments were described and recorded, for LA 4968 only the sample that I analyzed was used for the large sample. Table 6.2 shows the sample sizes for the large and smaller sub-sample for each site. For LA 160, only the detailed sub-sample was analyzed by me, and so OAS data were used for the larger initial sample. OAS analysts did not consistently differentiate the degree of polishing/smoothing or smudging, and so for surface texture and firing treatment variables there are fewer classes. For surface texture, an additional variable, 'NOT polished,' is included for sherds whose type descriptions indicate they are not polished, but no other surface texture information was available to determine if they were smooth, wiped, rough, or had a different surface texture. This means that, while LA 160 has the largest initial sample in the statistical analysis, the data have less resolution than the other samples.

Table 6.2. Sample Sizes.

| Site | Initial Sample | Detailed Sample |
|---|---|---|
| LA 160 | 4529 | 25 |
| LA 4968 | 1109 | 31 |
| LA 8671 | 567 | 41 |
| Barelas-Reynolds House | 554 | 52 |

## Results

*LA 160*

The large initial analysis sample for the LA 160 assemblage was 4,524 sherds and the detailed sub-sample was 25 sherds. As described in Chapter 5, petrographic analysis suggested eight different paste groups likely to represent five to six distinct clay recipes. Cluster validation tests for the initial and detailed samples indicated different optimal cluster solutions, as did the k-medoids and k-modes cluster analysis methods. For the large initial sample, seven clusters were considered the optimal solution for k-medoids analysis, while a six-cluster solution was selected for k-modes analysis. For the detailed sample, the small sample size and greater number of traits mean that the clusters were weaker. A five-cluster solution was selected for both methods for the detailed sample, but it may not be a good fit that represents the LA 160 undecorated ceramic assemblage.

The PCoA scatterplot of the initial sample shows three to six elongated groups (Figure 6.3). The plots contain 4,524 sherds each, however the perfect similarity between many sherds creates overlap among the points, making the plots appear less crowded. The k-medoids Silhouette plot peaks at 19 clusters, but there is a gradual 'hump' between seven and ten clusters (Figure 6.4). The WSS elbow plot has an elbow at seven clusters (Figure 6.5). The gap statistic plot was inconclusive and recommended 20 clusters (the maximum tested) (Figure 6.6). The WSS elbow plot for k-modes is somewhat erratic. However, it suggests that a six-cluster solution may be optimal (Figure 6.7).

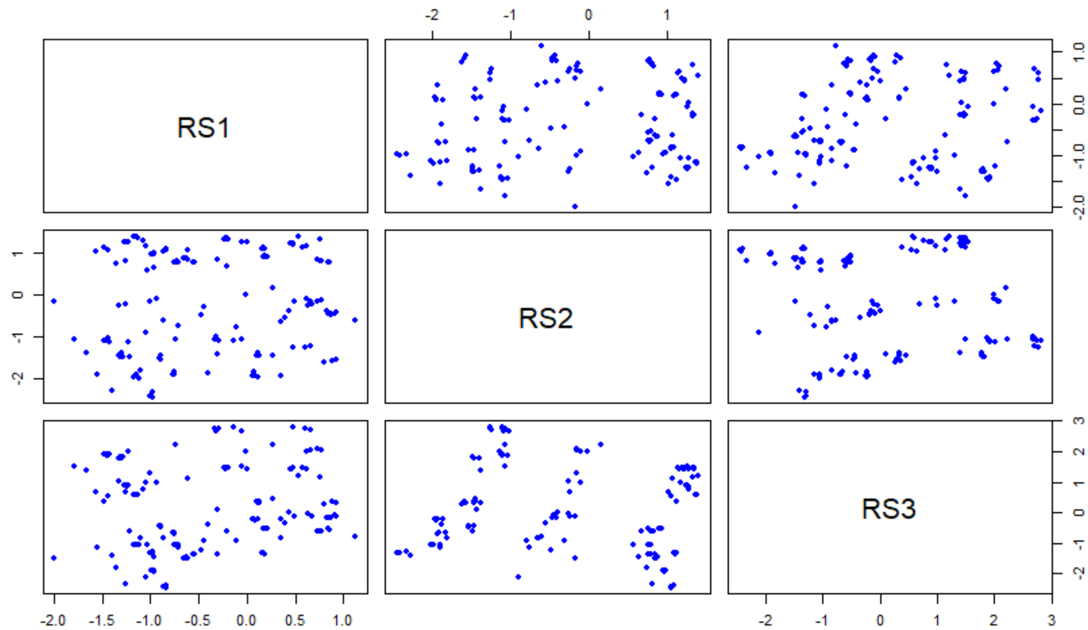



**Figure 6.3. LA 160, Principal Coordinates (PCoA) scatterplot based on the seven included variables. While each dot represents one sherd, identical sherds will overlap perfectly, making the plots appear less populated.**

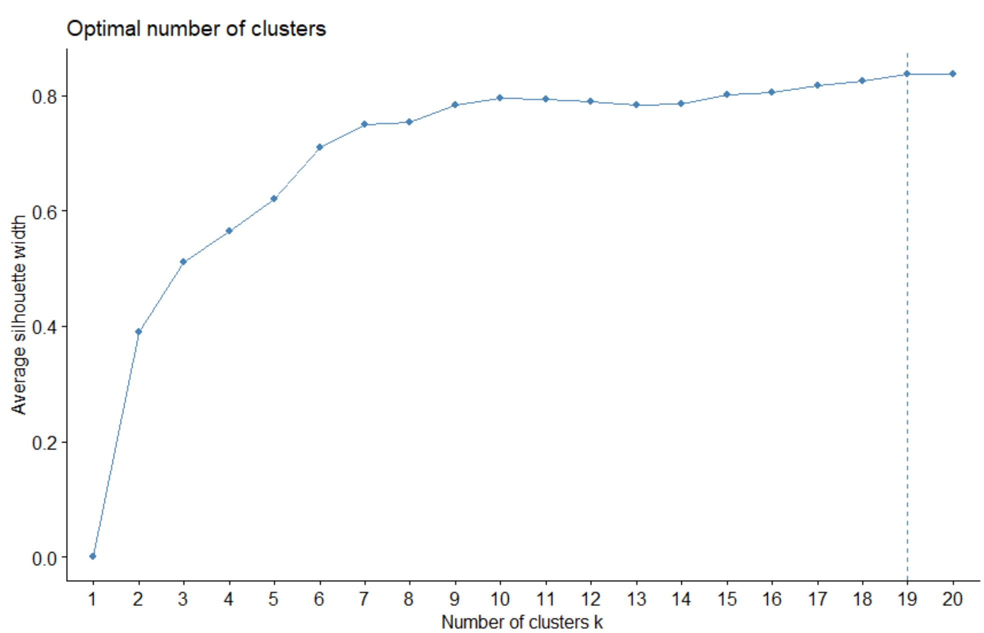



**Figure 6.4. LA 160, average Silhouette plot of k-medoids clusters. The factoextra silhouette algorithm automatically highlights the largest average silhouette width as the optimal solution but other peaks may also be of interest to the analyst.**

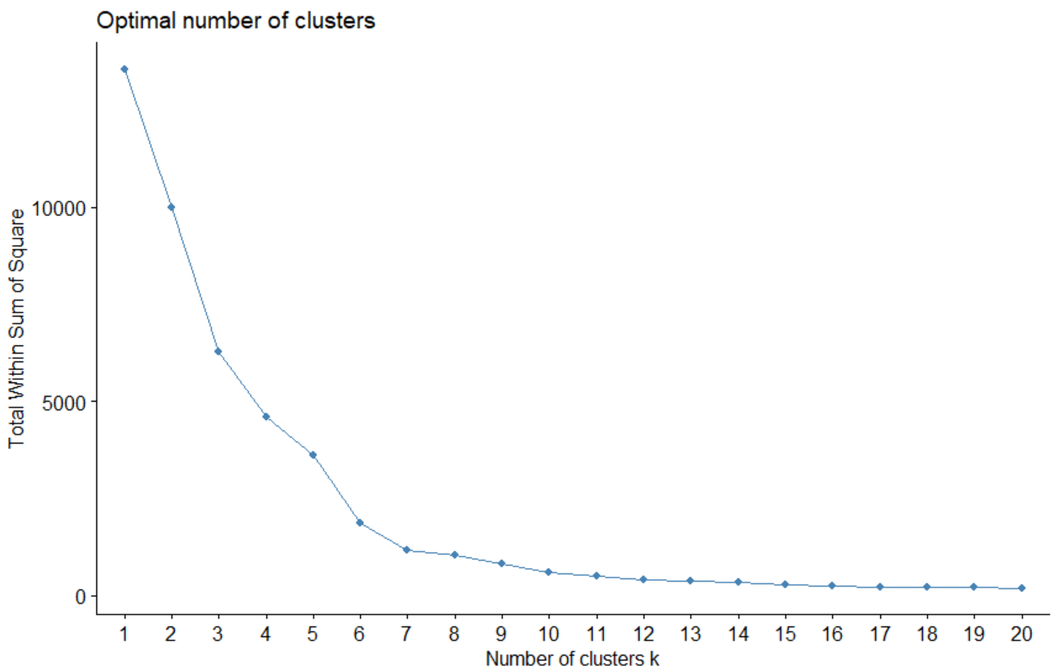



**Figure 6.5. LA 160, WSS elbow plot of k-medoids clusters. Points with a 'bend' such as at seven clusters, indicate an optimal cluster solution.**

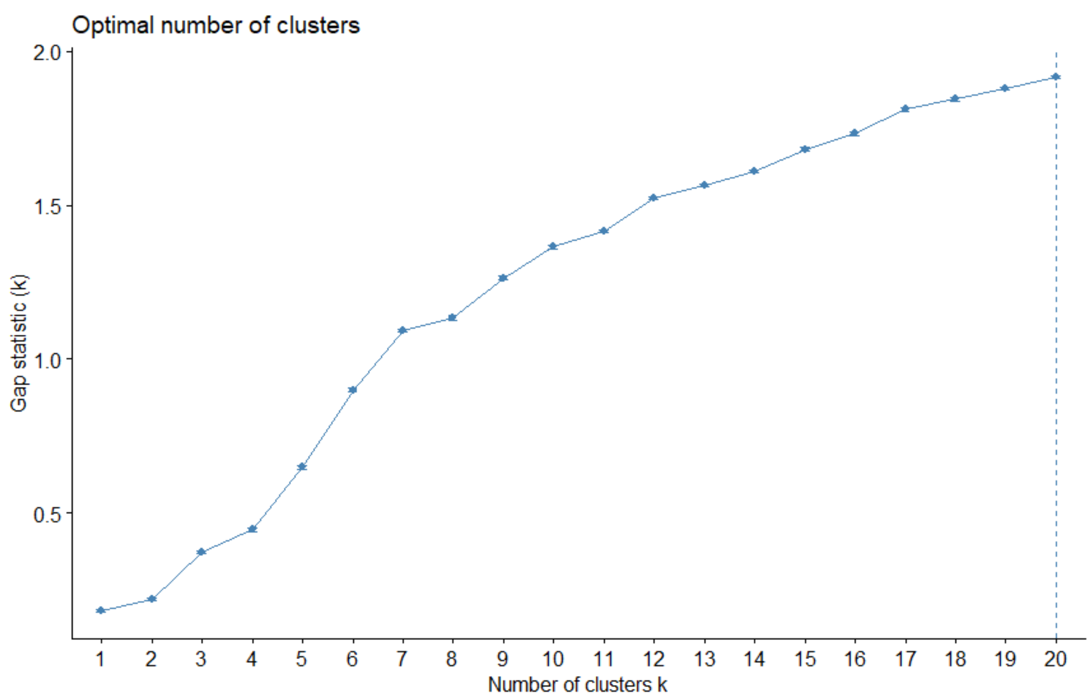



**Figure 6.6. LA 160, gap statistic plot of k-medoids clusters. The factoextra gap statistic algorithm automatically highlights first gap value which is within a standard error factor range of the local maximum as the optimal solution but there are other methods for selecting optimal solutions and other inflection points may also be of interest to the analyst.**

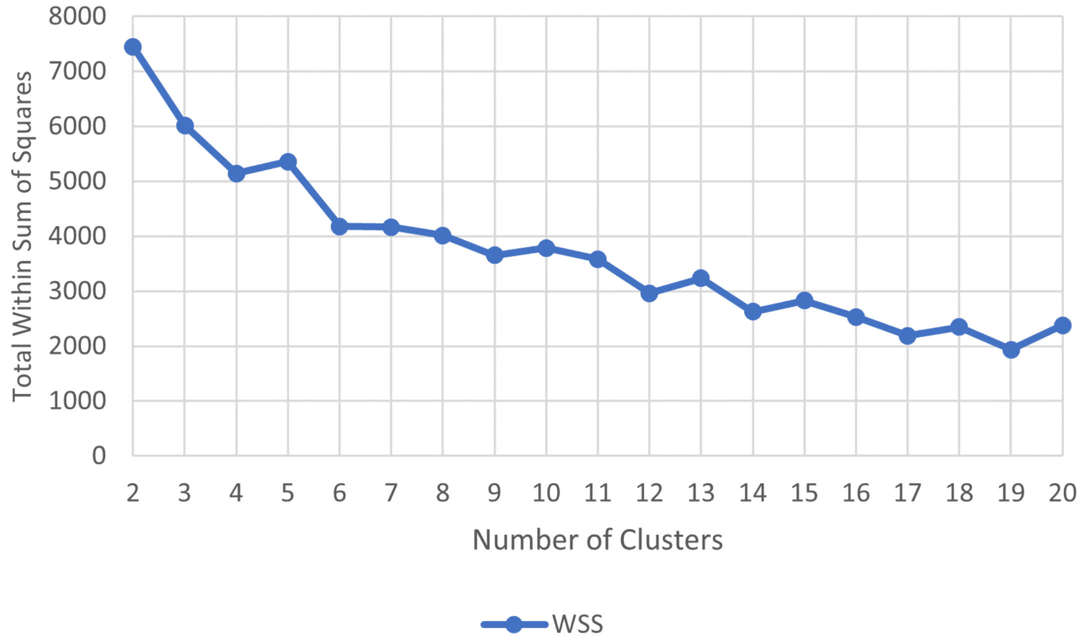



**Figure 6.7. LA 160, WSS elbow plot of k-modes clusters. Points with a 'bend' such as at four clusters, indicate an optimal cluster solution.**

A seven-cluster solution was selected for k-medoids cluster analysis and a six-cluster solution for k-modes. The scatterplots of the k-medoids clusters show that they do not have much overlap, except for Cluster 1 (red) (Figure 6.8). Cluster 3 (green) is strongly associated with the Polished Interior with Mica Slip descriptive type and Cluster 4 (purple) is dominated by the Smudged Interior/Mica Slip Exterior descriptive type. The other clusters, however, do not track with descriptive types. The clusters do appear to be grouped by temper, with the exception of Cluster 6, which includes many sherds with tuff and sand temper as well as fine tuff or ash. K-modes clusters also created groups that closely match the descriptive types for mica-slipped ceramics, suggesting that the mica-slipped and granite-tempered ceramics do represent a distinct technological style (Table 6.3). A cluster was also defined for red-slipped ceramics (Cluster 5), but it appears that black and gray polished ceramics are distributed throughout the clusters.

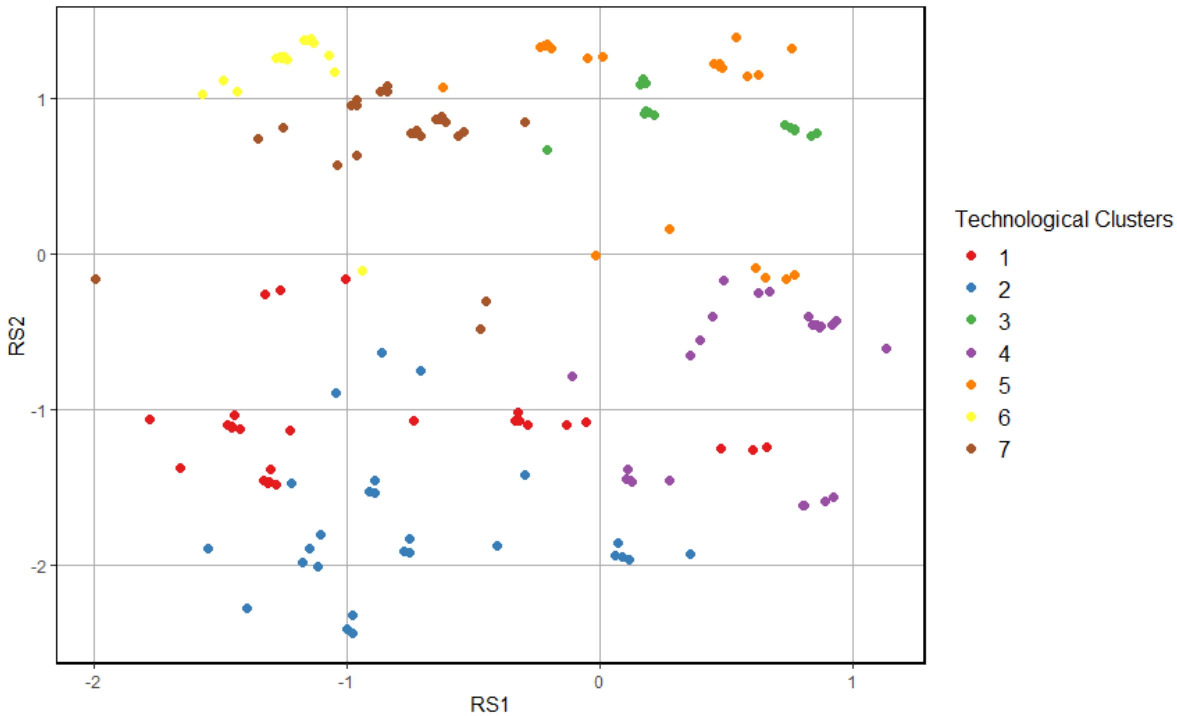



**Figure 6.8. LA 160, PCoA scatterplot with k-medoids cluster assignments. Seven cluster solution.**

Table 6.3. LA 160 Cluster Modes.

| Cluster | Temper | ExtText | IntText | ExtTreat | IntTreat | ExtFire | IntFire |
|---|---|---|---|---|---|---|---|
| 1 | Fine tuff or ash | polished | NOT polished | none | none | none | none |
| 2 | Fine tuff or ash | polished | polished | none | none | none | none |
| 3 | Granite without abundant mica | NOT polished | polished | mica slipped | none | none | smudged |
| 4 | Mica tuff and sand | polished | NOT polished | none | none | none | none |
| 5 | Fine tuff or ash | polished | polished | red slipped | none | none | none |
| 6 | Granite with abundant mica | NOT polished | polished | mica slipped | none | none | none |

*LA 4968*

The large initial analysis sample for the LA 4968 assemblage was 1,109 sherds and the detailed sub-sample was 31 sherds. As described in Chapter 5, eight different paste groups were identified in the petrographic analysis, which likely to represent five to six distinct clay recipes. Cluster validation tests for the initial and detailed samples indicated different optimal cluster solutions, as did the k-medoids and k-modes clustering analyses. There was not good agreement of an optimal cluster solution among the validation tests, with recommendations ranging from three to eight clusters, and weak evidence for additional structure within clusters. For the large initial sample, a five-cluster solution was selected as optimal for k-medoids analysis, while a seven-cluster solution is a better fit for the k-modes analysis. For the detailed sample, k-medoids analysis indicates four clusters while k-modes analysis indicates five.

PCoA scatterplots of the first three dimensions show that the initial sample is quite continuous, with only weak groupings visible in dimensions 2 and 3 (Figure 6.9). Because of this poor indication of groupings, the Hopkins' statistic was also calculated for the PCoA coordinates, which are the basis of the k-medoids cluster analyses. The Hopkins' statistic is a measure of clusterability of data, and ranges between -1 and 1. A response of over 0.5 indicates the data are clusterable, and over 0.75 indicates a high confidence there are clusters within the data (described in Lawson and Jurs 1990). The Hopkins' statistic for the LA 4968 initial sample PCoA coordinates is 0.9113, indicating that the data are highly clusterable.

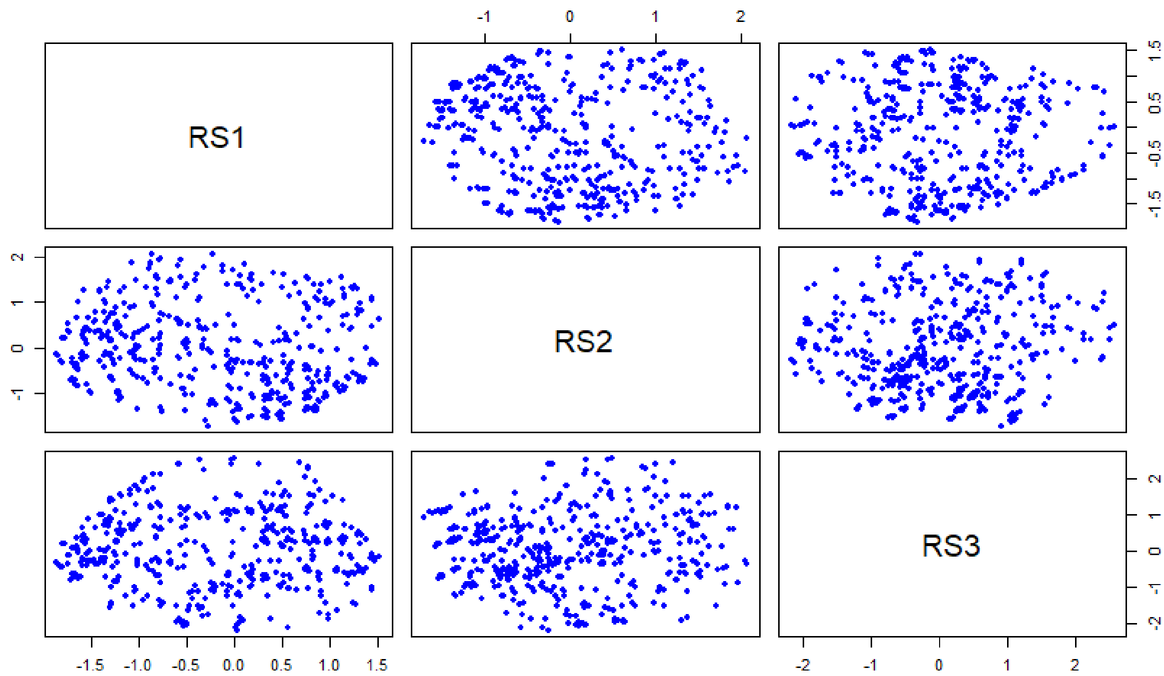



**Figure 6.9. LA 4968, PCoA scatterplot, first three dimensions.**

However, each of the cluster validation methods using k-medoids clustering techniques had ambiguous results. The widest average Silhouette is at 19 clusters, however there is also a 'hump' at five clusters (Figure 6.10). The WSS elbow plot also did not have strong cluster indications, and the smooth curve only gradually bends at 4–5 clusters (Figure 6.11). The gap statistic was inconclusive. It identified one as the optimal cluster solution, but there is a slight 'hump' at eight clusters (Figure 6.12). Finally, the WSS elbow plot of k-modes clusters had weak elbows at four and seven clusters (Figure 6.13).

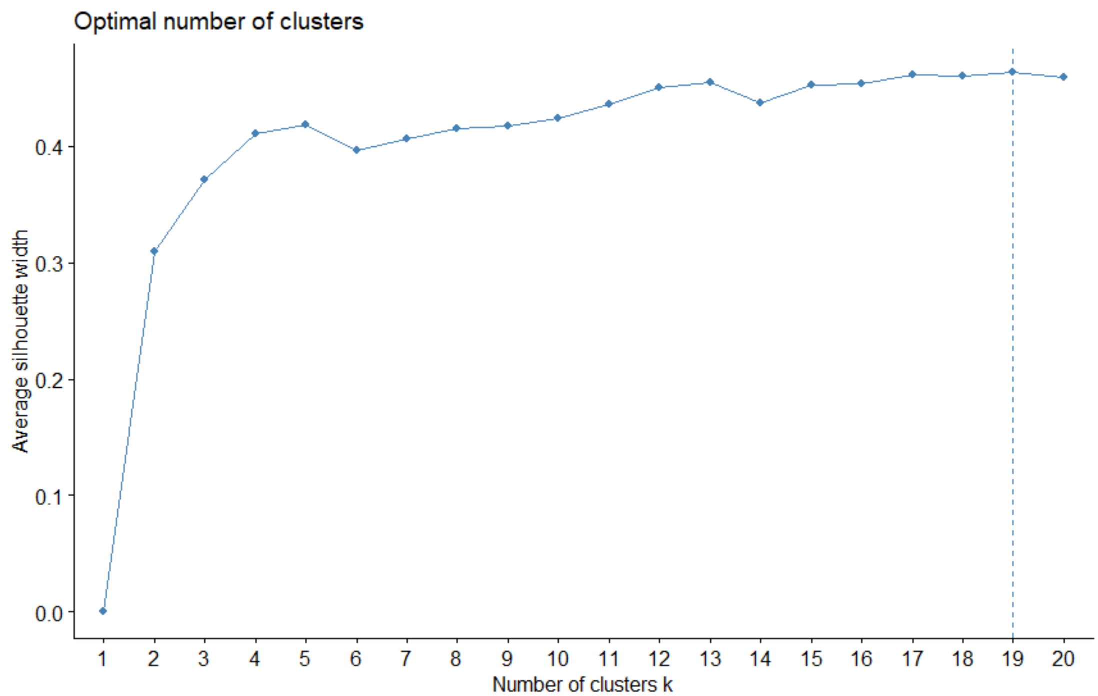



**Figure 6.10. LA 4968, average Silhouette plot of k-medoids clusters.**

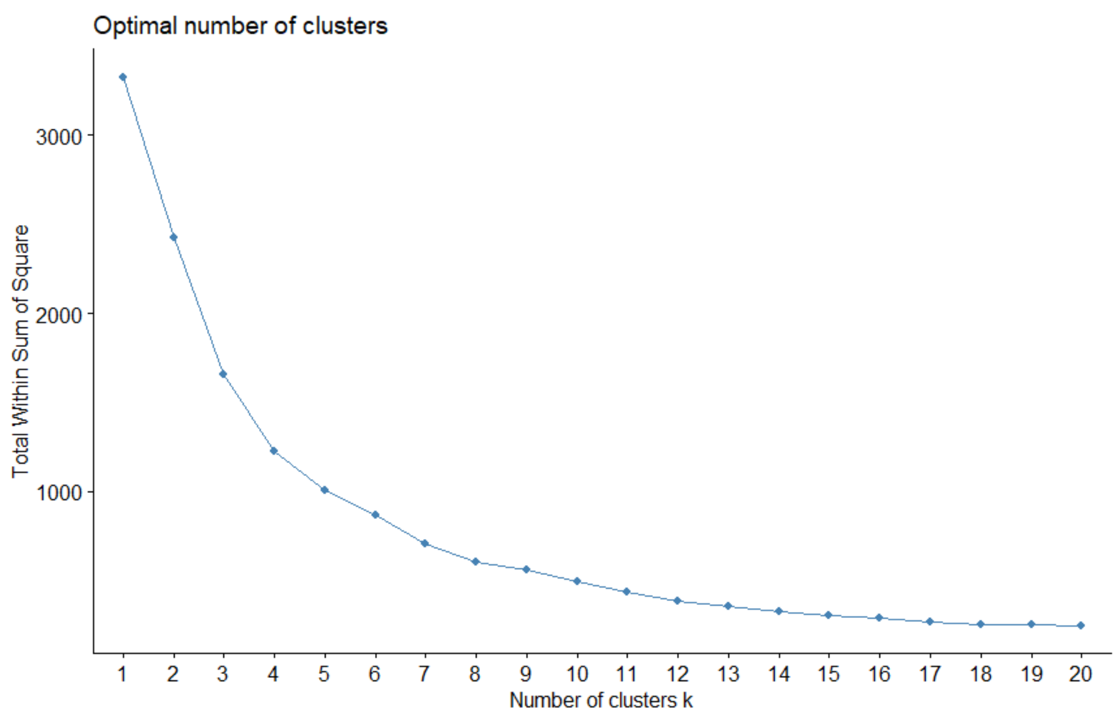



**Figure 6.11. LA 4968, WSS elbow plot of k-medoids clusters.**

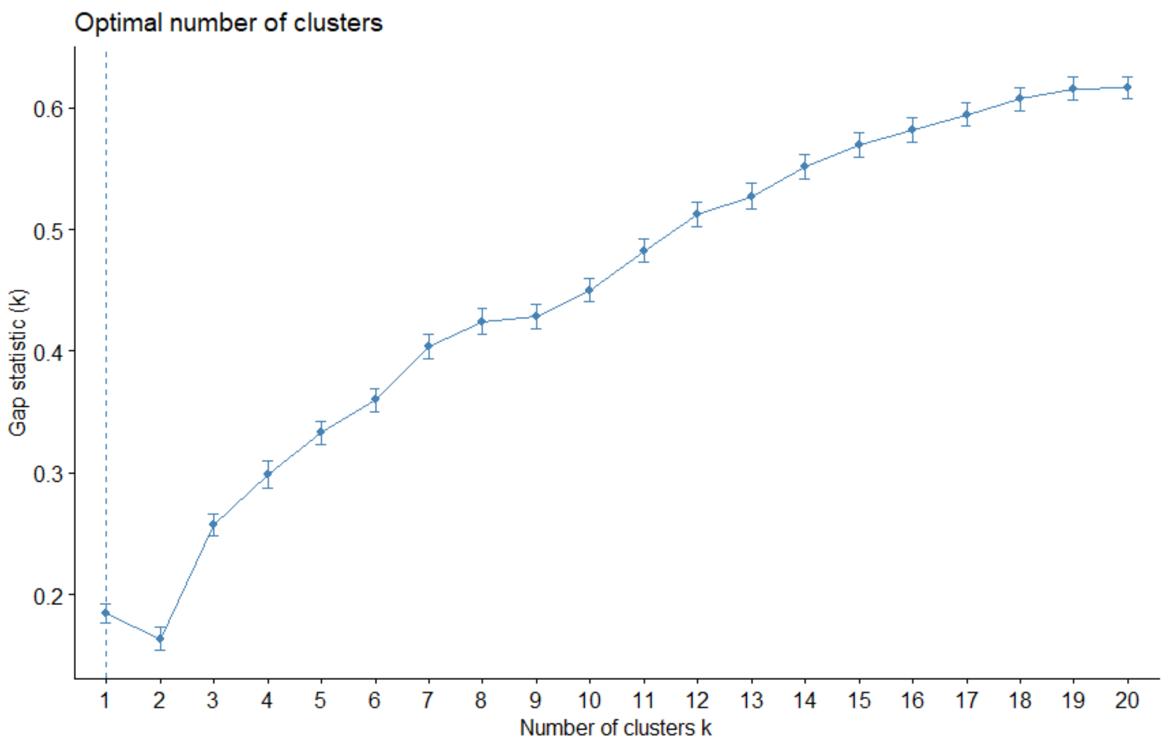



**Figure 6.12. LA 4968, gap statistic plot of k-medoids clusters.**

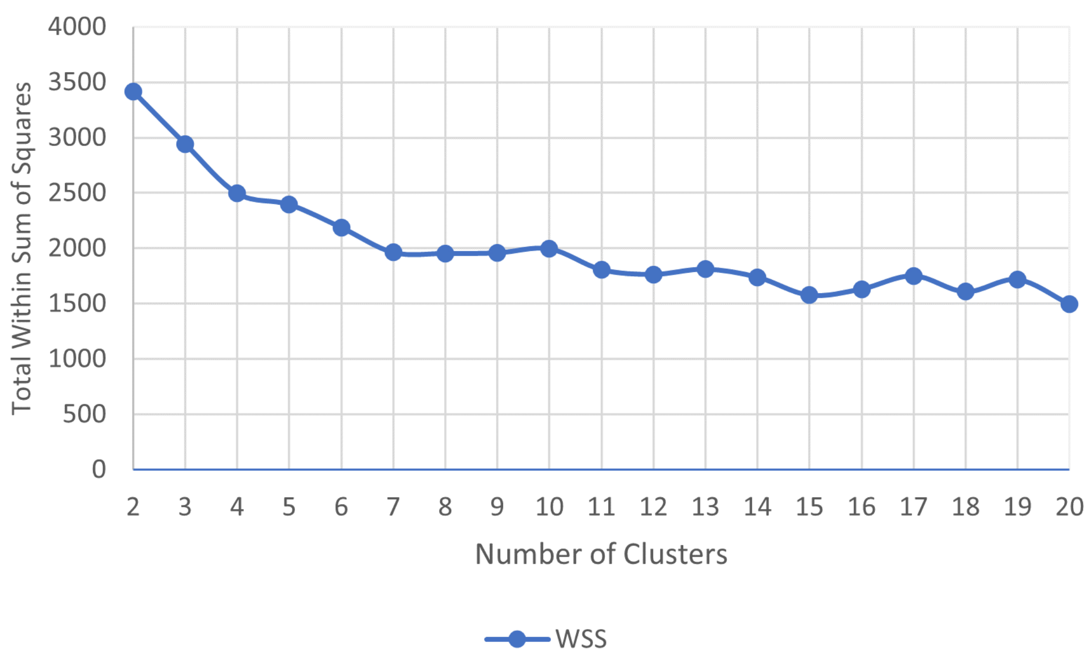



**Figure 6.13. LA 4968, WSS elbow plot of k-modes clusters.**

There was no strong agreement among the different cluster validation techniques, making it more difficult to select an optimal cluster solution. Scatterplots showing three clusters, five clusters and seven clusters were examined for k-medoids clusters. Ultimately, a five-cluster solution was selected because it bridges the recommendations of the three k-medoids validation tests and most closely matches the expected number of clusters based on petrographic analysis. A seven-cluster solution was selected for k-mode analysis to reflect the potential higher cluster numbers weakly indicated by the k-mode WSS elbow plot and k-medoids gap statistic plot. The five-cluster k-medoids solution does not have good cluster delineation—different clusters fully overlap in each of the paired biplots (Figure 6.14). As with LA 160, mica-slipped clusters are identified in k-modes analysis, but they are not dominated by granite temper (Table 6.4). Instead, both mica-slipped clusters (Cluster 2 and 6) have mostly sand and mica temper, and all of the granite-tempered sherds were grouped into Cluster 2. Polished ceramics are split into several groups, including a smudged and highly polished cluster (Cluster 5), a lightly smudged cluster with medium polish (Cluster 4) and a cluster with unslipped and smooth interiors (Cluster 7).

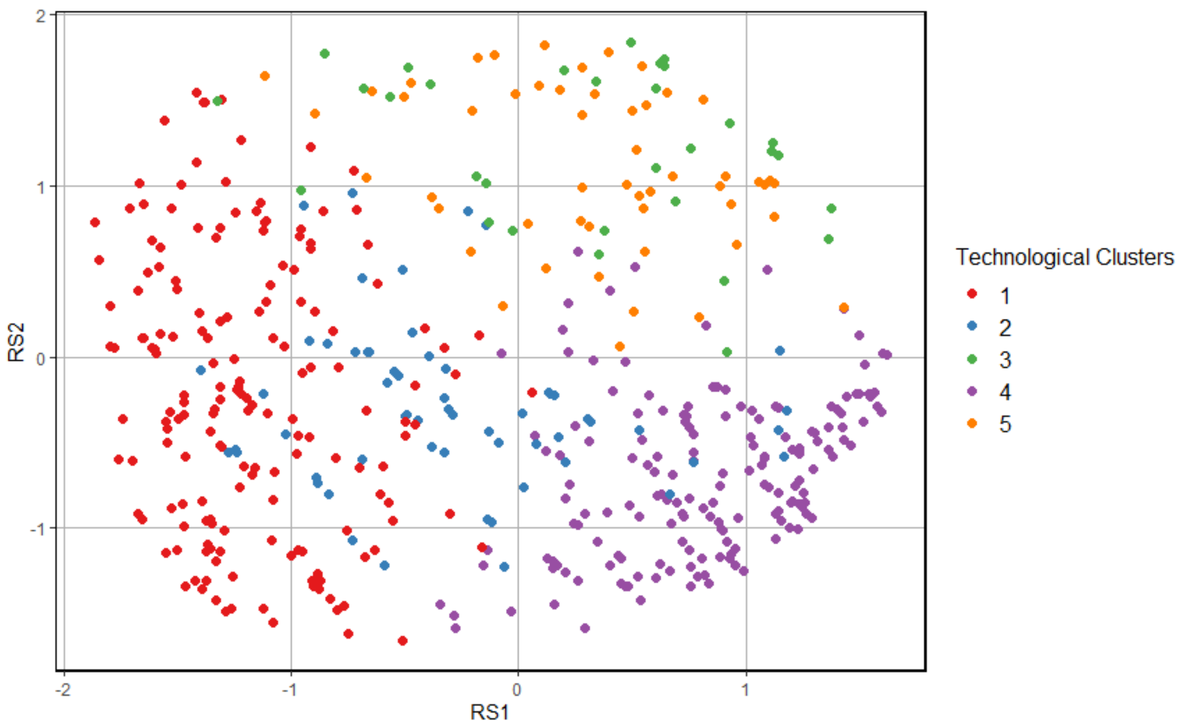



**Figure 6.14. LA 4968, PCoA scatterplot with k-medoids cluster assignments. Five-cluster solution.**

Table 6.4. LA 4968 Cluster Modes.

| Cluster | Temper | ExtTreat | IntTreat | ExtFire | IntFire | ExtText | IntText |
|---|---|---|---|---|---|---|---|
| 1 | Fine tuff or ash | none | none | none | none | polished | polished |
| 2 | sand and mica | mica slipped | slipped | none | smudged | smoothed | polished |
| 3 | highly micaceous (residual) paste | none | none | smudged | smudged | smoothed | smoothed |
| 4 | Fine tuff or ash | slipped | slipped | lightly smudged | smudged | polished | polished |
| 5 | Fine tuff or ash | slipped | slipped | smudged | smudged | highly polished | highly polished |
| 6 | sand and mica | mica slipped | none | smudged | lightly smudged | smoothed | highly polished |
| 7 | Fine tuff or ash | slipped | none | smudged | smudged | polished | smoothed |

*LA 8671*

The large initial analysis sample for the LA 8671 assemblage was 567 sherds and the detailed sub-sample was 41 sherds. As described in Chapter 5, petrographic analysis suggested 15 different paste groups that likely represent six to eight distinct clay recipes. Cluster validation tests for the initial and detailed samples indicated different optimal cluster solutions. The large initial sample has perhaps 6–7 clusters, but there are some indications that these clusters have internal groupings as well. The detailed sample has less variation and the optimal cluster solution for k-medoids is three to four clusters, and five clusters for k-modes.

Initial PCoA scatterplots of the first three dimensions show that there is strong structuring within the assemblage. Dimensions 1 and 2 suggest five or six groups may be present, while dimensions 2 and 3 have at least three groups (Figure 6.15). The Silhouette plot indicates that 17 is the optimum cluster solution, but there is also "hump" at 6–8 clusters (Figure 6.16). The WSS elbow plot has a weak 'elbow' at five clusters and appears to stabilize at approximately eight clusters (Figure 6.17). The WSS elbow method for k-modes clusters has elbows at five and seven clusters (Figure 6.18). The gap statistic for k-medoids was inconclusive, with one cluster recommended as the optimal solution (Figure 6.19). After two clusters, the curve is fairly continuous, however the 1-standard deviation rule appears to be satisfied at 7–8 clusters. These results indicate that the LA 8671 initial sample may have a considerable amount of variation, but that the variation does not have strong clustering tendencies. The multiple 'humps' in the Silhouette plot may mean that the sample assemblage is continuous rather than strongly clustered.

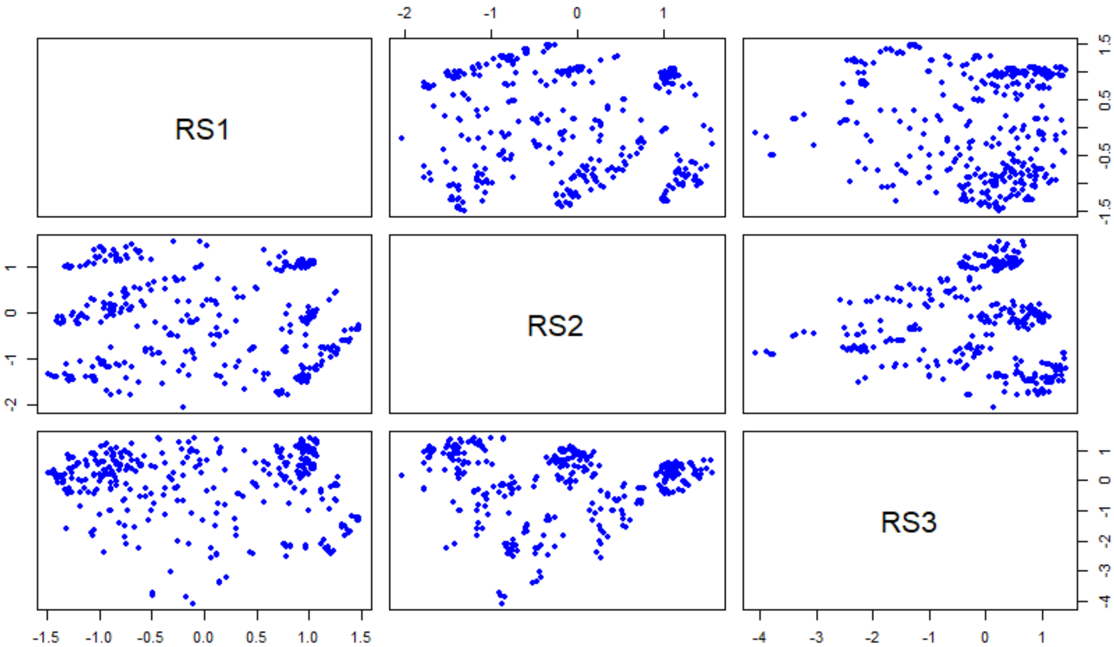



**Figure 6.15. LA 8671, PCoA scatterplot, first three dimensions.**

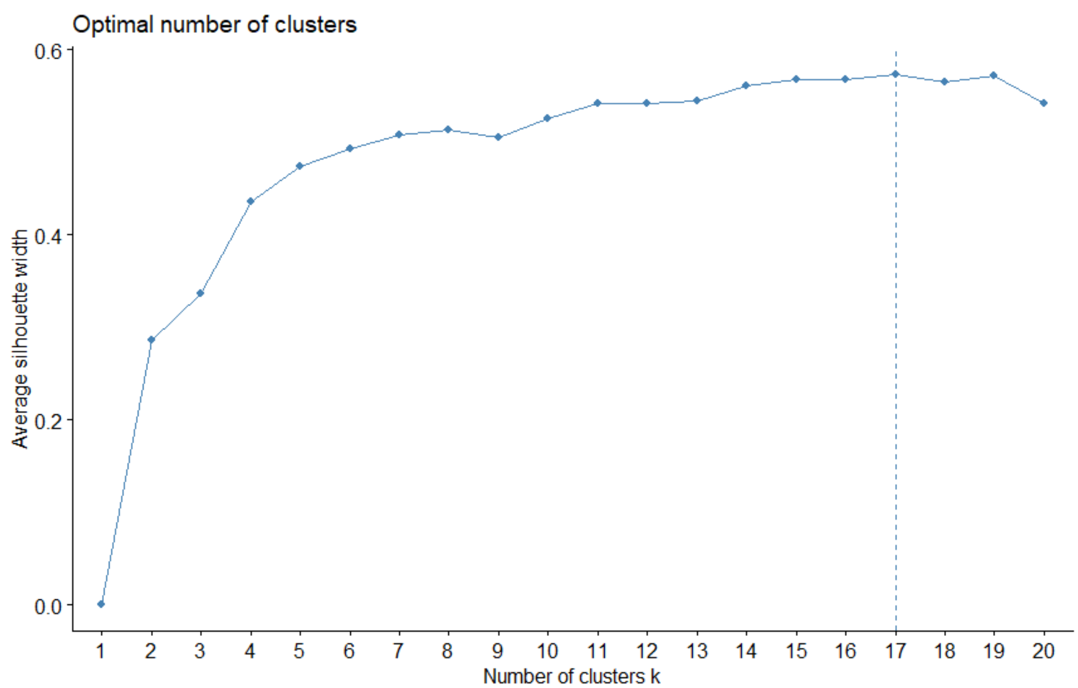



**Figure 6.16. LA 8671, average Silhouette plot of k-medoids clusters.**

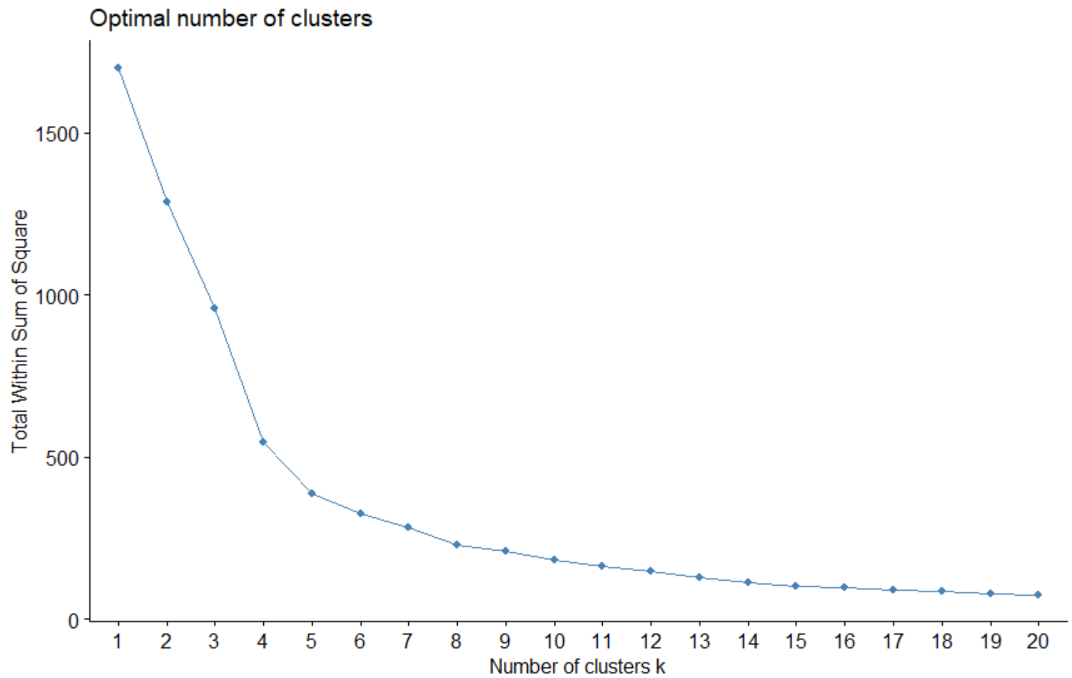



**Figure 6.17.  LA 8671, WSS elbow plot of k-medoids clusters.**

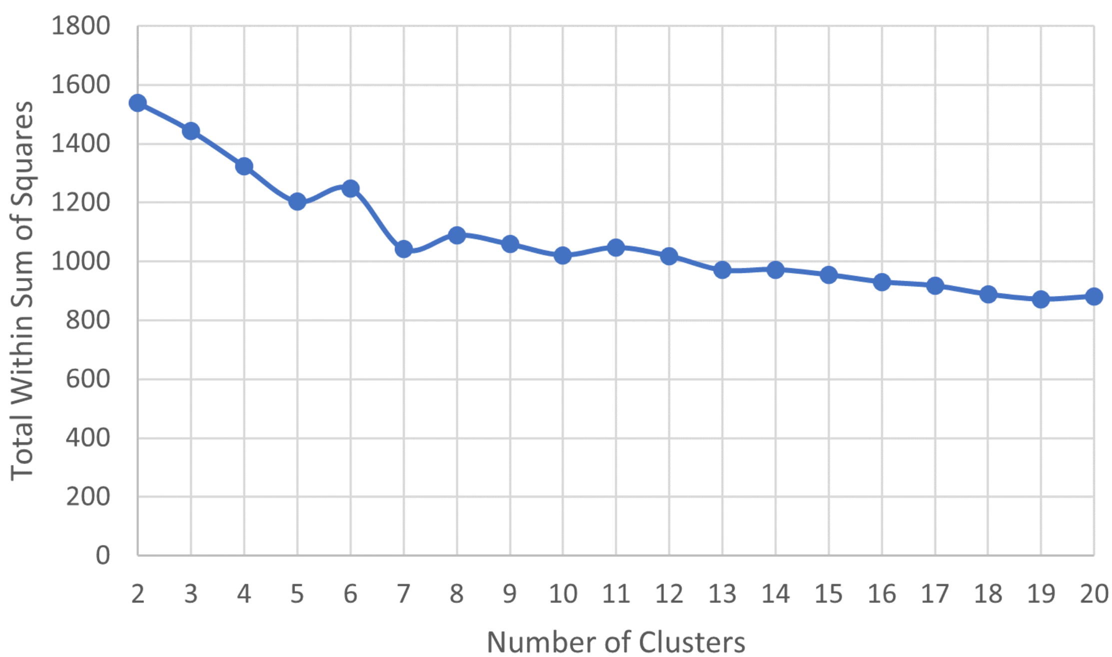



**Figure 6.18.  LA 8671, WSS elbow plot of k-modes clusters.**

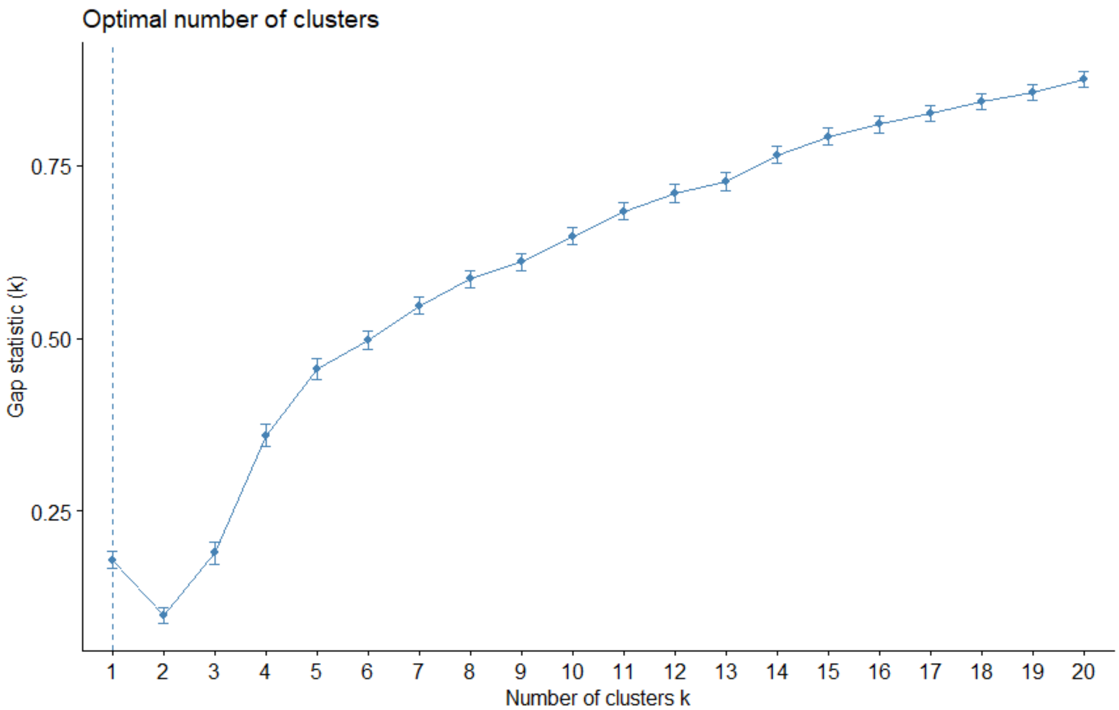



**Figure 6.19. LA 8671, gap statistic plot of k-medoids clusters.**

A six-cluster solution was selected for the k-medoids and a seven-cluster solution for the k-modes cluster analysis, although plots were also examined for a k-medoids 17-cluster solution. The six-cluster k-medoids solution (Figure 6.20) shows fairly well-defined clusters in dimensions 1 and 2. The k-modes cluster modes (Table 6.5) indicate that the cluster analysis identified polished black ceramics from the Tewa region (Cluster 5) and sand-tempered smudged ceramics with smoothed or moderately polished surfaces—similar to Brody and Colberg's (1966) observations of different 'polished black' types.

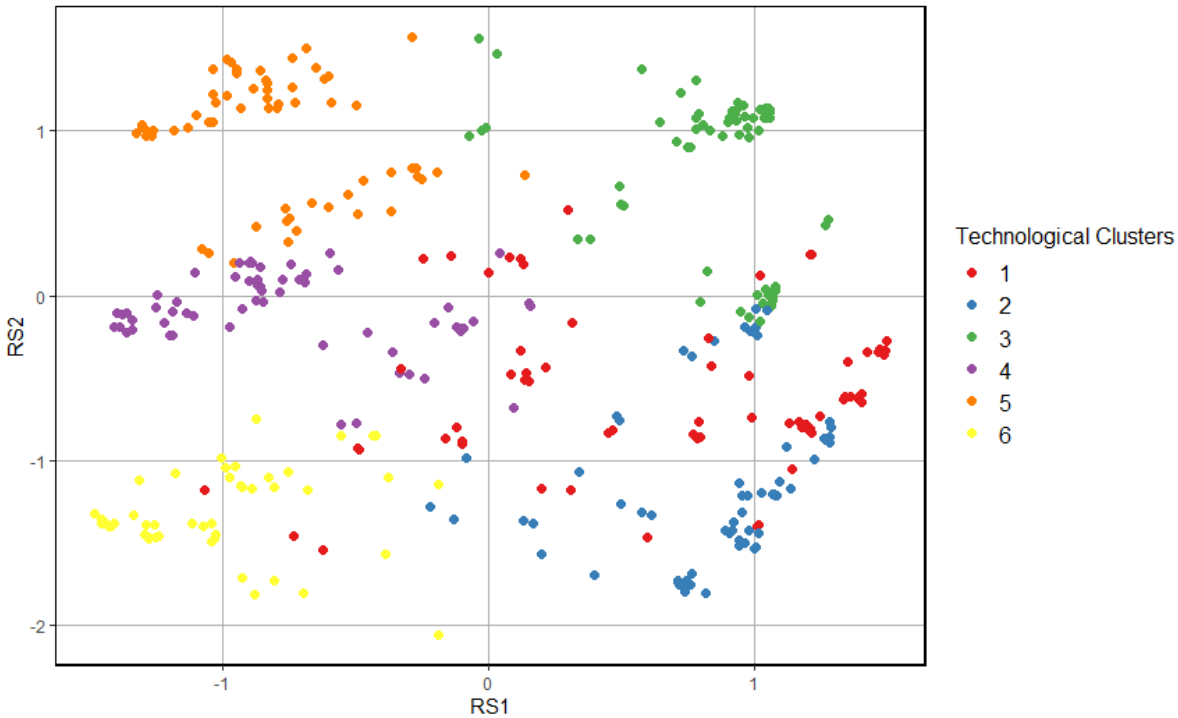



**Figure 6.20. LA 8671, PCoA scatterplot with k-medoid cluster assignments. Six-cluster solution.**

Table 6.5. LA 8671 Cluster Modes.

| Cluster | Temper | ExtTreat | IntTreat | ExtFire | IntFire | ExtText | IntText |
|---|---|---|---|---|---|---|---|
| 1 | sand | none | none | lightly smudged | lightly smudged | smoothed | smoothed |
| 2 | fine tuff or ash | slipped | slipped | lightly smudged | lightly smudged | polished | polished |
| 3 | granite without abundant mica | mica slipped | slipped | lightly smudged | smudged | wiped | polished |
| 4 | sand | slipped | slipped | smudged | smudged | polished | smoothed |
| 5 | fine tuff or ash | slipped | slipped | smudged | smudged | highly polished | highly polished |
| 6 | sand | none | none | smudged | smudged | smoothed | smoothed |
| 7 | large tuff fragments | slipped | slipped | lightly smudged | smudged | smoothed | polished |

*Barela-Reynolds House*

The large initial analysis sample for the Barela-Reynolds house assemblage was 554 sherds and the detailed sub-sample was 52 sherds. As described in Chapter 5, approximately four clay recipes were identified with petrographic analysis for the New Mexican ceramics. Cluster validation tests for the initial and detailed samples indicated different optimal cluster solutions. The large sample has perhaps seven to ten clusters, but there are also indications that there is overlap and poor definition among clusters. The detailed sample has fewer clusters—only four to five.

Initial PCoA scatterplots of the first three dimensions show that there is structure within the assemblage, with at least three, possibly five clusters displayed in dimensions 1 and 2 and dimensions 2 and 3 (Figure 6.21). The Silhouette and WSS elbow methods on k-medoids clusters both weakly indicated that there are seven clusters in the sample assemblage, although the 'elbow' is very weak (Figures 6.22 and 6.23). The WSS elbow method for k-modes clusters suggests that 10 clusters is the optimal number (Figure 6.24). The gap statistic plot for k-medoids has a slight peak at 15 clusters (Figure 6.25), but curve is very gradual, which suggests that the sample data potentially closely resembles the randomized data.

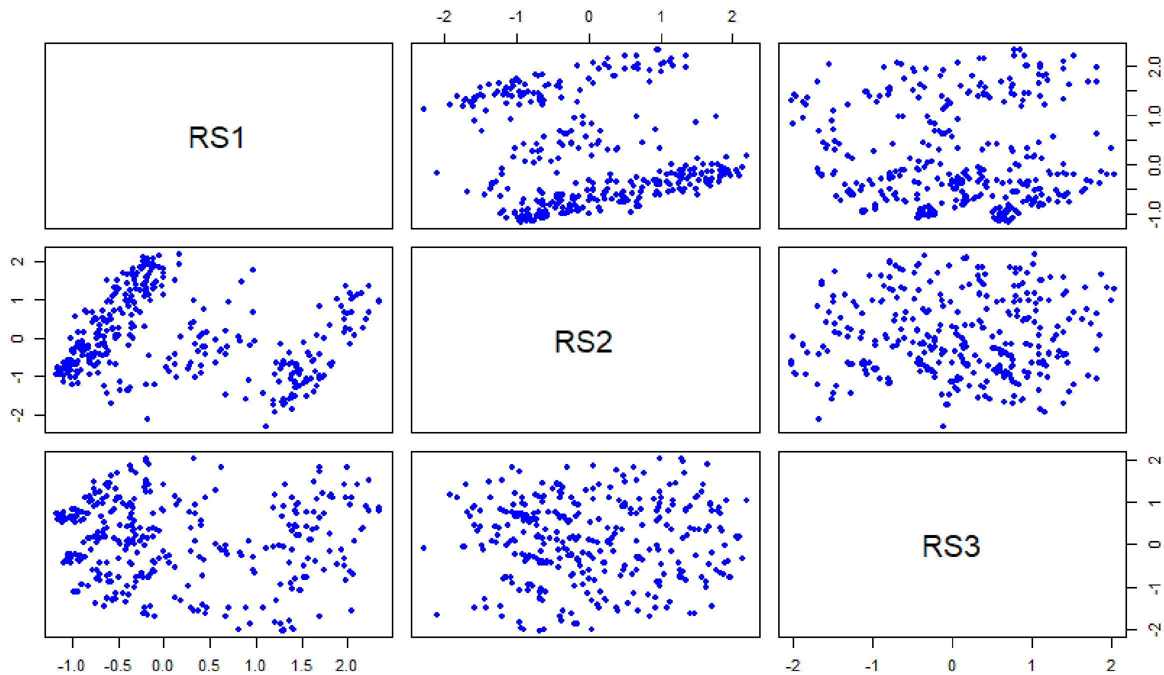



**Figure 6.21. Barela-Reynolds, PCoA scatterplot, first three dimensions.**

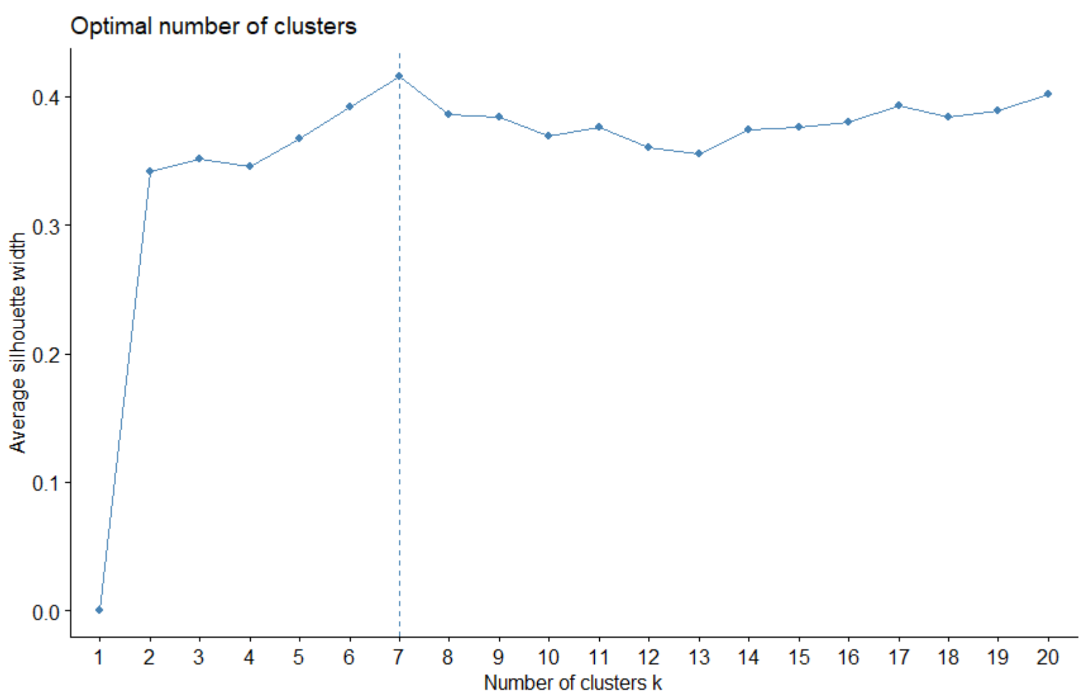



**Figure 6.22. Barela-Reynolds, average Silhouette plot of k-medoids clusters.**

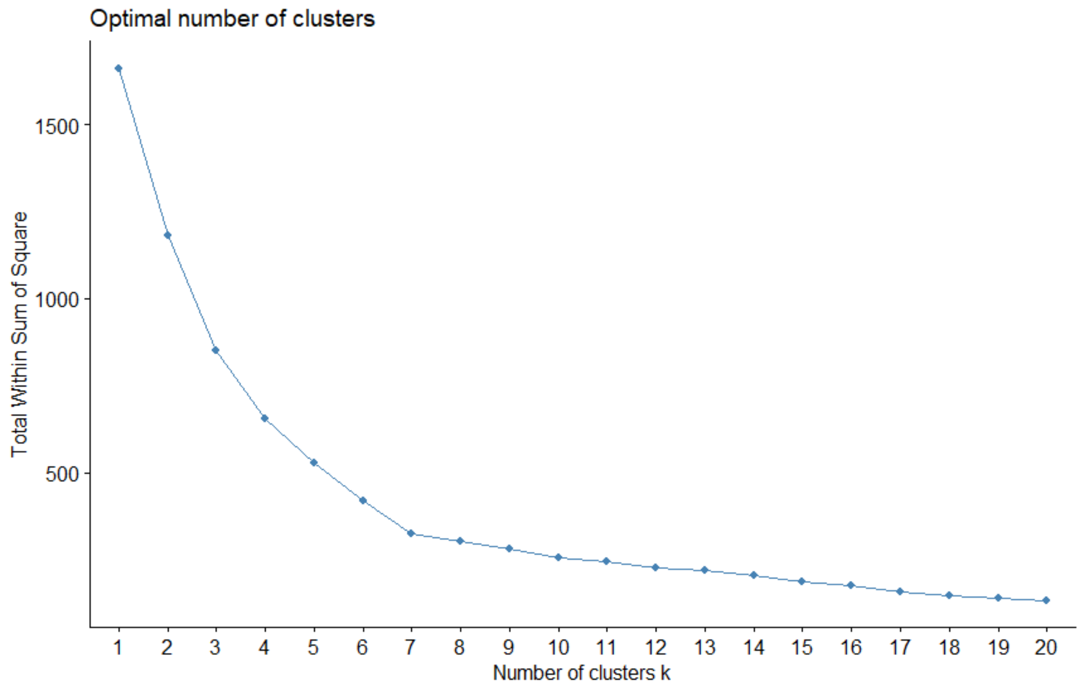



**Figure 6.23. Barela-Reynolds, WSS elbow plot of k-medoids clusters.**

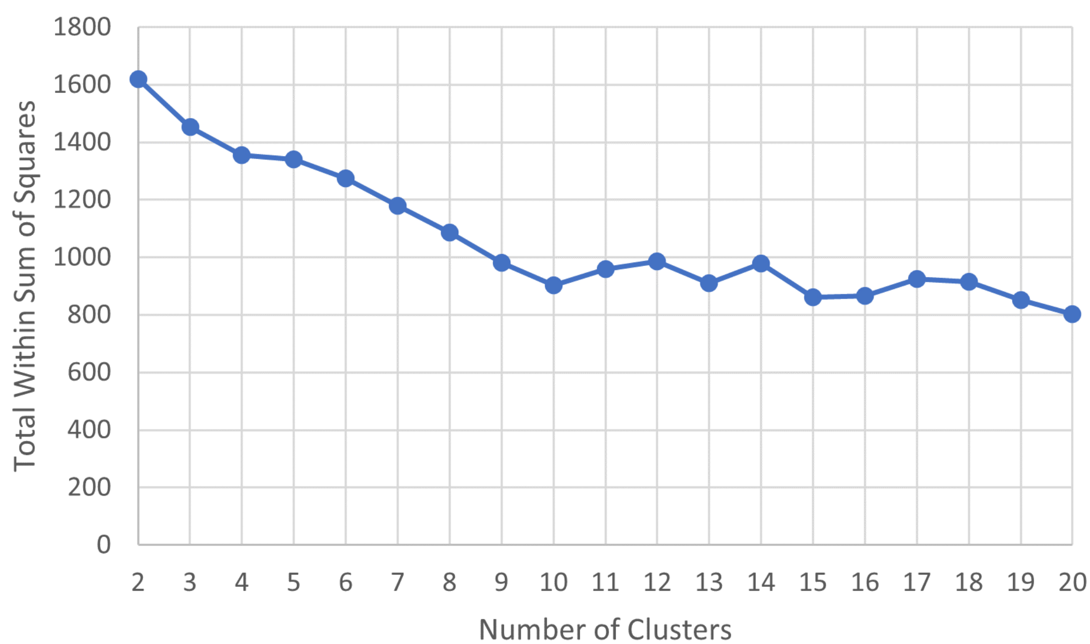



**Figure 6.24. Barela-Reynolds, WSS elbow plot of k-modes clusters.**

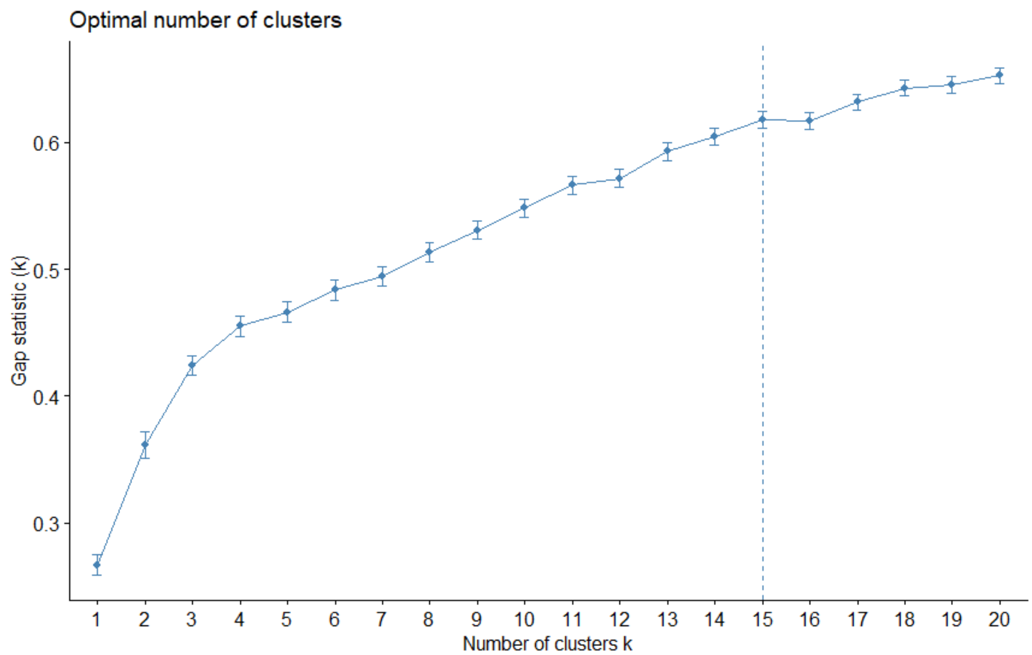



**Figure 6.25. Barela-Reynolds, gap statistic plot of k-medoids clusters.**

A seven-cluster solution using the initial sample was selected for k-medoids cluster analysis, and a ten-cluster solution was selected for k-modes cluster analysis. The results are presented in Figure 6.26 and Table 6.6. From the k-medoids cluster plot it is apparent in that Clusters 1 (red) and 4 (purple) almost completely overlap, as do Clusters 3 (green) and 6 (yellow). This overlap is likely the reason that the gap statistic plot had no clear peak. Examination of the k-modes cluster assignments and descriptive traits shows that only some clusters do track with descriptive types. Cluster 1, the largest cluster, is almost entirely Plain Utility sherds, while Cluster 7 is unpolished buff sherds and Cluster 8 is dominated by Polished Black. Alternatively, red slipped wares such as polished red and red-on-tan, which were not very common in the Barela-Reynolds assemblage, are distributed throughout the ten clusters, as are the less common temper types.

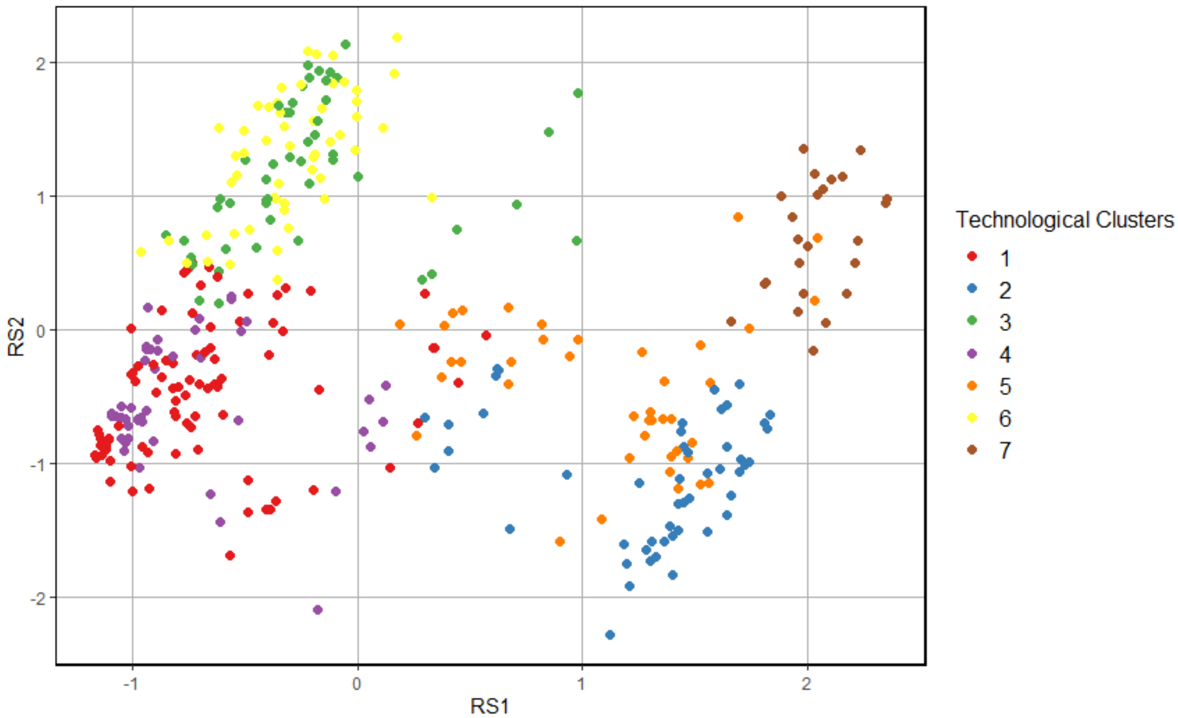



**Figure 6.26. Barela-Reynolds initial sample, PCoA scatterplot with k-medoids cluster assignments. Seven-cluster solution.**

Table 6.6. Barela-Reynolds Initial Sample Cluster Modes.

| Cluster | Temper | ExtTreat | IntTreat | ExtFire | IntFire | ExtText | IntText |
|---|---|---|---|---|---|---|---|
| 1 | sand | none | none | smudged | smudged | smoothed | smoothed |
| 2 | sand | slipped | slipped | none | smudged | smoothed | smoothed |
| 3 | mixed sand | slipped | slipped | smudged | none | smoothed | smoothed |
| 4 | mixed sand | none | none | lightly smudged | none | lightly polished | smoothed |
| 5 | sand | none | none | lightly smudged | lightly smudged | polished | polished |
| 6 | granite and sand without abundant mica | none | none | none | none | polished | smoothed |
| 7 | sand | none | none | none | none | lightly smoothed | lightly smoothed |
| 8 | mixed sand | slipped | slipped | smudged | smudged | polished | polished |
| 9 | mixed sand | none | none | none | none | smoothed | smoothed |
| 10 | sand | slipped | slipped | lightly smudged | none | polished | highly smoothed |

## Discussion

This chapter presents a series of exploratory statistical clustering analyses conducted on large initial samples and detailed sub-samples for the four sites in the project. A range of clusters were identified for each site, which represent sherds with similar traits, due to potters making similar choices at each stage in the ceramic production process. Constellations of similar choices during clay and temper selection, vessel forming, surface treatments and textures, and firing treatments and temperatures represent similar technological styles adhered to by potting communities of practice. Therefore, the identified clusters can be used as proxies for communities of practice. The number of clusters in each assemblage is a measure of how many communities and relationships site residents needed to maintain to acquire the New Mexican plain ware ceramics they used in their homes. A regional strategy is defined by many relationships with more distant potting groups suggesting more impersonal consumer relationships. Alternatively, few relationships with local potting groups may be the result of close, personal relationships, potentially even with kin or fictive kin—a local solution to their pottery supply needs.

However, these results come with some caveats, and aspects of the results indicate that improvements can be made to the analysis methodology. First, statistical analysis on the detailed subsamples returned the nearly same result for all four sites: 4–5 clusters for k-medoids and 4–6 clusters for k-modes analyses. This indicates that the detailed sub-samples were too small and diverse to be useful for cluster analysis. This is because the detailed sub-sample was selected to sample the greatest diversity of descriptive types and optical temper groups possible, as well as large sherds with evidence of forming techniques. Thus, the detailed sub-samples were unlikely to form reliable clusters. While conducting statistical analyses on the sub-samples was informative from a methodological perspective, the results are unlikely to accurately represent microstyles. Future studies using this methodology can address these sampling issues by selecting larger, more representative samples for petrographic, X-ray, and refiring analyses.

Second, k-medoids clustering algorithms tended to produce poorly delineated clusters with substantial overlap visible in the PCoA biplots. This is likely due to poor fit between characteristics of the assemblages and the k-medoids clustering algorithm. K-medoids analysis was selected as a Euclidean clustering method because the k-family of cluster analysis is the most commonly-used nonhierarchical partitioning cluster method used in exploratory cluster analysis and because it was the methodology used by Peeples (2011; 2018), who conducted one of very few other statistical analyses of technological style in plain ware ceramics. A nonhierarchical rather than hierarchical clustering method was selected for this exploratory analysis because it makes fewer assumptions about the structure of the data. A Euclidean method was selected because cluster results can be projected onto scatterplots, which allow for intuitive visual assessment of cluster quality and relationships.

However, the data collected here are entirely categorical, while the ceramic traits used by Peeples were a mix of ordinal, nominal, and numeric data types. K-medoids is not necessarily well-suited to illustrate groupings in only categorical data. Also, the PCoA biplots of assemblages at LA 160, LA 8671, and the Barela-Reynolds house showed that the structure of groups in the assemblage was elongated rather than spherical, whereas the LA 4968 initial sample had very little structure in its biplots, and instead showed very continuous distributions. Unfortunately, k-medoids is not well suited to either circumstance. The algorithm forces spherical clusters and does not manage elongated groups or groups with many concave angles well. It also attempts to maximize cluster compactness (within cluster similarity) and separation (between cluster dissimilarity) and so it struggles with continuous data. For these reasons, it may be that a hierarchical clustering method such as single linkage or Robust Clustering Using Links (ROCK) may be better to explore grouping in these assemblages (Han and Kamber 2006).

Despite these caveats, the cluster solutions presented for the initial samples at each site are an adequate first pass at exploring technological style in New Mexican historic plain wares. The general agreement between k-medoids and k-modes cluster solutions suggest that they do represent groups of technologically similar sherds which can be interpreted as microstyles.

The results of the cluster analyses (Table 6.7) did not directly follow expectations based on the technological analyses (Chapter 5). Technological analyses suggested that the LA 8671 ceramic assemblage was the most diverse, with the greatest variety of choices made at each stage in ceramic production, while the Barela-Reynolds house was the least diverse, based on the clay recipes, clay sources (refiring colors), and surface treatments present. In contrast, the cluster analyses showed that LA 4968 likely has the fewest microstyles, while the Barela-Reynolds house assemblage has the most.

Table 6.7. Cluster Solutions.

| Site | Initial Sample | | Detailed Sub-sample | |
|---|---|---|---|---|
| | K-medoid | K-mode | K-medoid | K-mode |
| LA 160 | 7 | 6 | 5 | 5 |
| LA 4968 | 5 | 7 | 4 | 4 |
| LA 8671 | 6 | 7 | 3-4 | 5 |
| Barela-Reynolds House | 7 | 10 | 4 | 6 |

While these results are surprising, they underscore just how little is actually known about historic period ceramic production in southern New Mexico. The high number of clusters identified could indicate that there were many potting communities in the area working with geologically similar clay and temper sources. Further research into clay sources and sand petrofacies could provide more information about where potting communities were located and how they were differentiated. Alternatively, it could be that there were in fact few potting groups in the area, but their styles were integrated through shared learning and teaching techniques, social ties that led to high levels of exchange between groups, or open learning environments that produced flexible technological styles. These are research questions beyond the immediate scope of this dissertation.

The clusters presented in this chapter are not sufficient to serve as a ceramic sourcing study, nor should they be used to evaluate descriptive types or other ceramic typologies developed for historic New Mexican ceramics. However, there are some patterns that suggest further research into these questions would be productive. While the identified clusters do not exactly reflect descriptive groups, there are some descriptive groups that were consistently identifiable in the clusters. In the Cuyamungue sites, mica-slipped wares with sand and/or granite temper were identified as technological styles at both sites. Also, polished wares, particularly Polished Black ceramics were also identified as technological styles at LA 160, LA 4968 and LA 8671. Further research into these ceramics may be useful for developing a historic plain ware typology that reflects cultural or chronological patterns. Alternatively, red-slipped wares, buff wares, and Plain Utility ceramic types were rarely grouped into clusters. Instead, these descriptive types could be found in many different clusters. This may mean that these ceramics were produced as variations of other technological styles (polished red ceramics as an oxidized variation of a polished black technological style, for example).

This chapter used two types of multivariate clustering analyses, k-medoids clustering and k-modes clustering, to identify groups of similar sherds based on technological traits observed in the New Mexican ceramics at each site in the project. This work is exploratory, but I interpret the number of microstyles identified to indicate the number of potting communities represented in each assemblage. It is a measure of variability that tells us more about how many different consumer relationships Hispanic residents at the four sites maintained with Puebloan and possibly Hispanic or Apachean potters around them. The results of the cluster analyses did not precisely follow expectations based on the analyses in Chapter 5. Based on cluster analyses, the Barela-Reynolds house assemblage has the greatest number of microstyles, followed by LA 8671 and LA 160. As expected, LA 4968 had the least variability and the smallest number of microstyles was identified in the cluster analysis.

# Chapter 7: Imported Goods and Market Access

This chapter examines the networks and social relationships involved in the acquisition and consumption of imported artifacts found at the four sites in the sample. Imported artifacts are those items unlikely to have been produced within the New Mexico territory. This category includes goods from Asia, Europe, areas of the eastern United States, and from further south in Mexico. While identity in the Late Colonial and Territorial periods has been described as largely civic or community-based and localized in nature (Atherton 2013; Jenks 2011; Nieto-Phillips 2004), the growing presence of imported goods at residential sites in New Mexico throughout the nineteenth century indicates that New Mexicans were also increasing their participation in regional and global markets. Therefore, imported materials at each site are particularly informative about regional or national networks and social relationships.

To understand whether the artifact assemblages suggest local or regional consumer profiles at each site, we must understand market access within the New Mexico territory. Each site in the study represents a different part of the territory with potentially different market access—north of Santa Fe at the Cuyamungue sites (LA 160 and LA 4968), near Albuquerque at LA 8671, and in Mesilla at the Barela-Reynolds house, which by 1854 was near the national border of the territory and directly along the route to Chihuahua and other Mexican trade centers. Archival and artifact data are used in this chapter to answer three main questions: 1) What goods were brought into the territory? 2) How did goods circulate throughout the territory and eventually reach each site region? 3) What goods did site residents choose to acquire and how were these goods used?

The results of analyses in this chapter show that residents at each site developed their own strategies for acquiring and incorporating imported materials into their daily lives, based on how their local circumstances and personal relationships shaped access. At LA 4968 and LA 160 site residents prioritized remodeling the roomblocks at the sites to include glass windowpanes—a relatively new development in the Mexican and American Territorial periods—but were very limited in their incorporation of imported materials in private life. Residents at LA 8671 likely had poor market access, but they acquired a surprisingly large and diverse collection of imported ceramic tableware, possibly from many small purchases or during purchasing trips to Santa Fe. The Barela-Reynolds house is an example of post-railroad market access, with greater availability in certain categories, like packaged food, than ever before. However, residents apparently maintained close market ties with north-central Mexico and acquired high amounts of Mexican lead-glazed ceramics as tableware.

Questions 1 and 2 are first addressed generally for the New Mexico territory using secondary sources and the published historiography. Considerable work has been conducted by U.S. historians to reconstruct and understand the social and commercial networks along the Santa Fe Trail (Atherton 1940; Calafate Boyle 1997; Church 2017; Moore et al. 1999; Moorhead 1995; O'Brien 2014; Sandoval 1989; Simmons et al. 1992). This scholarship has produced broad understanding of what goods arrived in and passed through the New Mexico territory between 1821 and 1880.

Further detail regarding Question 1 is provided using an archival sample. Purchase histories and networks of exchange and debt are examined through ledger books kept by different top-tier merchants. This line of evidence does not always preserve the activities of small-scale traveling merchants or peddlers at the bottom of the overall hierarchy, however it does give an idea of client purchasing habits, and relative value of items consumed in New Mexico, as well as how they were purchased, how often, and by whom. Inventory lists of imported materials and bills of lading provide information regarding the most common and most expensive imports, the value of goods over time, and ultimate sources of materials and the consumer networks maintained by merchants themselves to acquire inventory. While there are many ledger books preserved within collections across the state, a sample was selected from top-tier Hispanic and European merchants. This sample consists of a selection of the most legible pages of the ledger books of Manuel Alvarez between the years of 1834 and 1841, preserved within the Manuel Alvarez Papers.[7] Discussion of the Alvarez material also draws on research by historian T. E. Chavez, who worked extensively with the Alvarez papers as part of several biographical studies (Chavez 1990, 1978). Other materials in the archival sample are bills of lading and receipts between merchant Felipe Chávez and the forwarding company W. H. Chick and Company between 1862 and 1873,[8] and a ledger book of large purchases from the German merchant firm of Elsberg and Amberg for the year 1860.[9] These samples do not encompass all trade within the territory, but they are the first steps in a detailed study of the quantities, types, and costs of goods entering New Mexico during the pre-railroad period.

To address Question 2, merchant activity in each site region during the American Territorial period is examined through merchant licenses and tax fees organized by county. License records provide information about the names of merchants, their frequency of

[7] Alvarez Ledger 1834–1839 and 1839–1841, reel 2: frames 615–716, Manuel Alvarez Papers (hereafter MAP), Series 2: Ledger Books, New Mexico State Records Center and Archives, Santa Fe, NM (hereafter SRCA).
[8] Business Correspondence, 1861–1881. Letters and receipts from W.H. Chick and Co., box 1, folder 31, Felipe Chavez Family Papers, Center for Southwest Research, University Libraries, University of New Mexico, Albuquerque, NM.
[9] Elsberg and Amberg Ledger Book, 1860–1862, Collection 1959-207, SRCA.

activity in each county, as well as the relative monetary value of their inventories. Merchant licenses, combined with census data, serve as a proxy for understanding how goods circulated in the territory and reached each site region. While not exhaustive, these data inform on the number and ethnicity of potential merchant sources that site residents could use to acquire imported goods. This proxy can be used to compare relative market access between the site regions.

Question 3 is addressed through descriptions of the imported artifact assemblages at each site in the sample and functional analysis of the assemblages. The imported artifacts at LA 160 and LA 4968 were analyzed by OAS as part of the larger U.S. 84/285 Santa Fe to Pojoaque Corridor Project (Boyer et al. 2018; Moore 2018c, 2018d) and are only summarized here. Imported artifacts from LA 8671 were initially analyzed in the 1960s by Brody and Colberg (1966), with some assistance by E. Boyd from the Museum of New Mexico and re-examined at the Maxwell Museum of Anthropology for this project. Imported artifacts from the Barela-Reynolds house were not relocated at New Mexico State University, however the university museum retains a detailed analysis catalog of the artifacts, which includes drawings of some artifacts and their manufacturers' marks. This catalog was used with original field counts and excavation notes to develop the artifact summaries presented here.

Finally, functional analysis can give a picture of the range and variety of activities that occurred at each site, the role of imported artifacts within daily life at the sites, and a broad foundation for comparison among the four sites. Each imported artifact was assigned one of eleven broad functional categories, as well as a specific function (if this could be identified). The functional categories used here are: Arms and Ammunition, Construction and Maintenance, Domestic, Economy and Production, Entertainment and Leisure, Food, Furnishings, Indulgences, Personal Effects, Transportation, and Unassignable. Each category is further defined in Table 7.1. The broad categories are used in other historical artifact summaries across New Mexico (Badner et al. 2014; Barbour 2011; Boyer 2004a; Boyer et al. 2018; Moore 2018c), facilitating future comparative research among nineteenth century sites. Additionally, examination of glass bottle forms, ceramic dishware forms and decorative styles, and metal artifacts can tell us how site residents set their tables and served food, how they sewed and decorated their clothing, and how they built their homes and furniture.

Table 7.1. Functional Categories.

| Functional Category | Description |
|---|---|
| Construction and Maintenance | Tools, hardware, and materials used in the making and upkeep of structures, such as milled wood, roofing material, and window glass. |
| Arms and Ammunition | Weapons, bullets, and cartridges |
| Economy and Production | Items related to livestock, agriculture, mining, or other forms of making a living. |
| Food | Faunal remains, botanical remains, containers for purchased food such as cans, bottles, and condiment jars. |
| Domestic | Artifacts associated with daily household tasks, particularly cooking, serving, and storing foods such as kitchenwares and tablewares, canning jars and lids, flatware, etc. May also include items related to care and maintenance of clothing. |
| Furnishings | Items related to interior furnishing and decoration of a domestic structure, such as furniture, furniture hardware, and lighting. May also include such items as battery fragments, stove fragments, coal, or lamp glass. |
| Unassignable | Artifacts whose function could not be determined. This category is primarily populated by bottle glass that could not be attributed to Indulgences or Food, and cans that could not clearly be attributed to Food. |
| Indulgences | Represented by materials not necessary for human survival, primarily liquor, tobacco, and sodas or soda water. |
| Entertainment and Leisure | Toys, books, newspapers, gambling tokens, etc. |
| Personal Effects | Individually owned objects, such as shoes and clothing, jewelry, combs, eyeglasses, or coins. This category also includes artifacts related to cosmetics and personal care items such as non-prescription medicines. |
| Transportation | Artifacts related to vehicular or animal transportation. |

## Question 1: What Goods Arrived in the Territory?

Historians of the Santa Fe Trail often emphasize the stark effect that access to eastern U.S. trade had on material life for New Mexicans. To support this assertion, typically a laundry list of items is presented, gleaned from packing manifests, ledger books, muster rolls, memoirs, and receipts. For example, Moorhead (1995:81) lists:

> In addition to such dry goods as muslin, broadcloth, drills, prints, flannels, linen, calico, nankeen, pongee, taffeta, velveteen, cashmere, alpaca, merino, and silk, there were also the following items: clothing of all kinds; rings, necklaces, bracelets, earrings, crucifixes, beads, buttons, buckles, hairpins, ribbons, and handkerchieves; brushes, combs, razors, razor strops, mirrors, and cologne; clocks and watches; thread, needles, thimbles, scissors, and knitting pins; curtain hooks, wallpaper, window glass and white lead; pots, pans, coffee mills, dishes, corks, and bottles; wrapping paper, writing paper, pen points, pencils, slates, and books; candlewick, matches, percussion caps, gunflints, gunpowder, rifles, and traps; knives, axes, shovels, hoes, and other tools; claret, sherry, and champagne."

While lists of this type provide an idea of the range and variety of goods imported into the New Mexico territory and internal regions of Mexico, they do not always give an idea of the relative proportions or values of these items.

Ongoing work demonstrates the dominance of clothing, fabric, and sewing notions in the Chihuahua and Santa Fe trade, and this pattern extends from the Late Colonial period into the American Territorial period. Tigges (2019a, 2019b) conducted a study of wills, probate records and court cases of New Mexican merchants between 1715 and 1765 and she has also compiled a database of imported goods owned by Late Colonial and Territorial period New Mexicans. Her analysis shows that during the Late Colonial period, cloth and clothing were some of the most common imported materials owned by wealthy New Mexicans. Those portions of the merchant wills that included their sales inventories most often included footwear, fabrics, and notions.

This pattern did not change when the Santa Fe Trail greatly expanded trade with the eastern United States. Susan Calafate Boyle (1997) made a close study of merchant inventories surviving in import permits between 1825 and 1845. From 1821 to 1846, Santa Fe served as a point of entry to Mexico for merchants traveling along the Santa Fe Trail from Missouri. *Aduanas* (customs houses) were based here and beginning in 1825 merchants were required to acquire *guias* (import permits) to transport and sell their merchandise within Mexico. A *guia* was proof that the imports had been inspected and proper taxes had been paid. They often listed the owner or conductor of the cargo, its quantity and approximate value, and the merchant's destination, where they were required to acquire additional official documentation upon arrival. Sometimes *guias* included a cargo inventory. By studying *guias*, Calafate Boyle notes that the largest proportion of shipments were usually fabrics, however, household goods were the most varied category of items imported from the U.S. into Mexico.

*Archival Sample*

An analysis of a sample of ledgers from Manuel Alvarez in 1834–1841, the Elsberg and Amberg debt ledger from 1860, and wagon manifests and receipts from W. H. Chick and Company to merchant Felipe Chávez between 1862 and 1873 provide more detailed perspective into the cost of goods and what types of goods were most frequently bought and sold during the Mexican and American Territorial periods. In each archival sample I examined what goods were purchased with high frequency, in the largest quantities, what goods were the cheapest, and the most expensive.

*Manuel Alvarez Ledger (1834–1841).* Manuel Alvarez, merchant American consul (1839–1846), and lieutenant governor (1850) of the New Mexico territory, is a challenging example of the intersection of business, nationality, and ethnicity within social networks of consumption. Alvarez has been closely studied by T. E. Chavez (1990) and Lansing Bloom (1946), and his biography is only summarized here. Alvarez was born in Spain and came to the New Mexico territory via Cuba and New York. He arrived in Santa Fe in 1824 and while there served as the American consul during the difficult years leading up to the American invasion. His primary duties as consul were to serve as a point of contact and local advocate for American merchant interests in the New Mexico territory and with the Mexican government, although the Mexican government never formally recognized any of the four appointed American consuls.

Alvarez also conducted extensive trade of his own along the Santa Fe and Chihuahua Trails and to California. He imported goods from London and Paris, conducting purchasing trips personally, but he also utilized Francis B. Rhodes and Company for international purchases. Rhodes and Company were based in New York, specialized in European imports, and had agents in most major American cities, including St. Louis.

Alvarez's New Mexican network included Governor Manuel Armijo (Sandoval 1978), and Charles (Carl) Blumner, a German immigrant who served as Alvarez's accountant and secretary, and who later was appointed Territory Treasurer (Jaehn 1986). His ledger books include a range of transactions and debts between two and several hundred dollars in size, from both men and women, in Santa Fe and throughout the territory.[10]

[10] Alvarez Ledger 1834–1839 and 1839–1841, reel 2: frames 615–716, MAP, Series 2: Ledger Books, SRCA.

The Manuel Alvarez ledger is frequently illegible or unclear, especially with regards to the specific cost per unit of goods. Alvarez maintained records both in English and in Spanish, and he had a tendency to give nicknames to his customers, such as “The Snake Woman” and “El Señor Jefe Politico (un Americano).” However, the ledger quickly makes clear that clothing/cloth and shoes were the items most frequently purchased from the consul-merchant. As noted above, cloth or clothing was the predominant item imported from Mexico during the eighteenth century, and the most common item imported across the Santa Fe Trail in the early nineteenth century.

The most expensive items purchased in the Alvarez ledger sample are almost always shoes, for both men and women, which could have been manufactured in Mexico or in the United States and purchased in bulk. Prior to advances in shoe sewing machines in the late 1850s and 1860s, most shoes would have been hand-sewn or nailed (Anderson 1968; Dappert-Coonrod and Mihich 2018). Although shoes were commonly imported, a shoemaker was also listed in San Ildefonso in the 1860 census, as well as many others in Santa Fe. Other expensive items were typically saddles or tack, and items related to transportation, such as wagons. The average total purchase size was small, however, and most transactions totaled less than $10. Alvarez also made loans of cash, typically in larger amounts than most of the purchases he documented.

Occasionally individuals would pay down their debts. Cash repayments were the most common, often in amounts of $1–3, but sometimes over $100. Other forms of repayment were in raw products such as furs, maize, and wheat. The least frequent form of re-payment was in goods, such as a coral necklace ($1.50), *punche* (local tobacco), or meat. Eighteenth and nineteenth century New Mexico is typically characterized as being a cash-poor economy

(Baxter 1987; Moorhead 1995; Wallace 2013; Weber 1982) and so the number of cash loans and cash repayments in the Alvarez ledger is surprising (although see Cox 1974 for a discussion of Alvarez's loans). However, this sample may be somewhat biased—Alvarez was a man of means and had access to cash resources far beyond the typical New Mexican. Also, while operating in Santa Fe he had access to soldiers of the presidio and government officials, some of the few in the territory who occasionally received a salary in currency. Despite the general shortage of currency in the territory, in 1830s Santa Fe Alvarez was able to consistently make cash loans and be repaid in cash or have rents paid in cash.

*Gustave Elsberg and Jacob Amberg Ledger (1860).* German merchants Gustave Elsberg and Jacob Amberg first formed a firm together in Kansas in 1855, before coming to Santa Fe in 1856. Elsberg operated as the primary purchasing agent, often living in New York, while Amberg managed the southwestern side of the business. The partnership had diverse investments. They opened a branch store in Chihuahua in 1866 and owned copper mines, including the Pinos Altos Mining Company between 1861 and 1866. They also had extensive partnerships (individually and together) with other German merchants in New Mexico such as Charles Ilfield, which was common practice at the time. The Elsberg and Amberg partnership was ultimately unsuccessful, however, and by 1869 the firm was facing bankruptcy and the two men were engaged in lawsuits against each other (Jaehn 2005; Parish 1960). The debt ledger from Elsberg and Amberg for the year 1860 provides a comprehensive picture of the selling patterns of relatively successful German wholesalers who were based in Santa Fe and specialized in selling large lots of merchandise to other upper- and middle-tier merchants.

Within the debt ledger sample, the items purchased in the greatest quantities per transaction were different types of cloth, followed by ready-made clothing and shoes. However, the Elsberg and Amberg clients were varied, and some purchases were dominated by other items such as soap, tin plates, ceramic cups, or candles. Cloth and clothing also made up the largest proportion of cost for most purchase transactions, followed by alcohol. Items with the highest per-unit cost included necessary items for travel, such as wagons ($175–200), oxen ($50), and saddles ($25). Shoes and clothing were also expensive. Silk dresses cost $40, a house dress cost $12, and coats cost $42 a dozen. Men's shoes were $15 a dozen and women's were $12. A box of champagne cost $24, and a box of whiskey was $50. The least expensive items were lesser quality fabrics, such as lawn and manta for $0.10 a yard, and calico for $0.125–0.135, or sewing notions. Bulk dry goods such as coffee, tea, and sugar were also among the least expensive items.

Goods in the ledger that might be found at an archaeological site include looking glasses ($22.50 a dozen), razors ($6.00 a dozen), and padlocks ($1.50). A range of tableware and cutlery was purchased: tin pans ($4.50 a dozen), tin cups ($1.12 a dozen), tumblers ($2.00 a dozen), plates ($12.00 a dozen), cups and saucers ($6.00–12.00 a dozen), one china dish ($2.00), tablespoons ($6.00 a dozen), teaspoons ($4.50 a dozen), and pink saucers ($1.00 a dozen). The difference in prices listed for dishware possibly indicate a range of decorative types available, although descriptions are generally absent. Cups and saucers appear to have been sold as units, as were pitchers and wash basins. Prices were most often listed by the dozen, but items were purchased by the half dozen. Most of the individuals in the 1860 debt ledger were merchants as well, likely intending to re-sell their purchases (individual purchases were recorded in a separate "petty ledger"). However, these merchants typically only purchased tableware in lots of one dozen or a half dozen, suggesting demand was not high. Pitchers and wash basins, and tin pans were usually purchased individually whereas tin plates and cups were purchased in lots of 1 to 2.25 dozen.

The ledger also includes evidence of special-order purchases and large orders made by individuals who would have needed personal relationships with Elsberg or Amberg to be extended high amounts of credit. For example, Juan Munz (Muniz), of Mesilla appears to have opened a bar in approximately 1860. In June of that year, he purchased $2,326.99 in goods from Elsberg and Amberg and his purchases included major elements of a bar or saloon, such as a billiards table ($1,000), a looking glass with a gold frame ($40.00), a carved frame ($15.00), nine pictures ($65.00), four boxes of glass lanterns ($10.50 each), and a billiard cover ($10.00). Munz also outfitted his bar with both printed and white curtains ($22.74 and 9.00, respectively), with rods, cords, and tassels.

Glass and serving wares purchased for the saloon are especially interesting for archaeologists. Six dozen glass tumblers were purchased at $3.00 a dozen, as well as wine glasses ($3.00 a dozen), cordial glasses ($2.30 a dozen), and German silver teaspoons at $4.30 a dozen. Munz was clearly prepared to offer a range of cocktails, with his purchase of an egg whip ($0.45), a nutmeg grater ($0.50), nutmeg, lemons, raspberry syrup, ginger, and, of course, alcohol. Liquor purchases included two boxes of rye whiskey ($75.00 each), four different types of brandy, and schnaps. Bar snacks included oysters, small and large cans of sardines, and peppermints.

*Felipe Chávez Shipping Manifests (1862–1873).* Felipe Chávez (1834–1906) was a wealthy, successful second-generation merchant by 1863. Initially Chávez worked alongside his father, José María Chávez. This activity allowed him to begin his own importing and sales network and by the 1860s Chávez had taken over the business and was involved in importing goods over the Santa Fe Trail, had a network of stores and local sales agents operating throughout New Mexico, and maintained sheep flocks of as many as 500,000 sheep in addition to purchasing wool from other smaller herders across the territory. His commercial activities were examined in detail by Calafate Boyle (1997) as an example of a highly successful Hispanic capitalist utilizing the Santa Fe Trail.

W. H. Chick and Company was a forwarding and commission firm founded in 1858 in Kansas City. The firm provided a range of services to New Mexican merchants, but primarily served to transport merchandise from the railroad terminus to various destinations within the New Mexico Territory and to ensure that wool and other goods sent by merchants were packed and loaded onto trains heading to eastern cities for sale. W. H. Chick and Co. also served as purchasing agents in terminus towns, buying groceries, dry goods, equipment for transportation, and other final items to fill all available packing space.

The firm followed the Atchison Topeka and Santa Fe Railroad, setting up offices in railroad towns as they moved west. In 1879, as the railroad reached Raton Pass and Las Vegas, New Mexico and forwarding firms were no longer in as much demand, W. H. Chick retired and Lawrence Browne partnered with New Mexican Hispanic Francisco (Frank) Antonio Manzanares to become Browne and Manzanares and Co. The firm had a warehouse in Las Vegas and conducted its own merchandise sales and wool purchases at stores in Lamy and Socorro while continuing to act as purchasing and forwarding agents. The firm was bought by another large New Mexican firm, Gross, Kelly and Co. in 1915 (Fritz 2004). Manzanares served as a delegate to the House of Representatives in 1884.

The archival sample used here is from 25 bills of lading from W.H. Chick and Company, which include detailed inventories of shipments as they were removed from railcars and packed into wagons. There are two bills from 1858, one each from 1859, 1863 and 1869, eight from 1870, seven from 1871, two from 1872 and one from 1873. Because costs for transport were often calculated based on weight, frequently details about item quantities and weight are listed, rather than their purchase costs. However, values are also sometimes listed, possibly for items that were purchased by the firm for Chávez in the terminus town. Therefore, in most cases we are only able to extrapolate what was purchased in large and small quantities, and if Chávez considered the transportation cost worthwhile on heavy items.

The sample shows much less emphasis on fabrics and clothing than the other archival samples, most likely because W.H. Chick and Co. appears to have specialized more in groceries at this point. Sugar (both white and yellow) and coffee were among the items purchased in the greatest quantities, as well as soap and candles. Coffee most often made up the largest proportion of weight in shipments, followed by alcohol, sugar, and candles. The lightest items were small household or leisure goods purchased in small quantities, such as cheap soap, clothes pins, marbles, or playing cards. Items purchased in the smallest quantities included dishware (ceramic, glass, or tin), household goods like paint, varnish, trunks, an iron safe, and single boxes of packaged groceries, such as oysters, pineapple, peaches, and sardines. The wide variety of these 'small purchases' demonstrates that products were becoming cheaper and more accessible by the early 1870s, in part due to increased production in the United States, but mostly because railroad development reduced the transportation mark-up. 'Small purchases' also include many single items that were most likely special orders. In the sample there was a two-pot stove with pipe, furniture, a tea kettle, a fan mill, a box organ, a slab of marble, and lightning rods.

While ceramic, tin, and glass dishware were only a small part (both by weight and by quantity) of Chávez's purchases, the inventories demonstrate a developing demand within New Mexico. Purchases were larger, more frequent, and described with greater detail than in the earlier archival samples. Boxes of Queensware are listed in 1870 ($n$ = 2) and in an undated inventory, tinware in 1870, 1871, and an undated inventory, CC ware (creamware) in 1871, and glassware in 1870 and an undated inventory. "Dishes" with no further description were moved in 1858 ($n$ = 2) and 1859. Purchases made from Glasgow and Brother purchasing agents in 1858 and 1859 list detailed prices as well, which hint at a variety of ceramic dishware selected. In 1858 a chest with 6 dozen cups ($0.75 per dozen), 46 dozen cups (0.65 per dozen), 23.5 dozen cups (0.55 per dozen), and a box of glasses ($0.50, 0.65, and 0.75); and chest with 25 dozen plates (0.50), 25 dozen plates (0.90), 19 dozen cups (0.75), 4 dozen cups (0.65), and 1.5 dozen cups (0.55) were purchased. Another 1858 purchase from Glasgow and Brother contained a chest with 15 dozen cups (0.70), 35 dozen cups (0.60) 40 dozen plates (0.50), and 10 dozen plates (0.60). The range of prices suggests different decoration technologies.

Table 7.2 shows some items within the archival sample that might appear in archaeological sites, including the dishware described above. Among these "future artifacts," the most common purchases are cutlery and knives, shoes (of which nails, soles, uppers, or aglets may remain), clothing buttons, dishes (tin and ceramic), and brushes of various types.

Table 7.2. Changing Costs of Goods That May Appear in Archaeological Sites.

| Personal Effects | | |
|---|---|---|
| Item | Cost | Source |
| Combs | 0.187 each | Alvarez Ledger |
| | 2.00 per dozen (0.167 each) | Elsberg and Amberg |
| Beard brush | 1.50 each | Alvarez Ledger |
| Buttons (brass) | 1.00 unit unclear | Alvarez Ledger |
| | 0.75 gross | Elsberg and Amberg |
| Buttons (pearl) | 0.75 gross | Elsberg and Amberg |
| Buttons (iron) | 0.125 | |
| Buttons (jacket and pants) | 0.372 | Alvarez Ledger |
| Necklace (corral) | 1.50 | Alvarez Ledger |
| Razors | 6.00 per dozen | Elsberg and Amberg |
| Rosary | 2.00 per dozen | Elsberg and Amberg |
| Shoes | 1.50-2.00 | Alvarez Ledger |
| | 3.00-4.00 | Chávez Inventory |
| Shoes (silk) | 2.50 a pair | Alvarez Ledger |
| Shoes (men's) | 15.00 a dozen | Elsberg and Amberg |
| Shoes (women's) | 2.15-3.00 a pair | Alvarez Ledger |
| **Domestic** | | |
| Butcher Knife | 2.50-5.00 per dozen | Elsberg and Amberg |
| Cups | 4.5 per dozen | Alvarez Ledger |
| | 1.25 per dozen | Elsberg and Amberg |
| | 0.55-1.00 per dozen | Chávez Inventory |
| Cups (tin) | 1.12-2.25 per dozen | Elsberg and Amberg |
| Cups (yellow) | 0.50 per dozen | Chávez Inventory |
| Cups and Saucers | 0.37 each, 3.00-6.00 per dozen | Elsberg and Amberg |
| | 0.30 each, 4.50 per dozen | Chavez Inventory |
| Cut glass bottles | 4.30 per dozen | Alvarez Ledger |
| Plates (unidentified ceramic) | 4.50 per dozen | Alvarez Ledger |
| | 2.25-6.00 per dozen | Elsberg and Amberg |
| | 0.50-0.90 per dozen | Chávez Inventory |
| Forks and Knives (sets) | 6.00 per dozen | Alvarez Ledger |
| | 6.00 per dozen | Elsberg and Amberg |
| Frying Pans | 7.50 per dozen | Elsberg and Amberg |
| Saucers | 1.00 per dozen | Elsberg and Amberg |
| Scissors | 2.00 per dozen | Chávez Inventory |
| Tablespoons | 0.33 per dozen | Elsberg and Amberg |
| Teaspoons | 4.50 per dozen | Elsberg and Amberg |
| Tin pans | 2.00-6.00 per dozen | Elsberg and Amberg |
| Tin cups | 1.12-2.25 per dozen | Elsberg and Amberg |
| Tumblers | 0.33-2.00 per dozen | Elsber and Emberg |
| Wine Glasses | 1.50 per dozen | Elsberg and Amberg |
| Washbowl and Pitcher | 4.00-5.00 | Elsberg and Amberg |

Lead for ammunition was also common. The table shows wide variation in the size of dishware purchases, indicating both growing demand (Chávez's purchases dwarf anything in the Alvarez ledger) and that different wholesalers had different specialties. While Chávez purchased dishware at least once, if not several times a year, Elsberg and Amberg rarely sold more than half a dozen pieces at a time to other merchants. The samples also demonstrate the relative value of dishware compared to other, more frequently purchased items, such as cutlery. The low price per dozen makes ceramic dishware among the cheaper items in the Chávez inventories. In comparison, spoons were $0.80 a dozen, scissors cost $2.00 a dozen, and shoes still cost about $3.00–4.00 a pair. The dishware is also much cheaper than in the previous archival samples. The 1830s Manuel Alvarez ledger lists cups and plates at $4.50 a dozen, while they only cost Chávez $0.50–0.90. Even considering local price mark-ups, ceramic dishware had become substantially cheaper by 1858.

*Question 1 Summary*

Historians' work on the Santa Fe trade has shown the wide range of goods that were imported into (and through) the New Mexico territory beginning in the 1820s. The archival sample analyzed here gives some quantitative context to that variety, showing what goods were imported most frequently, what goods cost the most and least, and how prices and availability changed between 1830 and the 1870s. First, fabric and shoes were consistently the most frequent products that came into the New Mexico territory, from Mexico during the Late Colonial period and from the eastern U.S. and Europe through the American Territorial period. New Mexicans prioritized acquiring a wide range of fabrics and sewing notions to make their own clothing and, by the 1870s, more and more pre-fabricated clothing items were being imported, but they were costly. Additionally, shoes remained expensive, but prioritized purchases throughout the study period. Second, although the variety of goods imported was high, and increased throughout the study period, personal items such as jewelry, books, or cards remained infrequent. Household furnishings were even more rare, often appearing in ledgers only as special-order items.

Ceramic, tin, and glass dishware are of particular interest to archaeologists, but were only a small part of the array of material culture imported into the territory. While they were infrequent and expensive items in the 1830s, improving transportation from the advancing railroad, industrial improvements in Britain, and the growing U.S. pottery industry led to decreasing prices for dishware in New Mexico and across the U.S. (Miller 1991). It does not appear that New Mexicans prioritized purchasing imported dishware, particularly teaware. Although a top-tier wholesaler such as Chávez purchased large quantities of ceramic dishware in the late 1850s, the Elsberg and Amberg ledger suggests that middle and small-scale merchants or store owners rarely felt the need to purchase more than 0.5–1 dozen cup and saucer sets for the year in 1860.

### Question 2: How did Goods Circulate Within New Mexico?

Merchants circulated goods through their networks within the New Mexico territory by operating at several scales (Calafate Boyle 1997; Parish 1961), but historical analysis has typically emphasized only the top-tier of merchants, persons such as Josiah Gregg, Charles Ilfeld, or Felipe Chávez. These men moved tens of thousands of dollars in merchandise multiple times a year and had the ability to extend or receive substantial credit within New Mexico and with merchandising firms in the eastern U.S. Top-tier merchants needed agents for their business empires that included other merchants in New Mexico, and stretched across the United States into New York, Philadelphia, St. Louis, and across the Atlantic into Europe (Calafate Boyle 1997; Reynolds 2013; Sisneros 2013). The networks of exchange maintained by top-tier New Mexican merchants also extended downwards, from large-scale wholesalers who could afford financial risk, through a hierarchy to medium-scale retail merchants who maintained stores within larger towns, and down to small-scale itinerant peddlers. Small-scale peddlers or traders may have participated in barter or exchange on an infrequent or seasonal basis, in addition to agricultural or herding activities, or *cibolero* pursuits.

The top-tier of Hispanic merchants, the *ricos* (rich) of the territory, were also closely integrated with one another through family and business ties via marriage, *compadrazgo* (godparent) relationships, business partnerships, and debt (Espinosa McDonald 1997; R. Gonzales 2017; Sandoval 1978). For example, the Otero, Chávez, Perea, and Armijo merchant families were connected by marriage. Felipe Chávez was the son of José María Chávez and Manuela Armijo, while José María's sister Mercedes married top-tier merchant José Leandro Perea. Felipe Chávez's sister, Bárbara, married Nicolás Armijo. The networks served economic purposes but were organized along social and familial lines.

Previous historians have developed an understanding of commercial and social networks in New Mexico through examining commercial histories of companies (R. Gonzales 2017; Parish 1961) and genealogical histories of certain *rico* families, which highlight how social and family relationships provided structure for Hispanic commercial networks and the movement of goods and wealth in the territory (Sandoval 1978). However, an examination of merchant licenses can also provide a detailed picture of levels of merchant activity in different counties of New Mexico and help quantify merchant activity in each county through time. This helps us reconstruct market access within the region of each site in the sample. Those sites with better access to more merchants or greater inventories might be expected to have a larger or more diverse amount of imported goods.

*Merchant Licenses and Taxes: 1852 through 1889*

After the U.S. took over the governing of New Mexico in 1846, Kearney designated Charles (Carl) Blumner as a treasurer, and the position became official in 1851 as territorial treasurer (Jaehn 1986), and a territorial auditor. Like Spain and Mexico before it, the U.S. government wished to manage trade within the territory through a system of merchant licenses. The territorial auditor relied on prefects in each county to distribute merchant and liquor licenses and to collect taxes and fees on these licenses. Generally, merchants could purchase licenses for three months, six months, or a year. There was a value tax based on the amount of inventory the merchant had, and a territorial fee structure that increased incrementally based on the inventory value. For between $0 and $1,000 of inventory, the merchant typically paid $10 for a six-month license. Between $1,001 and $2,000, the cost was $15, and so forth. The completeness of license records for each county varies, and the quality of the lists relates to the diligence of the county prefect, his willingness to collect and turn over tax monies, and the participation of the merchants themselves.

Like the Mexican Territorial period, during the first decades of the American Territorial period, the U.S. struggled to maintain records and collect these additional taxes from New Mexican and foreign merchants. Not everyone was willing to purchase the required license. Furthermore, small-scale merchants who operated seasonally or intermittently from year to year when they were able to accumulate surplus materials may not have bothered to acquire a license. These individuals may have had small enough or remote enough operations they did not attract the attention of officials.

A sample of merchant lists was collected from the territory auditor records for Santa Fe, Bernalillo, and Doña Ana counties.[11] County boundaries in New Mexico changed several times over the course of the study period as the population grew and settlement expanded (Figure 7.1). The earliest counties were enormous, and extended latitudinally across the entire territory, including present-day Arizona. However, the population and settlements remained highly concentrated along the Rio Grande, within and between only a few centers, especially between 1848 and 1870. Therefore, while the counties geographically encompassed large areas that sometimes extended very far from each of the sites, the majority of licenses in each county are attributable to trading centers such as Santa Fe, Albuquerque or Bernalillo, Mesilla or Las Cruces, and smaller settlements strung along the river between them. County boundaries were also changed as the population of New Mexico grew and new counties were added.

The lists are in a mixture of English and Spanish, depending on the prefect, although most earlier lists from the 1850s are in Spanish, while lists from the 1880s are in English. Lists from the 1880s tended to be much more comprehensive, reflecting the state's growing economy and increasing numbers of active merchants, but also improved record-keeping infrastructure, compliance with taxes, and stability within the territory.

[11] For Bernalillo County, see Bernalillo County: Lists of License Taxes Collected 1850–1883, folder 1, box 7, series 1: Territorial and Early Statehood Records, New Mexico State Auditor Records, collection 1960-030, SRCA. For Doña Ana County, see Doña Ana County: Lists of License Taxes Collected 1853–1889, folder 3, box 7, series 1. For Santa Fe County see Santa Fe County: Lists of License Taxes Collected 1849–1863, folder 8, box 7, series 1 and Santa Fe County: Lists of License Taxes Collected 1864–1893, folder 9, box 7, series 1.

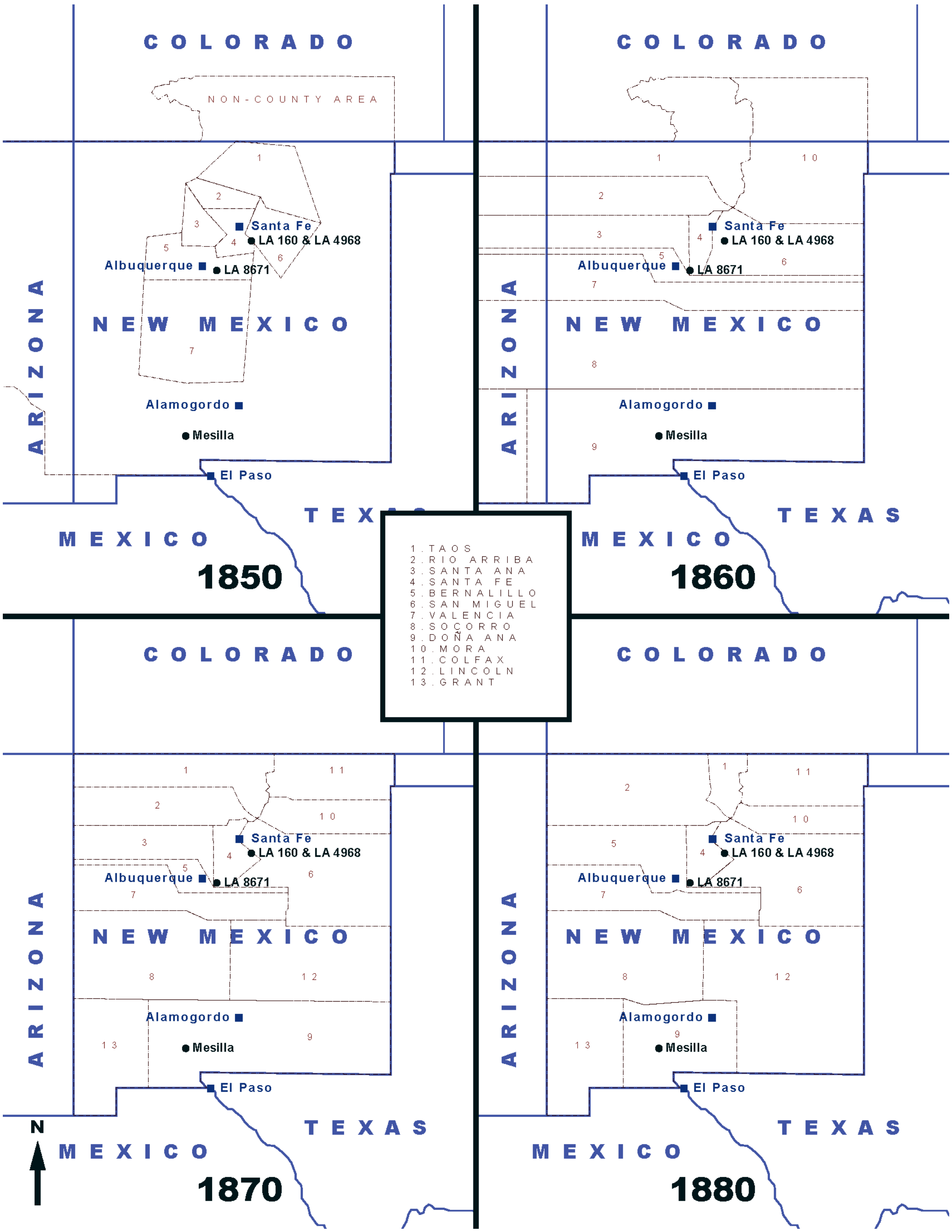



**Figure 7.1. Historic county boundaries through time.**

A report from the auditor's office to Governor James Calhoun on May 5, 1851 covered the years 1847 to 1851. In it, the territorial auditor complains that the county prefects were not providing enough information regarding collections or indebtedness, nor submitting taxes. He notes that San Miguel County was the most diligent, contributing three times the amount of Taos County and 2.5 times the amount of Bernalillo County.[12] In his December 1851 report to the Governor, the territorial auditor noted again that "It will hardly be considered foreign to the purpose of this report for me to notice the fact generally known, that the merchants of the Territory have, to a great extent, refused to pay the license and *ad valorum* taxes of the Kearney Code imposed upon them…"[13] In his 1852 annual report, the Treasurer of the territory, Charles Blumner, agrees with the auditor's assessment of serious problems with the reliability of tax collectors and the challenges of getting individual counties to turn over these taxes to the treasury. Only $150 was received from Doña Ana County that year, and $122.96 from Rio Arriba County (Table 7.3).[14]

Table 7.3. Taxes Received from Each County, 1852.

| County | Amount |
|---|---|
| Bernalillo | 273.25 |
| Doña Ana | 150.00 |
| Rio Arriba | 122.46 |
| San Miguel | 1,473.12 |
| Santa Ana | 240.00 |
| Santa Fe | 2,341.37 |
| Santa Fe (liquor?) | 531.50 |
| Taos | 487.04 |

Source: Charles Blumner, "Report of the Treasury of the Territory of New Mexico from December 1, 1851 to December 1, 1852," 13 December 1852, series 1, box 13, folder 1a, New Mexico State Auditor Records, collection 1960-030, SRCA.

[12] Report from the Auditors Office, Santa Fe, to Governor James S. Calhoun, 10 May 1851, series 1, box 13, folder 1, New Mexico State Auditor Records, SRCA.
[13] Report of the Auditor to the Governor (Calhoun), 1 December 1851, series 1, box 13, folder 1, New Mexico State Auditor Records, collection 1960-030, SRCA.
[14] Charles Blumner, "Report of the Treasury of the Territory of New Mexico from December 1, 1851 to December 1, 1852," 13 December 1852, series 1, box 13, folder 1a, New Mexico State Auditor Records, collection 1960-030, SRCA.

The complaints by the territory treasurer and auditor suggest that the sample of merchant licenses may not be directly reflective of all trade activity in the territory, especially in the early years of the American Territorial period. There is not a great deal of overlap between names present in the merchant licenses and those identified as merchants in the 1860 and 1870 censuses. For example, Mariano Yrizarri (Yrisarri) is listed in the 1860 census as a merchant operating out of Los Ranchos in Bernalillo County and the second richest Hispanic merchant in the census that year, but there are no licenses in his name in the sample. Nor are there licenses for Manuel A. Otero, who is listed as a merchant operating in Valencia in Bernalillo County in the 1860 and 1870 censuses. However, some major Hispanic merchant names do appear in the license lists, including José Leandro Perea, José Chávez, and Manuel Armijo and Company, and smaller operators with Hispanic surnames.[15] Alternatively, individuals who only appear in the license records once or twice are generally listed as farmers or laborers in the census, rather than as merchants, clerks, grocery keepers, or other trade-related activities. This indicates that neither archival source provides a complete picture of commercial activity within the territory, but the two together can be leveraged to examine relative differences between regions. The license lists, in combination with the 1860 and 1870 censuses, give an idea of the number and presumed ethnicity of merchants operating between approximately 1850 and 1895. This can serve as a proxy measurement of market access available to residents at each site.

As noted above and shown in Figure 7.1, New Mexico county boundaries shifted through the nineteenth century. LA 4968 and LA 160 were within or very near the

[15] José Perea appears 5 times on Bernalillo list between 1850 and 1864, between $900 and $1000 sworn invoice, José Chávez appears 3 times on Bernalillo list between 1850 and 1854, between $900 and $3000 sworn invoice, Manuel Armijo: 10/14/1850, Bernalillo list, $950 sworn invoice, value tax $2.38, Territory fee $15.

boundaries of Santa Fe County throughout the study period. The license records for Santa Fe County were the most complete and allowed for the largest sample to be collected. The sample for Santa Fe County consists of portions of 1849, 1852, 1853, 1861, and 1863. The sample also includes *all* of 1850, 1862, and 1893 (Table 7.4). There are approximately 351 unique names (taking into account occasional illegible names, and reasonable interpretations of Hispanicized names such as Enrique Connelly aka Henry Connelly), and 551 licenses.

Table 7.4. Merchant Licenses Sample.

| Years | Unique Names Per Year |
|---|---|
| **Bernalillo** | |
| 1850 | 24 |
| 1851 | 19 |
| 1852 (all) | 17 |
| 1854 | 11 |
| 1864 | 22 |
| 1883 (all) | 123 |
| **Doña Ana** | |
| 1852 | 4 |
| 1853 (all) | 35 |
| 1889 (all) | 126 |
| **Santa Fe** | |
| 1849 | 25 |
| 1850 (all) | 94 |
| 1852 | 17 |
| 1853 | 34 |
| 1861 | 18 |
| 1862 (all) | 68 |
| 1863 | 35 |
| 1893 (all) | 115 |

LA 8671 was sometimes located within Bernalillo County, sometimes Santa Ana County, and potentially sometimes in Santa Fe County, as the county boundaries were shifted frequently, and the site was always located near the borders. However, because of the site's closer proximity to population centers such as Bernalillo and Albuquerque, the Bernalillo

County records are considered a more representative sample of merchant networks accessible to the site residents. The sample for Bernalillo County consists of portions of 1854 and 1864, and *all* of 1853 and 1883. There are approximately 200 unique names and 235 licenses.

The Barela-Reynolds house is within Doña Ana County, one of the original nine counties created in 1852. The records for Doña Ana County were more limited and reflect the low numbers of licenses in that county, as mentioned by Blumner. The sample includes a portion of 1852, and *all* of 1853 and 1889. There are approximately 165 unique names and 276 licenses. When it was first created, the county extended west all the way across the Arizona Territory. The boundaries were shrunk significantly when the territories separated in 1863 and by 1889 the Doña Ana County shrank even more with the creation of Grant and Lincoln counties to the west and east.

The proportions of Hispanic and European American surnames on licenses for each county show that Hispanic and European American operators were not evenly distributed across the territory. In Santa Fe County in 1850, 28.81 percent of licenses had Hispanic surnames and 65.25 percent had European American surnames (5.93% were indeterminate), whereas Bernalillo County was the inverse in 1853, with 23.81 percent European American surnames and 61.90 percent with Hispanic surnames (14.29% indeterminate). Doña Ana County, which had experienced a high influx of European American merchant immigration due to its proximity to Texas and the Chihuahua Trail, had 42.86 percent entries with European American surnames in 1853, primarily operating out of Las Cruces, 40.48 percent entries with Hispanic surnames, and 16.67 percent of surnames were indeterminate.

The patterns observed in the merchant license data are somewhat mirrored in the 1860 and 1870 censuses, as analyzed by Calafate Boyle (1997). In the 1860 census data, Bernalillo County had three times as many Hispanic-surname merchants listed as European American surnames (similar to the license sample for the complete year of 1853) and almost twice as many in 1870, while Santa Fe County was nearly even in both decades and Doña Ana consistently had more European American-surname merchants than Hispanic-surname merchants (Table 7.5). Calafate Boyle also noted that between 1860 and 1870 the number of Hispanic merchants in the territory overall had dropped and the numbers of European American merchants increased. Meanwhile, net wealth of Hispanic merchants also dropped,

Table 7.5. Hispanic and European American Surnames in Merchant Licenses and Census Lists (from Calafate Boyle 1997).

| Year | European American | Hispanic | Indeterminate |
|---|---|---|---|
| Bernalillo | | | |
| 1850 | 12 | 15 | 1 |
| 1851 | 3 | 15 | 1 |
| 1853 (full year) | 5 (23.81) | 13 (61.90) | 3 (14.29) |
| 1854 | 0 | 10 | 2 |
| **1860 Census** | **8 (25.00)** | **24 (75.00)** | **0** |
| 1864 | 6 | 18 | 1 |
| **1870 Census** | **6 (37.50)** | **10 (62.50)** | **0** |
| 1883 (full year) | 85 (66.41) | 34 (26.56) | 9 (7.03) |
| Santa Fe | | | |
| 1849 | 21 | 5 | 0 |
| 1850 (full year) | 77 (65.25) | 34 (28.81) | 7 (5.93) |
| 1852 | 12 | 6 | 0 |
| 1853 | 26 | 20 | 0 |
| **1860 census** | **28 (52.83)** | **25 (47.17)** | **0** |
| 1861 | 12 | 6 | 1 |
| 1862 (full year) | 62 (53.91) | 51 (44.35) | 2 (1.74) |
| 1863 | 17 | 18 | 2 |
| **1870 census** | **20 (44.44)** | **25 (55.56)** | **0** |
| 1893 (full year) | 105 (62.87) | 56 (33.53) | 6 (3.59) |
| Doña Ana | | | |
| 1852 | 1 | 2 | 1 |
| 1853 (full year) | 18 (42.86) | 17 (40.48) | 7 (16.67) |
| **1860 census** | **32 (61.54)** | **20 (38.46)** | **0** |
| **1870 census** | **17 (65.38)** | **9 (34.62)** | **0** |
| 1889 (full year) | 160 (69.56) | 68 (29.57) | 2 (0.87) |

and became more concentrated among a few individuals, and the net wealth of European American merchants generally increased (Calafate Boyle 1997:101–104).

The number of Hispanic merchants listed in the census for Bernalillo County dropped from 24 to 10 between 1860 and 1870, and within Doña Ana County from 20 to 9. European American merchant numbers in Bernalillo and Santa Fe Counties, however, remained steadier, dropping only from 8 to 6 in Bernalillo, and from 28 to 20 in Santa Fe. There was a substantial drop from 32 to 17 European American merchants in Doña Ana County. However, this is more likely due to changes in county boundaries between 1860 and 1870.

Together the license and census data indicate the proportion of Hispanic merchant activity peaked in Bernalillo County in 1860, and then had a sharp decrease; activity in Santa Fe County gradually increased and peaked in 1870; and Hispanic merchant activity in Doña Ana County gradually decreased between 1853 and 1870. All three counties showed a substantial increase in the number of merchant licenses but drop in the proportion of Hispanic surnames represented after the railroad arrived: Santa Fe County licenses were 62.87 percent European American surnames in 1893, Bernalillo was 66.41 percent in 1883, and Doña Ana was 69.56 percent.

Different prefects included different levels of detail in their license records. Doña Ana County was probably the most minimal, and for 1852–1853, only the merchant's name, license type, date, tax, and total were reliably recorded. Sometimes merchants with large inventories also had a sworn invoice regarding the value of their merchandise, which was used to determine the value and territorial tax amounts. In 1889, however, merchant's name, license type, tax amount, and date were still recorded, but inventory value was not. A new piece of information in 1889 included the city the merchant was operating, or simply ‘county’ for traveling merchants. The majority of licenses in 1889 were distributed to merchants operating in Las Cruces (112 out of 230, 48.70%), followed by Doña Ana (*n* = 15, 6.52%), Mesilla (*n* = 11, 4.78%), and Tularosa (*n* = 11, 4.78%). The prefect for Santa Fe County also did not record merchant location until 1893. The Bernalillo County prefects, however, recorded merchant location intermittently throughout all years in the sample, though they were most diligent in 1883. Albuquerque was the most common recorded location (88 out of 128 licenses with location data, 68.7%), followed by Bernalillo (4 licenses).

The territory-wide integration of some merchant networks is represented by merchants or merchant companies who purchased licenses in multiple counties, although these were uncommon. Ambrosio Armijo purchased licenses in both Bernalillo and Santa Fe County in 1850, and in 1853 purchased a license for the entire territory. Most territory licenses were issued in Santa Fe County (*n* = 57) whereas only nine territory licenses were distributed in Bernalillo County, and six in Doña Ana County. This suggests that those who operated over large areas, either as top-tier merchants at the head of networks, or as traveling peddlers, tended to be based in Santa Fe. Rafael Armijo, Ambrosio’s cousin, did business with his brother Manuel Armijo (the younger) and purchased licenses in Bernalillo County in 1850 and 1851, when he operated with his brother directly in Albuquerque, and in Doña Ana County in 1853. Rafael Armijo lived there from 1852 to 1859, and again from 1867 to 1881 (Richards 1994). There are a few other cases of licenses in multiple counties with identical names, but they are all very common New Mexican names, such as Jose Maria Gutiérrez (purchased a peddler’s license in Santa Fe County in 1850, and both *tienda* (shop) and *vinatero* (wine-seller) licenses in Bernalillo in 1850 and 1851), or Ignacio Gonzalez (licenses in Santa Fe and Bernalillo counties in the 1850s and listed on the 1860 census in Albuquerque and the 1870 census in Mesilla), and cannot be definitively proven to be single individuals.

A more direct measure of the activities of top-tier merchants, who were most likely wholesalers who provided inventory to middle- and bottom-tier merchants, comes from the sworn inventory portion of the license sample, which was recorded inconsistently, and the license fee totals, which were based on inventory value and license duration, and recorded for every entry. The merchants with the most valuable inventories tended to be Jewish immigrants[16] in Santa Fe County. The Spiegelberg brothers occupied the top three places when they purchased licenses in February and August of 1862, and reported inventories worth $50,000 each time, and listed $35,000 in August 1863. Other Jewish merchants were also among the top-tier in Santa Fe, including Joseph Hersch at $20,000 in 1862 and 1863, and the partners Elsberg and Amberg, at $20,000 in 1861.

In Bernalillo County, the highest reported inventory for a license was W. Strachan and Company, who purchased a license in January 1864, and reported an inventory worth $15,000. This inventory falls far short of reported personal assets on the 1860 census, where the top ten richest Hispanic individuals were listed as living in Bernalillo and Valencia counties, with only one of the top ten in Santa Fe (according to the census, the richest three Hispanic merchants in New Mexico were Mariano Yrisarri in Bernalillo with $213,000 in assets, José Leandro Perea in Bernalillo with $225,000, and Manuel Otero in Valencia with $164,550). The top ten European American merchants listed in the 1860 census were more

[16] The Jewish status of many German, Russian, and Prussian immigrants is established in secondary historic sources (Fritz 2000; Jaehn 2005; Parish 1960).

widely distributed, in Mora, Albuquerque, Mesilla, San Miguel, and three of the top ten merchants in Santa Fe (the richest three European American merchants in the territory in 1860 were Cerain St. Vrain in Santa Fe with $210,000 in assets, W. H. Moore in Tecolote with $165,000, and Henry Connelly in Albuquerque with $142,000) (Calafate Boyle 1997 Appendices 3 and 4).

Averages of sworn inventory and license fees can also give some indication of differences in the amount of capital and trade that flowed through each county. In Santa Fe County, the average inventory value over 138 licenses was $4,933.06, a fairly high amount that is skewed by the small number of high-cost licenses for which the prefect recorded this information. The median was $2,000. The average fee, recorded for 303 merchant and peddler license entries, was $13.08. For Doña Ana County the average inventory value was $1,650, and the median was $1,000 over 21 entries, but the average fee was similar to Santa Fe at $13.45 over 157 licenses. In Bernalillo County the average sworn inventory was $1,325.21, with a median of $900 over 79 entries. The average fee was $15.71 over 109 merchant and peddler licenses. The higher average fee in Bernalillo County suggests that merchants in this county tended to have high valued inventories, which could mean larger inventories or more valuable goods.

A closer look at Santa Fe County, which had the largest sample, suggests that the average fee varied through time as well. In 1850, with 67 merchant licenses, it was $28.26, in 1862 with 77 merchant licenses, it had dropped to $20.10. But after the railroad arrived, and the nature of market trade in New Mexico changed dramatically, the average fee in Santa Fe County was $4.99, with 151 licenses in 1893. Lower fees were triggered by several factors. Cheaper licenses, such as for peddlers, or for 3-month (rather than 6-month) durations, were much more common in 1893. Furthermore, the cost of imported goods, and therefore the inventory values (which determined the license fees), had dropped.

The short term and sometimes ad hoc nature of merchant activity in New Mexico during this period is apparent in the bottom-tier merchants represented in the license sample. Of the unique names that appear in the sample, 556 (52.35% of total licenses) only appear once. It appears that after their initial license purchase, aspiring *comerciantes* either did not bother to purchase a license again, confident they could evade the prefect, or they were unable to gather sufficient capital or credit to acquire surplus goods to sell. The 1860 and 1870 census data compiled by Calafate Boyle suggests something similar—even those whom we know from other historic documentation to be major commercial actors, did not necessarily self-identify as "merchants," instead appearing in the census most often as farmers. "Merchant" was not the only way to engage with the Santa Fe trade and those who worked seasonally also participated as wagoneers, muleteers, packers, translators, guides, clerks, hunters, and cooks—none of which are likely to be recorded as such in the census (Sandoval 1978:74). However, these individuals likely also made purchases of their own for personal use and re-sale while in Missouri and other eastern destinations. Furthermore, commercial activity was only one aspect of a larger range of seasonal economic activities for most New Mexicans. Individuals grew crops, tended sheep and livestock, engaged in mining, and probably also produced some crafts such as tin work or pottery. Each of these activities was an avenue for residents to acquire goods to meet their needs.

This territory-wide examination of merchant licenses gives a greater understanding of merchant activity in Santa Fe, Bernalillo, and Doña Ana counties during the American Territorial period. The licenses provide details about levels of activity (number of licenses and values of inventories) in each county, and they show that activity and capital were not evenly distributed throughout the territory. Santa Fe County had the greatest amount of merchant activity, followed by Bernalillo County, then Doña Ana County. Hispanic surnames were most dominant among merchants in Bernalillo County, and based on census data, Hispanic-owned capital was also centered in Bernalillo and towns to the south. European American merchants and capital were centered in Santa Fe, although Bernalillo merchants may have had higher-value inventories. However, the license data do not show Hispanic merchant activity well. Seeing the whole web of commercial and social relationships is difficult. Wholesalers with large inventories and consistent license purchasing have an outsized historical footprint while itinerant or irregular merchants tend to not show up in the documentary records. More detailed examination of the licenses in each county, alongside the potential market sources for each site region, tells us more about how goods circulated within each region and what kind of market access site residents enjoyed.

*Santa Fe County Region: LA 4968 and LA 160*

While the Mexican and American Territorial periods saw dramatic expansion Hispanic settlements along the Rio Grande corridor and adjacent river corridors such as the Mora River and the Pecos River, Santa Fe remained the commercial, demographic, and political center of the territory. Within the study sample, LA 160 and LA 4968 are closest to Santa Fe and site residents very likely had considerable connections there. The sites are approximately 26 kilometers from the city. Other potential market sources for site residents include Santa Cruz de la Cañada (Española), and the nearby pueblos or their surrounding Hispanic settlements, which attracted traveling peddlers or more permanent tradesmen. San Ildefonso and Pojoaque Pueblos were located along reliable drainages and irrigated farmland in the Pojoaque Valley, which had also drawn Hispanic settlement immediately after the 1692 reconquest. Hispanic settlers rapidly encroached on Pueblo land in this area during the Mexican and American Territorial periods, when legal protections for Puebloan lands were at their weakest (Hall 1987) (Figure 7.2). Pojoaque Pueblo was not individually enumerated in the 1850 census and apparently only had a population of 37 in 1860.[17] However, one individual, Manuela Tapia listed her profession as 'making earthen ware.' She lived in a household with Guadalupe Tapia (a farmer, her husband or father) and Dorotea Tapia, likely her daughter. Household assets were $100.[18]

The Village of Pojoaque, consisting of non-Puebloans encroaching on the grant, was enumerated at 428 people in 1860, including one merchant.[19] One retail merchant was enumerated in 1870 as well.[20] The Village of San Ildefonso had approximately 214 people in

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[17] United States Bureau of the Census, *1860 United States Federal Census*, Pueblo of Pojoaque, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

[18] *1860 United States Federal Census*, Pueblo of Pojoaque, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021).

[19] United States Bureau of the Census, *1860 United States Federal Census*, Village of Pojoaque, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d. The merchant was José Trujillo, age 21, living in the household of José Maria Salazar. His personal estate was listed at $700 (page 156).

[20] United States Bureau of the Census, *1870 United States Federal Census*, Precinct No 1 Rio Pojoaque, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1870 U.S. census, population schedules. NARA microfilm publication M593, 1,761 rolls. Washington, D.C.: National Archives and Records Administration, n.d. The retail merchant was John Bouquet of France. His personal estate was listed at $400 and his real estate value was $1,500.

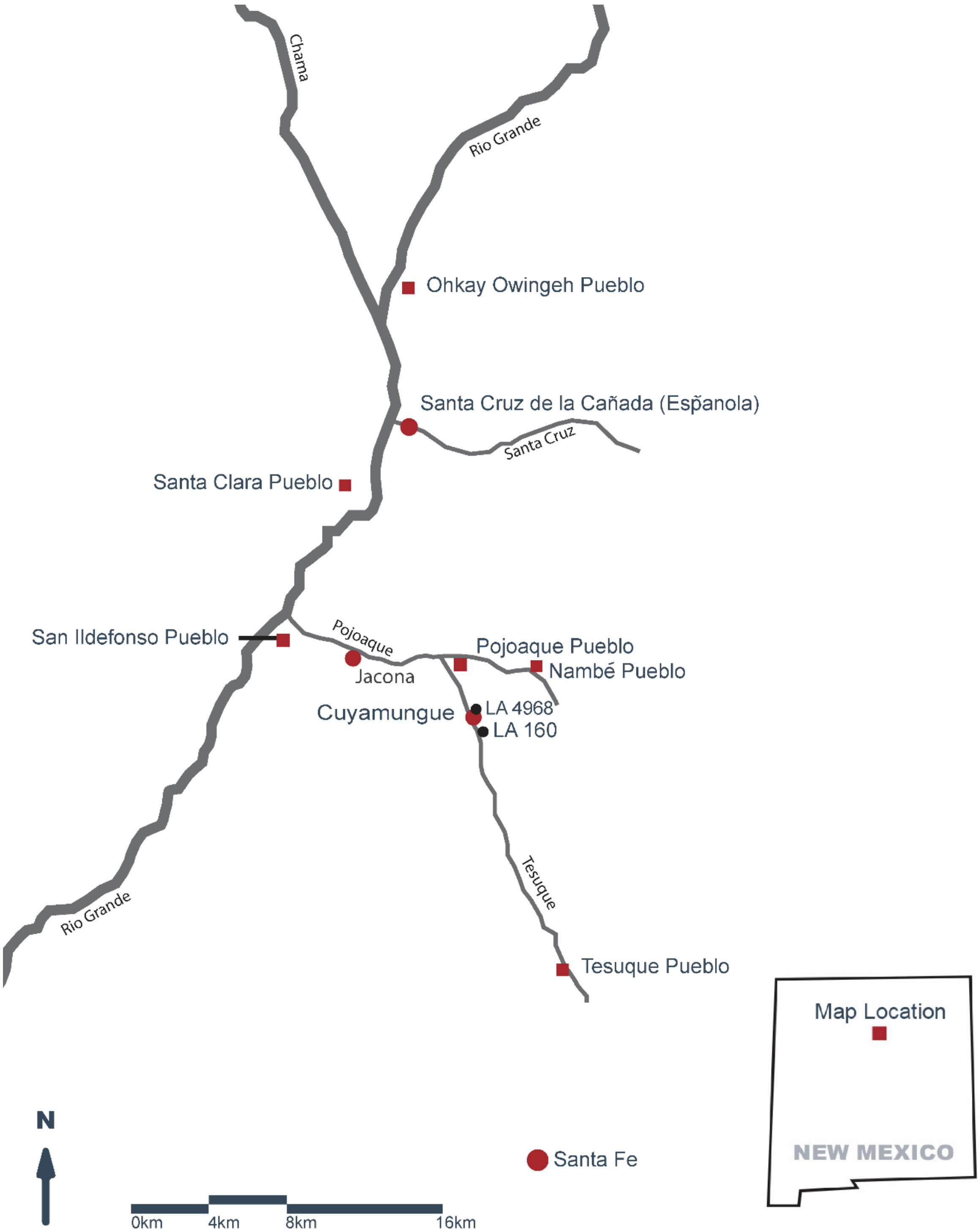


**Figure 7.2. Potential Pueblo and Hispanic market sources surrounding LA 4968 and LA 160. Drawing by Erin Hegberg.**

1860.[21] Tesuque Pueblo contained approximately 126 people in 1850, and Nambé Pueblo had approximately 104 persons.[22] Jacona, another mostly Hispanic settlement wedged between San Ildefonso and Pojoaque Pueblos, had approximately 265 people enumerated in 1860, including a shoemaker, a blacksmith, and a weaver.[23] Vicente Valdez, owner of the land at LA 4968, was enumerated in the 1860 census at Cuyamungue.[24] He is listed as a farmer with six others in his household and $1,000 in physical assets and $1,700 in real estate, making him among the richest of the 147 people in Cuyamungue.

License records for Santa Fe County were the most complete and provided the largest sample of licenses ($n$ = 551) and unique merchant names ($n$ = 351). Where license data were available for the full year, 1850 contained approximately 94 unique names, 1862 contained 69 unique names, and 1893 contained approximately 117 unique names. Specific locations within Santa Fe County were not recorded within the sample years, and most likely all of these individuals were based in the city of Santa Fe or closely enough that greater detail was not considered important by the prefects.

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[21] United States Bureau of the Census, *1860 United States Federal Census*, Village of San Ildefonso, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

[22] United States Bureau of the Census, *1850 United States Federal Census*, Tesuque Pueblo and Nambé Pueblo, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: Seventh Census of the United States, 1850; (National Archives Microfilm Publication M432, 1009 rolls); Records of the Bureau of the Census, Record Group 29; National Archives, Washington, D.C.
*1860 United States Federal Census*, Village of Pojoaque, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021).
Although Palkovich (1985) notes the high likelihood for inaccuracies in enumerations of Pueblo peoples for these censuses.

[23] United States Bureau of the Census, *1860 United States Federal Census*, Village of Jacona, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

[24] United States Bureau of the Census, *1860 United States Federal Census*, Village of Cuyamungue, Santa Fe County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

The merchant whose name appeared most frequently in the Santa Fe sample (suggesting he was the most diligent in paying his license fees) was Joseph Hirsch ($n$ = 10), followed by Francisco Ortiz y Delgado ($n$ = 7). Joseph Hirsch (or Hersch) is listed in the 1860 census as a Polish merchant with $40,000 in real estate and $20,000 in personal assets, making him the seventh richest European American merchant listed that year. In 1870 he is again listed as a (Russian) merchant, but there is no information regarding his assets. Hirsch owned a grist mill and a distillery, although his licenses are merchant and draw shop varieties. Much of his wealth came from supply contracts to U.S. forts in the territory.

The increasingly cosmopolitan nature of Santa Fe can be seen in the proliferation of license types over time. In 1850 there were licenses for merchants ($n$ = 60), liquor sales (draw shops, $n$ = 44), seven peddler licenses, five billiard licenses, and two distilleries. In 1862 there were merchants ($n$ = 64), liquor sales ($n$ = 33), mixed goods and liquor sales ($n$ = 11), only one peddler, and still five billiard licenses. By 1893 the effects of the railroad can be seen and in addition to merchant and liquor licenses, there were new categories for hotel licenses ($n$ = 9), pawn brokers ($n$ = 7), and a distinction between wholesale merchants ($n$ = 5) and retail merchants ($n$ = 95). There was also a considerable increase in travelling peddler licenses ($n$ = 53).

Together the census data and license data from the region around LA 160 and LA 4968 suggest that this region had both the greatest market access in terms of sheer number of active merchants, and a preponderance of top-tier or wholesale merchants. These individuals had greater amounts of capital and had cultivated credit with banks in the eastern United States. They were more likely to have access to a range of European or American goods to import and had control over what type of product they brought into the territory for sale.

Better access to imported goods also seems to have supported a wider range of industries in the region, hence occupations such as 'shoemaker,' 'tailor' and 'blacksmith' also appeared in the 1860 and 1870 censuses for the communities immediately surrounding LA 160 and LA 4968. Shoemakers and tailors would have needed ready access to goods such as shoe nails, aglets, needles, scissors, and different cloths and trimmings to maintain their industries. In general, people living in this region would have had the greatest opportunity to interact with and acquire imported goods from well-connected merchants, both Hispanic and European American.

*Bernalillo County Region: LA 8671*

Markets available to Ideal Site residents most likely existed in the larger settlements of Bernalillo and Albuquerque in the Mexican Territorial period, followed by San Felipe, Santa Ana and Sandia Pueblos, Algodones, and San Pedro to the east. Albuquerque and its surrounding *placitas* were clearly the most active trade center in the region during the American Territorial period when merchant license records were kept (Figure 7.3.). In 1850 only two Albuquerque licenses were listed for the city, and both were liquor licenses sold in July, to John Patten and José Maria Gutiérrez. However, that year 26 merchant licenses were sold within the county for unidentified locations. One of those licenses was sold to José Chavez in March of 1850, and at the time he testified to having $930 in inventory. Manuel Armijo and Company purchased a license in October 1850, for $950 in inventory.

In 1853 there appears to be a considerable drop in license collection. While seven licenses were sold for Albuquerque, only seven others were licensed for unlisted locations in the county overall, which is a substantial drop from 1850 ($n$ = 26) and 1851 ($n$ = 17). This trend continued in 1854 with four licenses in Albuquerque and only eight in unlisted areas, but by 1864 the numbers in unlisted areas increased to 22 but dropped to two in Albuquerque. The possible trading locations closest to LA 8671 do not appear frequently in the license lists. Algodones had one liquor license in 1851 and one merchant license in 1883. Bernalillo had four licenses in 1883 (one peddler, one restaurant, one liquor, and one liquor plus merchandise), and many of the *placitas* north of Albuquerque, such as Candelarias, Duranes, Los Ranchos and Los Griegos had one license each. Albuquerque had 73 licenses in 1883.


**Figure 7.3. LA 8671 area map with potential market centers.**

Additional avenues of merchant access existed in Algodones, which was along the route of the Chihuahua Trail/Camino Real, and where many people from the nearby Late Colonial settlement of San José de las Huertas had family and other personal connections (Batchen 2000:6). According to the 1850 census, there were two merchants and an additional two "farmer merchants" in Algodones.[25] In the 1860 census, Algodones had approximately 356 people, including Bernardo Baca, who self-identified as a merchant with $500 in personal assets and $2,000-worth of real estate.[26]

Markets also existed to the east, either via Comanchero trade, or along the Santa Fe Trail. These other trade avenues are less clearly quantified in archival documents. However, there are several stories related by Lou Sage Batchen based on her interviews of Placitas residents for the WPA Writers Project that reference the social and economic role of long-distance informal trade exercised by local residents in the nineteenth century. For example, Antonio Gurule and his son Jose Librado Aron Gurule supposedly were freighters on the Santa Fe Trail in 1865, when Jose lost an arm when his musket mis-fired. Casimiro Gallegos supposedly had a carreta he had made himself, which he used to gather piñons in tinajas to trade in Chihuahua (Batchen 2000:8).

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[25] United States Bureau of the Census, *1850 United States Federal Census*, Algodones, Santa Ana County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: Seventh Census of the United States, 1850; (National Archives Microfilm Publication M432, 1009 rolls); Records of the Bureau of the Census, Record Group 29; National Archives, Washington, D.C.
The merchants were B.J. Mahan of Mississippi, with $500 in assets, and Diego Antonio Montoya of New Mexico, with $104 in assets. The farmer merchants were Juan Archibeque with $1763 in assets and Rumaldo Baca with $1050 in assets. A Rumaldo Baca also had three *guias* in the 1840s and a merchant license in Santa Fe County in 1853. It is not clear if they were the same individual.

[26] United States Bureau of the Census, *1860 United States Federal Census*, Algodones, Santa Ana County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

Of the three site regions in the sample, I argue that LA 8671 and Bernalillo County had the poorest market access, particularly prior to the arrival of the railroad. Merchant activity in the county, as seen in licenses and census data, was less than in Santa Fe County, but potentially there was more Hispanic wealth concentrated in this region and Valencia County to the south. LA 8671, located on the northern tip of the Sandia Mountains, was not conveniently close to market centers such as Albuquerque or Bernalillo, nor the primary Santa Fe-Valencia travel routes. Residents in the Placitas area may have had to rely on peddlers or traders who traveled to San Felipe Pueblo or through the growing mining towns in the mountains, or, they could have engaged in small-scale commercial activity of their own, working as Comancheros, or wagoneers or muleteers on the Santa Fe Trail.

*Doña Ana County Region: Barela-Reynolds House*

Residents in Mesilla were ideally situated to access a range of markets and long-distance trade. The town is located at the southern end of the Jornada del Muerto and served as a major traffic point along the Chihuahua Trail. Like El Paso, residents of Mesilla could take advantage of goods brought south along the Santa Fe Trail, including both eastern U. S. and northern New Mexican products, and goods brought north from central and northern Mexico, such as silver, majolicas, lead-glazed wares, and European and Asian goods imported to Mexico via ports at Matamoros, Veracruz, or Guaymas. Las Cruces and Mesilla were also well-connected to points east and west, via stagecoach routes to San Antonio, Texas, and San Diego, California, and the Butterfield Overland Mail routes. Other small settlements along the Rio Grande within the Mesilla Valley were potential arms of the regional trade networks, including the settlements of Doña Ana, Rincón, and La Mesa (Figure 7.4). Lastly, Fort Fillmore (1851–1862) also would have been an important stimulus for demand and a reliable client that may have drawn additional merchants as well as retired soldiers to settle in the area.

Between 1848 and 1854, Mesilla was still a part of Mexico and lay directly along the national border. With the Gadsden Purchase in 1854 the national border moved south to El Paso. For six years Mesilla became a major point of connection between the newly defined border between the United States and Mexico, and was a center place in bureaucratic


**Figure 7.4. Mesilla plaza and surrounding structures, showing nineteenth century ownership. Based on Taylor (1982). Map by Oscar Camorlinga.**

and legal emphasis on border creation, nationalism, and trade control (Mora 2010). Mesilla's first real population boom was rooted in ideas of Mexican nationalism as New Mexican Hispanics were settled here after the 1848 annexation, so that citizens could 'stay' within Mexico and the Mexican government could have a population buffer to help define and defend its new national border. The program was not well-funded or executed, however, and few settlers received the financial support promised by the Mexican government. In reality, daily life in Mesilla remained porous and fluid as residents maintained ties on both sides of the border. Mesilla and Las Cruces were only 6.5 km (4 miles) apart at the time, and many residents continued their existing trade relationships despite the creation of a new national border, much to the consternation of the Mexican consul Guadalupe Miranda. Although Miranda himself was later listed as a merchant in the 1860 and 1870 censuses (Mora 2010).[27]

The Doña Ana County license sample contains records for part of 1852, all of 1853, and all of 1889. As noted above, Doña Ana County residents were particularly recalcitrant regarding merchant licenses and paying the tax fees. In 1852, documentation remains for four licenses distributed in Doña Ana County: one *comerciante* and three *vinatero* (wine-seller) licenses. It is likely that these 1852 records are incomplete, because in 1853 where the sample includes the full year, there is evidence for 42 licenses issued to approximately 35 individuals in the county, including 20 merchant or *comerciante* licenses, 10 licenses for a

[27] United States Bureau of the Census, *1860 United States Federal Census*, Mesilla, Doña Ana County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1860 U.S. census, population schedule. NARA microfilm publication M653, 1,438 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

[27] United States Bureau of the Census*,* *1870 United States Federal Census*, Chamberino, Doña Ana County, New Mexico Territory (ancestryheritagequest.com, accessed July 1, 2021). Original data: 1870 U.S. census, population schedules. NARA microfilm publication M593, 1,761 rolls. Washington, D.C.: National Archives and Records Administration, n.d.

shop or *tienda*, and 12 *vinatero* licenses. This number seems to be fairly complete—in 1860 the U.S. census documented 25 merchants (Calafate Boyle 1997). Most merchants only applied for one license in 1853. In 20 cases, the applicants included a sworn invoice for the total value of their goods.

In 1889 license documentation and compliance is far more comprehensive. This year 230 licenses were issued to approximately 125 individuals. There were 113 licenses in Las Cruces, and only 11 in Mesilla. The disparity between the two locations is due to the railroad, which was constructed through Las Cruces in 1881. The access to national distribution networks meant that Mesilla was quickly eclipsed as a mercantile center (Mora 2010). Mora (2010) also notes a growing divide between Mesilla and Las Cruces, with Mesilla retaining many traits associated with "Mexicanness" such as an emphasis on the Spanish language and adobe architecture, whereas Las Cruces was more amenable to being re-made as a modern American railroad town. In some ways this duality is perpetuated in how the two towns are marketed to tourists even today: Las Cruces is the home of a modern university and agricultural research stations, while Mesilla is presented as a window into the historic wild west and is valued for its New Mexican Hispanic ambiance and architecture. The reality is more complex: land for the railroad in Las Cruces was sold by Hispanic Las Cruces merchant Martin Amador, and European American merchants Reynolds and Griggs maintained their storefront on the Mesilla plaza until 1903.

None of the merchants known to have used the Barelas-Reynolds house and storefronts—Mariano Yrissari, Pedro Peres, Charles A. Hoppin, Nathan B. Appel, Alexander Duval, the Barela family, or William Reynolds and James Griggs—appear in the retail license sample. There were other retail and recreation establishments in the Mesilla plaza: a bar operated by Guadalupe Miranda and then Sam Bean, a store and residence owned by Leonart Maurin, and a building used as a warehouse by Prussian merchants Henry Lesinsky and then the L. Freudenthal Company. Of these, only Samuel Bean (gaming table license in 1889) and the L. Freudenthal Company appear in the license sample (two merchant licenses and two liquor licenses in 1889).

Based on the sworn invoices for licenses and information on merchants reported in the local newspapers and collected by Fritz (2000), William Reynolds and James Edgar Griggs were among the 'top-tier' of merchants in the region. The merchants utilized the south lot of the Barelas-Reynolds house and store front beginning in 1863 and would have been well-positioned to access nearly all of the potential markets described above. Reynolds is listed in the 1870 census as a dry good merchant and retailer, with $5,500 in real estate, $25,000 in personal estate and $30,500 in assets. James Griggs is less wealthy, with $5,500 in real estate (potentially based on the shared ownership of the Barela-Reynolds house property), $15,000 in personal estate, and $20,500 in assets.

By the late 1870s, many of the top-tier merchants in Mesilla had begun to build or renovate large personal homes separate from their stores and warehouses. In a section northwest of the plaza that came to be known as the "California District," Griggs built a Territorial style home with Greek revival elements in 1874, and Reynolds also built a Territorial style house in the late 1870s. Mariano Barela's house was east of the plaza, and built in about 1860 and enlarged in 1875 (Taylor 1982).

Of the three regions in the site sample, census and license records indicate that Doña Ana County had the least commercial activity overall. Furthermore, despite its cultural construction as a very 'Hispanic' or 'Mexican' town, commercial activity in Mesilla appears to have been dominated by European American individuals, and this alignment only strengthened over time, as most of the owners around the plaza were European American and merchants were investing in the burgeoning mining markets in Los Pinos and in Arizona.

*Question 2 Summary*

Commercial activity in territorial New Mexico operated at several scales integrated through social and familial ties. Top-tier wholesale merchants stationed in larger commercial centers including Santa Fe, Mesilla/Las Cruces, and Las Vegas used their own social networks to gain lines of credit with suppliers in the eastern U.S., Mexico, and Europe to purchase and bring the bulk of the imported materials to New Mexico. Then, through sales to middle- and small-scale merchants or peddlers (again, often on credit) wholesalers redistributed imported goods to be sold in towns and settlements throughout the territory. Small-scale operators were most likely intermittent in their commercial activities, incorporating trade with other seasonal economic pursuits including farming, sheep raising, mining, crafts, and collecting other raw resources such as firewood and piñon.

Census records in combination with county commercial license records provide an idea of commercial activity within the three site regions—Santa Fe County, Bernalillo County, and Doña Ana County. However, these records may not be effective at demonstrating Hispanic commercial activity. Santa Fe County had the greatest amount of activity, both in terms of value of merchandise imported by merchants, and the number of merchants active. Bernalillo County came next, and Doña Ana County had the least amount of documented commercial activity. Hispanic commercial activity was less even through time and across the territory. It appears to have peaked in Bernalillo County in the 1860s, followed by a steep decline, peaked in the 1870s in Santa Fe County followed by a more gradual decline, and was continuously declining from the 1850s to 1890s in Doña Ana County. However, commercial activity overall increased over time in all three counties. Increases were fueled by small- and medium-scale operators who purchased low-cost licenses infrequently, especially as goods became cheaper and easier to import thanks to the railroad. By the 1880s many top-tier merchants had moved on to other commercial pursuits, such as land speculation and early banking operations, and the typical value of most merchant inventories dropped substantially.

## Question 3: What Did Site Residents Acquire and How Was it Used?

The previous archival discussion provides a broad picture of commercial activity relating to imported goods in New Mexico, especially between 1850 and the 1890s. The following descriptions of the imported artifact assemblages give concrete indications of what site residents were consuming. Although each site represents different excavation and sampling procedures, the assemblages provide a record of consumption patterns stretching from the late 1820s (LA 4968) to the early 1900s (Barela-Reynolds house).

### *LA 160 Imported Artifacts*

Imported European, American, and Mexican artifacts at LA 160 and LA 4968 were analyzed by OAS and the following summary discussion of their assemblages is based on inventory data kindly provided by James L. Moore of OAS in 2016. Between this time and when the final report for these sites was published by OAS in 2018, some changes in the original analysis categories occurred. The following discussion uses quantities and descriptions based on the 2016 data, rather than trying to recreate interpretive decisions made over several years by the OAS analysis team (Boyer et al. 2018).

Excavations at LA 160 recovered 327 imported artifacts, or 3.54 percent of the total artifacts collected from the site (not including animal bone). Peckham's excavations in 1959 recovered 230 of these artifacts (69.5% of the imported artifacts), suggesting that imported goods were concentrated within the earlier roomblock feature or nearby trash scatter, rather associated with the western trash area features excavated by OAS. The assemblages suggest that the roomblock area dates to approximately 1840–1860 whereas the western trash areas date to 1870–1900 (Moore 2018c). The imported artifacts consist of 21 ceramic sherds, 179 pieces of glass, and 116 pieces of metal, 54 of which were zinc shoe nails.

*Ceramics*. Twenty-one imported ceramic sherds were recovered from LA 160, all but one of which came from Stewart Peckham's excavations. These sherds represent 6.34 percent of the imported artifacts, 0.247 percent of all ceramics at the site, and 0.193 percent of all artifacts in the assemblage. The main ceramic paste groups at the site are light-colored majolica ($n$ = 2), and white refined earthenwares, otherwise known as whitewares ($n$ = 19). Some (up to 14) of the whitewares may be a class of white refined earthenware pastes known as stone china, or ironstone. British potters began to produce ironstone in the early 1800s, particularly for U.S. and Canadian markets. However, early versions of this paste type can be difficult to differentiate visually from other white refined earthenwares (Majewski and O'Brien 1987).

Minimum vessel counts were not estimated for any sites within the sample. While minimum vessel counts are optimal for discussing ceramic diversity in historic assemblages, without these data, paste-decoration combinations are used instead. This form of artifact description is modeled after the ceramic type and decoration/manufacture categories used in historic ceramic analyses in the Sand Point Archaeology Project (Haught-Bielmann 2014). At least 17 different paste-decoration combinations are represented in the LA 160 assemblage, including two majolica types (one unknown blue-on-white and one unknown polychrome), one blue shell-edged ware, two sponged/stamped/spattered sherds (one blue, one red and blue), two different painted sherds, one yellow banded sherd, and nine sherds with transfer prints representing at least seven designs (Table 7.6). There are four undecorated whitewares, and all other paste-decoration combinations are represented by only one or two sherds.

Table 7.6. LA 160 Imported Ceramics, by Paste and Decoration Combination.

| Decoration | Majolica Light | Refined Earthenware | Ironstone | Total |
|---|---|---|---|---|
| Annular, yellow banded | | | 1 | 1 |
| Clear glaze (plain) | | 1 | 3 | 4 |
| Edged, blue feathered | | 1 | | 1 |
| Majolica, blue curvilinear | 1 | | | 1 |
| Majolica, unknown blue and white | 1 | | | 1 |
| Painted, blue, unknown design | | 1 | | 1 |
| Painted, unknown color, floral design | | 1 | | 1 |
| Sponged/spatter, blue, edge design | | 1 | | 1 |
| Sponged/spatter, red and blue, non-figurative/abstract design | | | 1 | 1 |
| Transfer, black, floral design | | | 2 | 2 |
| Transfer, blue, floral design | | | 2 | 2 |
| Transfer, blue, geometric design | | | 1 | 1 |
| Transfer, molded, purple, curvilinear design | | | 1 | 1 |
| Transfer, painted, purple and red, indeterminate design | | | 1 | 1 |
| Transfer, polychrome, floral design | | | 1 | 1 |
| Transfer, yellow and black, floral design | | | 1 | 1 |
| **Total** | **2** | **5** | **14** | **21** |

None of the sherds had back stamps or manufacturers' marks, however production characteristics and decorative styles on the sherds, combined with the general dates of occupation for the structure (1830–1860), suggest that all of the white refined earthenwares at LA 160 were most likely originally manufactured in British or other European potteries (Majewski and O'Brien 1987; Miller and Earls 2008). Dates or production location for the two majolica sherds could not be determined, although major majolica production centers in the nineteenth century include Puebla and Guanajuato, with other centers at Aguascalientes in north central Mexico, and Sayula, Jalisco (Fournier 1999; Fournier and Blackman 2008; Giffords and Olvera 2003).

Vessel form could be identified for approximately half of the imported ceramics (*n* = 11, 52.38%). Within this very small sample, there are three bowl fragments, one candy dish, and seven plate fragments. The bowl fragments are all decorated, the candy dish is plain, and the plates are both decorated (*n* = 5) and plain (*n* = 2).

*Metal*. In total, 116 metal artifacts were collected from LA 160; 74 from Peckham's excavations and 42 from OAS excavations. They include brass (*n* = 5), copper (*n* = 6), iron (*n* = 6), steel (*n* = 12), zinc (*n* = 54, all shoe nails) and unidentified ferrous and non-ferrous metals (*n* = 21). Additionally, tinned steel (*n* = 3), zinc-coated iron (*n* = 3), and slag (*n* = 5) were collected. The most common metal artifact type was shoe nails (*n* = 57), followed by nine cans, eight fence staples, eight unidentifiable artifacts, six nails, and an assortment of singular artifacts, such as two fragments of a butcher knife, a pocketknife, four different types of ammunition (one round each), a clothing rivet, a horseshoe, and a large spoon. Ten metal artifacts, including, at least three cans, one crown caps, and two bullet casings date to the early twentieth century and most likely post-date the occupation of the site structure.

*Glass*. A total of 179 pieces of glass were recovered at LA 160. Fifty-five pieces were collected during OAS excavations, 124 during Peckham's excavations. The majority of the glass is flat glass (*n* = 95, 57.2%), most likely from windowpanes, followed by bottle glass (*n* = 68), one fragment from a goblet, and 13 shards of unidentifiable form.

Flat glass consists of natural unclarified colors (*n* = 59), clear (*n* = 34), and three pieces of blue window glass. OAS analyses place the natural and blue colored glass as post-1846 and the clear glass as pre-1850 (Boyer 2018c). Window glass was certainly available in the United States by the first quarter of the nineteenth century, however, there were not many glass manufacturers who produced it and American factories were unable to keep up with demand or the quality of glass from Britain. As a result, much of the window glass in the U.S. was imported from England, into the late nineteenth century. In 1880 an estimated 25 percent of window glass in U.S. buildings was still imported (Manning 2010). Window glass became more available to New Mexicans when the Santa Fe Trail opened, but most likely it remained an uncommon commodity until at least 1846 (Boyer 2018c). Window glass will be discussed in more detail relating to LA 4968, in sections below.

Bottle glass is represented by seven colors: aqua (*n* = 2, 2.94%), brown (*n* = 31, 45.59%), clear (*n* = 8, 11.76%), gray (*n* = 1, 1.47%), green (*n* = 5, 7.35%), natural uncolored glass (*n* = 20, 29.41%), and amethyst (*n* = 1, 1.47%). No manufacture's marks were observed on bottle fragments, however 19 (27.94%) were identified as hand blown, and 19 (27.94%) were identified as manufactured using molds.

*Other*. Artifacts classified as Other at LA 160 include a fragment of selenite windowpane, seven leather or leather and metal shoe fragments, four scraps of a green Grand

Union paper trading stamp(s) that probably post-dates the site's occupation (1896–1980), and a glass and enamel pendant.

*Functional Analysis.* Nine functional categories are represented in the LA 160 assemblage: Construction/Maintenance (*n* = 114, 35.65%), Unassignable (*n* = 96, 29.34%), Personal Effects (*n* = 67, 21.14%), Domestic (*n* = 26, 8.20%), Indulgences (*n* = 10, 3.15%), Economy/Production (*n* = 4, 1.25%), Arms/Ammunition (*n* = 2, 0.62%), Transportation (*n* = 1, 0.31%), and Food (*n* = 1, 0.31%). It is not uncommon at historical sites for Unassignable to be a dominant category, mostly due to bottle glass whose contents cannot be identified to place the artifacts specifically into Indulgences (alcohol), Food (condiments), or Personal Effects (medicines or perfumes).

Within these broad functional categories, 34 specific functions could be identified (Table 7.7). The Domestic functional category is the most diverse, with nine types identified, primarily single examples of different dish and utensil forms. Construction/Maintenance is the next most diverse, with seven specific functions.

Table 7.7. LA 160 Artifacts by Functional Category and Specific Function.

| Functional Category<br>Specific Function | Count | Percent |
|---|---|---|
| **Construction/Maintenance** | **114** | **35.65** |
| Window glass | 97 | 30.60 |
| Fence Staple | 7 | 2.21 |
| Nail, Indeterminate | 6 | 1.89 |
| Latch | 1 | 0.31 |
| Windowpane (selenite) | 1 | 0.31 |
| Rivet | 1 | 0.31 |
| Nut and Bolt | 1 | 0.31 |
| **Unassignable** | **93** | **29.34** |
| Bottle | 59 | 18.61 |
| Unidentified | 21 | 6.62 |
| Slag | 5 | 1.58 |
| Can | 5 | 1.58 |
| Chain | 2 | 0.63 |
| Strap/Strip | 1 | 0.32 |
| **Personal Effects** | **67** | **21.14** |
| Shoe Nail | 57 | 17.98 |
| Unidentified Boot or Shoe | 7 | 2.21 |
| Clothing Rivet | 1 | 0.31 |
| Pendant | 1 | 0.31 |
| Pocket Knife | 1 | 0.31 |

| Functional Category<br>Specific Function | Count | Percent |
|---|---|---|
| **Domestic** | **26** | **8.20** |
| Unidentified Vessel | 8 | 2.52 |
| Plate | 7 | 2.21 |
| Bowl | 3 | 0.95 |
| Unidentified Dish, Serving or Eating | 2 | 0.63 |
| Butcher Knife | 2 | 0.63 |
| Candy Dish | 1 | 0.31 |
| Unidentified Utensil | 1 | 0.31 |
| Goblet | 1 | 0.31 |
| Large Spoon | 1 | 0.31 |
| **Indulgences** | **10** | **3.15** |
| Bottle | 9 | 2.84 |
| Crown Cap | 1 | 0.31 |
| **Economy/Production** | **4** | **1.25** |
| Disc or Trading Stamp | 4 | 1.25 |
| **Arms/Ammunition** | **2** | **0.62** |
| Rimfire BB Case | 1 | 0.31 |
| Centerfire Case | 1 | 0.31 |
| **Transportation** | **1** | **0.31** |
| Horseshoe, Riding | 1 | 0.31 |
| **Food** | **1** | **0.31** |
| Unidentified Canned Goods | 1 | 0.31 |
| **Total** | 318 | 100.00 |

At LA 160 a surprising proportion of artifacts are from the Personal Effects category, which includes clothing. Over 20 percent of the assemblage is in this category, due to the presence of 57 shoe nails. All but one of the artifacts identified as Personal Effects came from areas excavated by Peckham in 1959. At the other three sites in the sample, Personal Effects make up less than four percent of the imported artifact assemblages. This, and the low proportion of items in the Domestic category, make LA 160 stand out in the sample. However, comparison with the other sites is tentative due to the small size of the LA 160 assemblage.

One possible explanation for these differences relates to sampling at the site. Artifacts from Peckham's 1959 excavations of a three-room dwelling and some extramural sampling contributed most of the imported artifacts in the assemblage. While it appears that Peckham did sample a midden or possible refuse pit feature, he may not have identified or sampled the main refuse area for the dwelling, where one might expect more New Mexican ceramics and imported dishes. Without sampling a primary refuse area, the Domestic category may be under-represented. The high proportion of items in the Personal Effects category is shaped by the amount of shoe nails recovered, but these may reflect only a few shoes.

In summary, it may be that the limited diversity and skewed proportions of functional categories and types represented in the imported artifact assemblage is a product of limited excavation and sampling at the site, rather than a true reflection of the activities of the occupants.

*LA 4968 Imported Artifacts*

A larger proportion of the structural features and extramural features were sampled at LA 4968 than at LA 160. OAS excavations recovered 3,567 imported artifacts, approximately 3.89 percent of the total artifacts collected from the site. Among these were 1,485 pieces of glass, 955 imported ceramics, 675 fragments of selenite (which is not actually imported, but considered in this portion of the analysis), 374 metal artifacts, and 75 artifacts classified as Other. The imported artifacts were distributed evenly throughout the site features, with 273 recovered from the midden, 267 from the roomblocks, 265 in trash pit contexts, and 117 in associated extramural contexts. Artifacts that were identified as having manufacturing dates beginning in 1900 or later were eliminated from the current analysis: 126 shards of glass, 1 metal artifact, and 10 artifacts from other materials.

*Ceramics*. There are 711 imported ceramic sherds from European sources and 241 ceramic sherds from Mexican sources in the imported artifacts assemblage (952 sherds total). Given the date of the assemblage, it is unlikely there are many, if any, American-made ceramics. This represents 27.75 percent of all imported materials, 1.12 percent of all local and imported ceramics at the site, and 0.794 percent of all artifacts collected from the site. The imported ceramics are diverse but dominated by white refined earthenware sherds (*n* = 567, 59.55% imported ceramics). Small amounts (less than 8% each) of porcelain, stoneware, yellowware, redware, and ironstone were also observed.

There are 140 paste-decoration combinations, reflecting the large site size and potentially multiple occupations or dumping episodes. Thirty-one are Mexican wares and 109 are European. Undecorated white refined earthenware sherds are the most common and make up 32.46 percent of the imported ceramics. Decorated European wares are primarily annular, or banded wares (Table 7.8). White refined earthenware ceramics with a simple blue band are the most common banded ware, but sherds with blue and black, yellow, and yellow and blue, and other polychrome combinations are also present. Sponged/spatter decorated wares were also somewhat common, primarily with blue paint, but small amounts of black, brown, or purple sponged/spatter decorated sherds were also seen. Transferwares were generally rare, with only 24 sherds observed. Black, blue, and red pigments are present, and designs included floral, architectural, landscape, and anthropomorphic/zoomorphic themes. While no analysis was done to produce minimum vessel counts, very few decorative combinations are represented by more than 10 sherds, suggesting that ceramic sets or even matched vessels are unlikely in this assemblage.

Mexican ceramics consist of tin-glazed majolicas and lead-glazed wares. There are 204 majolica sherds, with 17 individual types and 24 paste-decoration combinations (unidentified majolicas make up 19.09% of the Mexican ceramic assemblage). There are 37 Mexican lead-glazed sherds, with blue, brown, green, red, orange and white, and polychrome glaze designs and seven paste-decoration combinations (Table 7.9). At least seven majolica sherds are from types that pre-date the occupation of the site. Most of the other majolica types have long production periods (Boyer et al. 2018). Puebla was the dominant majolica production center during the eighteenth century, but documentary evidence suggests that majolica was also produced in smaller quantities in other regions, including some production in Mexico City, Jalapa (Vera Cruz), and Michoacán (Fournier 1999). As noted above, by the nineteenth century, Guanajuato and Aguascalientes were also major majolica production areas (Fournier 1999; Fournier and Blackman 2008; Giffords and Olvera 2003).

Table 7.8. LA 4968 European Imported Ceramics, by Paste and Decoration.

| Decoration | Refined Earthenware | Stone China | Yellowware | Stoneware | Redware | Porcelain, Soft-Paste | Porcelain | Unrefined Earthenware | NA | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Annular, banded and gilded | | | | | | 2 | | | | 2 |
| Annular, black and orange banded | 1 | | | | | | | | | 1 |
| Annular, black and yellow banded | 1 | | | | | | | | | 1 |
| Annular, black banded | 7 | | | | | | | | | 7 |
| Annular, blue and black banded | 15 | 4 | | | | | | | | 19 |
| Annular, blue and brown banded | 3 | 1 | | | | | | | | 4 |
| Annular, blue banded | 69 | 3 | | | | | | | | 72 |
| Annular, brown banded | | 2 | | | | | | | | 2 |
| Annular, engine turned, green banded | 3 | | | | | | | | | 3 |
| Annular, engine turned, orange banded | | 1 | | | | | | | | 1 |
| Annular, engine turned, yellow and blue banded | | | 1 | | | | | | | 1 |
| Annular, Flow blue banded | 7 | | | | | | | | | 7 |
| Annular, green banded | 2 | | | | | | | | | 2 |
| Annular, indeterminate color | 9 | | | | | | | | | 9 |
| Annular, molded, blue banded | 2 | | | | | | | | | 2 |
| Annular, orange banded | 6 | | | | | | | | | 6 |
| Annular, pink, banded and gilded | | | | | | 1 | | | | 1 |
| Annular, polychrome banded | 2 | | | | | | | | | 2 |
| Annular, polychrome, gilded | | | | | 4 | | | | | 4 |
| Annular, polychrome, gilded and molded | | | | | 1 | | | | | 1 |
| Annular, yellow and blue banded | | | 16 | | | | | | | 16 |
| Annular, yellow banded | | 1 | 13 | 3 | | | | | | 17 |
| Black glaze | | | | | 1 | | | | | 1 |
| Black glaze, gilded | | | | | 1 | | | | | 1 |
| Blue glaze, indeterminate design | 1 | | | | | | | | | 1 |
| Brown glaze, gilded | | | | | 1 | | | | | 1 |
| Clear glaze (plain) | 309 | 16 | | | 1 | | 1 | | | 327 |
| Clear glaze, gilded | | | | | 1 | | | | | 1 |
| Edged, blue feathered | 5 | 1 | | | | | | | | 6 |
| Edged, impressed, blue feathered | 2 | | | | | | | | | 2 |
| Edged, impressed, orange feathered | 3 | | | | | | | | | 3 |
| Edged, molded, blue feathered | 3 | | | | | | | | | 3 |

Table 7.8. Continued.

| Decoration | Refined Earthenware | Stone China | Yellowware | Stoneware | Redware | Porcelain, Soft-Paste | Porcelain | Unrefined Earthenware | NA | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Edged, orange feathered | 1 | | | | | | | | | 1 |
| Flow blue, curvilinear design | | 3 | | | | | | | | 3 |
| Flow blue, floral design | 1 | 2 | | | | | | | | 3 |
| Flow blue, indeterminate design | 12 | | | | | | | | | 12 |
| Flow blue, landscape design | 1 | | | | | | | | | 1 |
| Flow blue, multiple/composite design | 1 | | | | | | | | | 1 |
| Flow blue, non-figurative/abstract design | 5 | | | | | | | | | 5 |
| Flow blue, painted, polychrome, indeterminate design | 1 | | | | | | | | | 1 |
| Impressed, white glaze | 1 | | | | | | | | | 1 |
| Indeterminate decoration | 6 | 5 | | 2 | | | | | 1 | 14 |
| Lead glaze, yellow | | 2 | 19 | | | | | | | 21 |
| Molded, brown, anthropomorphic/zoomorphic design | | | | | | | | 1 | | 1 |
| Molded, clear glaze, floral design | | | | | | 1 | | | | 1 |
| Molded, clear glaze, indeterminate design | 2 | 1 | | | | 1 | 1 | | | 5 |
| Molded, floral design | 1 | | | | | | | | | 1 |
| Molded, gilded, clear glaze | | | | | | 1 | | | | 1 |
| Molded, yellow glaze, indeterminate design | | | 1 | | | | | | | 1 |
| Painted, black, floral design | 1 | | | | | | | | | 1 |
| Painted, black, indeterminate design | | | | | | | 1 | | | 1 |
| Painted, blue and black, floral design | 1 | | | | | | | | | 1 |
| Painted, blue floral design | 4 | 1 | | | | | | | | 5 |
| Painted, blue, indeterminate design | 4 | | | | | | | | | 4 |
| Painted, blue, non-figurative/abstract design | 1 | 1 | | | | | | | | 2 |
| Painted, green, curvilinear design | 1 | | | | | | | | | 1 |
| Painted, green, indeterminate design | 1 | | | | | | | | | 1 |
| Painted, orange, curvilinear design | 1 | | | | | | | | | 1 |
| Painted, orange, floral design | 3 | | | | | | | | | 3 |
| Painted, orange, indeterminate design | 2 | | | | | | | | | 2 |
| Painted, pink, floral design | 1 | | | | | | | | | 1 |
| Painted, pink, gilded, indeterminate design | | | | | | 2 | | | | 2 |
| Painted, polychrome, curvilinear design | 2 | | | | | | | | | 2 |

Table 7.8. Continued.

| Decoration | Refined Earthenware | Stone China | Yellowware | Stoneware | Redware | Porcelain, Soft-Paste | Porcelain | Unrefined Earthenware | NA | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| Painted, polychrome, floral design | 2 | | | | | | | | | 2 |
| Painted, polychrome, non-figurative/abstract design | 1 | | | | | | | | | 1 |
| Painted, unknown color, floral design | 3 | | | | | 1 | | | | 4 |
| Salt glaze, buff | | | | 9 | | | | | | 9 |
| Sponged/spatter, black, non-figurative/abstract design | 3 | 3 | | | | | | | | 6 |
| Sponged/spatter, blue and green, non-figurative/abstract design | 1 | | | | | | | | | 1 |
| Sponged/spatter, blue, indeterminate design | 1 | | | | | | | | | 1 |
| Sponged/spatter, blue, non-figurative/abstract design | 20 | 5 | | | | | | | | 25 |
| Sponged/spatter, brown, indeterminate design | 1 | | | | | | | | | 1 |
| Sponged/spatter, brown, non-figurative/abstract design | 2 | 1 | | | | | | | | 3 |
| Sponged/spatter, orange, non-figurative/abstract design | 2 | | | | | | | | | 2 |
| Sponged/spatter, purple, non-figurative/abstract design | 3 | | | | | | | | | 3 |
| Sponged/spatter, white, non-figurative/abstract design | 1 | | | | | | | | | 1 |
| Transfer, black, floral design | 1 | | | | | | | | | 1 |
| Transfer, black, indeterminate design | 7 | | | | | | | | | 7 |
| Transfer, blue, architectural design | 1 | | | | | | | | | 1 |
| Transfer, blue, floral design | 4 | | | | | | | | | 4 |
| Transfer, blue, indeterminate design | 4 | | | | | | | | | 4 |
| Transfer, blue, landscape design | 3 | | | | | | | | | 3 |
| Transfer, blue, multiple/compound design | 1 | 1 | | | | | | | | 2 |
| Transfer, red, anthropomorphic/zoomorphic design | 2 | | | | | | | | | 2 |
| White glaze, gilded | | | | | 2 | | | | | 2 |
| **Total** | **567** | **54** | **50** | **14** | **12** | **9** | **3** | **1** | **1** | **711** |

Table 7.9. LA 4968 Mexican Imported Ceramics, by Paste and Decoration.

| Decoration | Majolica Dark | Majolica Light | Majolica, Unknown | Unrefined Earthenware | Total |
|---|---|---|---|---|---|
| Majolica, unknown green-on-green | 54 | | | | 54 |
| Majolica, unknown | 4 | 39 | 3 | | 46 |
| Majolica, Aranama Polychrome | | 16 | 6 | | 22 |
| Majolica, Puebla blue-on-white | | 22 | | | 22 |
| Majolica, unknown polychrome | 1 | 18 | 2 | | 21 |
| Mexican lead glaze, green | | | | 19 | 19 |
| Mexican lead glaze, brown | | | | 9 | 9 |
| Majolica, San Elizario Polychrome | | 7 | 2 | | 9 |
| Majolica, Orange Line Polychrome | | | 6 | | 6 |
| Annular, Mexican lead glaze, brown banded | | | | 5 | 5 |
| Majolica, 19th century Mexican Complex | 4 | | | | 4 |
| Majolica, Huejotzingo Polychrome | | 4 | | | 4 |
| Majolica, Tumacacori Polychrome | | 4 | | | 4 |
| Majolica, Tallahassee blue-on-white | | 3 | | | 3 |
| Majolica, blue-on-white unknown | | 2 | | | 2 |
| Majolica, Castillo Polychrome | | 1 | 1 | | 2 |
| Majolica, Wavy Rim Band | | | 2 | | 2 |
| Mexican lead glaze, brown, molded | | | | 1 | 1 |
| Majolica, Esquitlan | | 1 | | | 1 |
| Mexican lead glaze, brown, geometric | | | | 1 | 1 |
| Majolica, Fig Springs Polychrome | | | 1 | | 1 |
| Annular, Mexican lead glaze, red banded | | | | 1 | 1 |
| Annular, Mexican lead glaze, polychrome banded | | | | 1 | 1 |
| Majolica, Abo II Polychrome | | 1 | | | 1 |
| **Total** | **63** | **118** | **23** | **37** | **241** |

Vessel form could be identified for 335 European imported ceramics and 148 Mexican imported ceramics. Bowls make up 46.27 percent of the identified European wares, followed by cup or bowl sherds (20.60%). Flat forms such as plate and plate or saucer make up 26.27 percent of the European sherds. Among Mexican imported ceramics, bowls are 5.4 percent of the identified forms, and cup or bowl sherds are 16.22 percent, whereas flat forms such as plate and plate or saucer forms are 64.19 percent (combined). These numbers suggest that Mexican and European imported ceramics served complementary functions as tableware, with European ceramics preferred for hollow forms and Mexican majolicas preferred for flat forms. In noting this pattern, Boyer and colleagues (2018:404) speculate that earlier majolicas were used as flat wares alongside Puebloan and Apache hollow form serving wares, especially prior to the 1840s and the American occupation. Then, as European ceramics became more available, pearlware may have been preferred over majolica for flat forms alongside other whiteware hollow forms.

*Metal*. A total of 373 metal artifacts were collected from excavations at LA 4968, representing nine functional categories and 63 specific functions (Table 7.10). Eighty-seven metal fragments could not be identified, 70 were cans or fragments of cans with unidentified contents, 38 were sheet fragments. Among the sheet fragments were several pieces with cut and punched edges that were most likely related to tin working. However, because the products could not be identified from the remaining scrap, these items were classified in the Unassignable functional category rather than Economy/Production (Boyer et al. 2018).

The next most common metal artifact type was nails (indeterminate type, $n = 34$), followed by slag ($n = 13$) and metal plate fragments categorized as straps/strips ($n = 10$). After these large artifact groups, the metal assemblage consists of a wide range of artifacts that occur in quantities of 10 or less. Many of these artifacts were small personal items that could have been easily transported along the Santa Fe or Chihuahua Trails and may have been some of the earliest imported goods available. For example, excavations recovered six

Table 7.10. LA 4968 Metal by Material and Specific Function.

| Metal / Function | Count |
|---|---|
| **Brass** | **7** |
| Button, Shank | 1 |
| Rod/Stock | 1 |
| Percussion Cap, Winged | 1 |
| Button: Self Shank | 1 |
| Thimble | 1 |
| Hooked Eyelet | 1 |
| Jetan | 1 |
| **Brass and Lead** | **1** |
| Military Insignia | 1 |
| **Bronze** | **4** |
| Unidentified | 1 |
| Plate with Hole or Eye | 1 |
| Brooch/ Lace Pin | 1 |
| Crucifix, Wearable | 1 |
| **Copper** | **13** |
| Unidentified Economy/Production | 2 |
| Unidentified Jewelry/Metal Work Production | 2 |
| Unidentified | 2 |
| Raw Material | 2 |
| Jewelry Finding | 2 |
| Strap/Strip | 1 |
| Rosary | 1 |
| Scrap | 1 |
| **Copper & Indeterminate Nonferrous Metal** | **1** |
| Button, Shank | 1 |
| **Copper and Iron** | **3** |
| Plate with Hole or Eye | 2 |
| Strap/Strip | 1 |
| **Ferrous and Non-Ferrous Metals** | **3** |
| Unidentified Personal Effect | 3 |
| **Ferrous Metal** | **148** |
| Unidentified | 45 |
| Sheet | 34 |
| Can | 34 |
| Unidentified Canned Goods | 13 |
| Strap/Strip | 4 |
| Tack, Indeterminate | 2 |
| Large Spoon | 2 |
| Plate | 2 |
| Pocket Knife | 2 |
| Nail, Common | 1 |
| Knife, Indeterminate | 1 |
| Unidentified Hardware | 1 |
| Ring | 1 |
| Butcher Knife | 1 |
| Roller Buckle | 1 |
| Button: Cloth Shank | 1 |
| Screw, Wood Flat Head | 1 |
| Buckle | 1 |
| Bulb | 1 |
| **Glass and Metal** | **1** |
| Bead | 1 |
| **Gold-Plated Metal** | **1** |
| Jewelry, Ring | 1 |
| **Non-Ferrous and Non-Copperous** | **2** |
| Crucifix, Wearable | 1 |
| Button, 4-hole | 1 |
| **Silver** | **1** |
| Cross, Wearable | 1 |
| **Slag** | **13** |
| slag | 13 |
| **Metal Alloy** | **1** |
| Scissors | 1 |

Table 7.10. Continued.

| Metal<br>Function | Count |
|---|---|
| **Iron** | **134** |
| Unidentified | 37 |
| Nail, Indeterminate | 34 |
| chain | 8 |
| Coscojo | 6 |
| Shoe Nail | 5 |
| Strap/Strip | 5 |
| plate | 4 |
| Tack, Gimp | 3 |
| Sheet | 3 |
| Tack, Indeterminate | 3 |
| Metal Arrowhead | 3 |
| Brad | 3 |
| Nail, Common | 3 |
| Rod | 2 |
| Unidentified Personal Effect | 2 |
| Horseshoe Nail | 2 |
| Nail, Clout | 1 |
| Plate with Hole or Eye | 1 |
| Hammer | 1 |
| Eye Hoe or Adze Eye Hoe | 1 |
| Nail, Box | 1 |
| Hooked Eyelet | 1 |
| Unidentified Hardware | 1 |
| Can | 1 |
| Unidentified Pot or Pan | 1 |
| Jaw Harp | 1 |
| Concho | 1 |
| **Lead** | **3** |
| Unidentified | 2 |
| Minie Ball | 1 |
| **Metal and Caulk/Sealant** | **2** |
| Canning Jar Sealer | 2 |

| Metal<br>Function | Count |
|---|---|
| **Metal and Cloth** | **1** |
| Button, Indet. | 1 |
| **Tinned Steel** | **2** |
| Can | 2 |
| **Tin-Plated Metal** | **21** |
| Can | 20 |
| Sheet | 1 |
| **Steel** | **10** |
| Shoe Nail | 5 |
| Pocket Knife | 4 |
| Percussion cap | 1 |
| **Zinc** | **1** |
| Canning Jar Sealer | 1 |
| **Total** | **373** |

*coscojos*, small metal bridle decorations favored by both Hispanic and Native American riders, six fragments of pocket-knives, four fragments of mirror, three wearable cross/crucifixes, and one rosary. Clothing notions such as hooked eyelets (*n* = 2), button shanks (*n* = 2) and buttons (*n* = 2), and jewelry findings (*n* = 2) were also collected. Given that bolts of cloth were the most commonly imported good along the Santa Fe Trail (Tigges 2019a), scissors, needles, and additional fixtures for clothing were likely also in high demand.

*Glass*. Glass was the most common imported material recovered at LA 4968 and consists of 1,359 pre-1900 artifacts. Among the historic or undated glass artifacts, 527 were identified as bottles and 527 were identified as window glass. Two hundred and thirty-three glass artifacts could not be identified by type. Additional glass artifact types include beads (*n* = 17), two buttons, one sequin, and housewares such as picture frames (*n* = 6), vase fragments (*n* = 23), and dishes (*n* = 10). A total of eight functional categories and 17 specific functions were identified in OAS analysis, demonstrating that while glass artifacts are a large proportion of the assemblage, they were not incorporated into as many diverse roles in daily life at the site as metal artifacts.

Bottle glass is represented by approximately 11 colors, dominated by brown (*n* = 220, 41.75%) followed by olive (*n* = 130, 24.67%) and clear (*n* = 81, 15.37%). Less common colors include natural (unclarified), aqua, blue, green, amethyst, honey, amber/yellow, and buff. The glass assemblage demonstrates a range of bottle forming technologies, including hand-blown (*n* = 19), and indeterminate mold technologies (*n* = 160). Specific glass mold technologies could also be identified on a few specimens, such as contact mold (*n* = 17), turn mold ($n$ = 3) and post-bottom mold ($n$ = 2). No bottles from the site occupation period held manufacturer's marks.

*Other*. Artifacts classified as Other encompass a wide range of organic, mineral, and composite materials. A total of 745 items were identified, 675 (90.60%) of which are selenite fragments, most often used for window coverings, especially prior to affordable window glass imports. The remaining Other artifacts were all related to Personal Effects such as clothing. Thirty fragments were leather and an additional five were leather and metal related to shoes. Three of these fragments were identified as female shoes, three as boot fragments, and two were identified as male shoes. Smaller numbers of miscellaneous materials included nine shell artifacts (six pieces of raw material, two buttons, one pendant), three bone artifacts (two pocket-knife handles, one button), three metal and wood composite artifacts (two shoe fragments, one button), a glass and metal bead, an ivory comb fragment, a wooden lice comb fragment, a scrap of cotton, and a cloth and wood button.

*Functional Analysis.* Eleven functional categories are represented in the LA 4968 assemblage: Construction/Maintenance ($n$ = 1,250, 36.41%), Domestic ($n$ = 975, 28.40%), Unassignable ($n$ = 926, 26.97%), Personal Effects ($n$ = 109, 3.18%), Indulgences ($n$ = 88, 2.56%), Furnishings ($n$ = 33, 0.96%), Economy/Production ($n$ = 14, 0.41%), Transportation ($n$ = 13, 0.38%), Food ($n$ = 13, 0.38%), Arms/Ammunition ($n$ = 7, 0.20%) and Entertainment/Leisure ($n$ = 5, 0.15%). Construction/Maintenance is dominated by window glass and selenite windowpane fragments, the Domestic category is almost entirely ceramic tableware, and Unassignable is dominated by bottle glass.

Within these functional categories, 100 specific functions were identified. The most common is window glass or selenite windowpane fragments ($n$ = 1,170, 34.08% of assemblage total), followed by unidentified bottle glass (*n* = 441, 12.85%), unidentified unassignable (*n* = 323, 9.41%), and unidentified tableware (*n* = 276, 8.04%) or vessels (*n* = 182, 5.30%). The Personal Effects category is the most diverse, with 26 specific functions, many related to clothing, such as buttons, shoes or boots, and jewelry pieces such as findings, a brooch pin, and wearable cross pendants. Domestic is the second most diverse, with 23 specific categories, mostly different forms of dishware.

The diversity of functional categories and specific functions observed in the LA 4968 assemblage reflects the large size of the assemblage and wide extent of the excavations, which included a full seven-room residence, two outbuildings, and refuse pits at the site. The analysis demonstrates what one might expect from a full range of daily activities within a nineteenth century Hispanic household that most likely produced and/or processed most of their own food and engaged in many other production activities within the rancho compound. The range of imported artifacts is also reflective of the early period of the Santa Fe Trail. There are very few items related to home furnishing or decoration—the remains of perhaps two glass vases, glass of one picture frame, and fragments from one mirror. None of the bric-a-brac associated with Victorian era domestic ideals (Mullins 2012; Mullins and Jeffries 2012), or larger home items such as stove parts or furniture parts, were recovered.

Imported artifacts at LA 4968 also demonstrate a primarily public or outward-facing role for imported materials. The most common class of imported artifacts at the site is ceramic dishware. The apparent use of imported majolica ceramics, and then pearlware and other white refined earthenwares for servingware and tableware, is a practice that would have been highly visible to any guests served at the home. While the vast majority of the ceramics at LA 4968 were locally-made New Mexican ceramics, there may have been enough European and Mexican tableware for setting a modest-sized table.

The most common single type of artifact in the imported assemblage is window glass, used to replace some selenite windows in Structure 1 and Structure 5. The earliest descriptions of glass-paned windows in New Mexico buildings dates to writer Albert Pike who was in Santa Fe between 1831 and 1832 and described glass windows in the Palace of the Governors (Boyer 2018c:823). Though present, it is unlikely that window glass was widely available in New Mexico prior to American occupation in 1846. Travelling through Belen in 1846, Lieutenant Abert purchased sheets of selenite, which he noted was used as window glazing (Abert 1962:136), suggesting that selenite glazing was probably still common at that time. In the 1860 Elsberg and Amberg debt ledger, Melchior Werner purchased two boxes of window glass at $8.00 each. Other items that cost around $8.00 in 1860 include a dozen tin buckets ($7.00-7.50), a dozen frying pans ($7.50), and 15 fanegas of corn ($6.00). Werner owned a hotel in Albuquerque that opened in 1876, but may not have been successful, as he is also listed in an account book of 'bad debts' for the Spiegelberg Brothers in 1881, for $4,595.00.

The thickness of the glass fragments indicates that much of the glass found associated with Structure 1 was manufactured between 1810 and 1835 and the glass near Structure 5 dates between 1840 and 1865 (Boyer et al. 2018:435). However, given the rarity of window glass in the New Mexico Territory prior to American occupation, Boyer (Boyer 2018c) interprets the window remodeling for both structures and the structure at LA 160 to have occurred after 1846. Boyer considers this to be the most likely scenario, although it involves merchants bringing glass to New Mexico that was a minimum of 10 to 30 years old. It is not clear what economic circumstances might have led to this. Alternatively, there is the possibility that Vicente Valdez was a very early adopter of window glass at Structure 1, and then later added glass to Structure 5 when it came to be occupied, and LA 160 after it came under his ownership in 1854. Chris Wilson, in his analysis of Tierra Amarilla vernacular architecture, noted that "wealthy merchants and large sheep owners tended to be those who first and most completely adopted architectural innovations…" (C. Wilson 1991:97).

In either scenario, the shift from selenite to glass-covered windows has important repercussions for the appearance and use of these domestic structures. A shift to glass windows, particularly if it was accompanied by the other fenestration characteristics of Territorial style architecture, such as milled wood sills and pedimented lintels would have been highly visible to anyone who visited the rancho. Glass-paned windows had the potential to be larger than selenite windows and could let in more light. Improved lighting, whether from clearer coverings or larger openings suggests new or expanded use of the indoor space, potentially for activities that would have occurred in portal or courtyard areas previously. The earliest glass windows in New Mexico apparently remained small, potentially due to the lack of milled wood to frame and support larger windows (Conron and Christopher 1978). By installing glass panes into Structure 1, then later into Structure 5 when it was fully occupied, the Vicente family committed significant funds to make a change to their domestic architecture that would have had impacts on the interior use and exterior presentation of their home.

*LA 8671 Imported Artifacts*

Imported artifacts recovered at LA 8671 and retained in the Maxwell Museum collections consist of 306 items (two pieces of clam shell individual artifacts and one chalcedony flake are not considered here); in addition, Ferg (1984) recovered 11 imported sherds (refit to seven), three pieces of glass, one chert gun flint that may be local material (Table 7.11). Five artifacts were described and photographed in the excavation notes that were not present in the Maxwell collections but are considered here: four shoe fragments and a piece of leather. Finally, 19 sherds of stoneware likely dating to the 1920s are not considered in this analysis. This leaves 303 remaining imported artifacts considered in this analysis. Imported artifacts make up 23.89 percent of the total assemblage. Many imported items (*n* = 138) were sufficiently identifiable that they were reported by Brody and Colberg in their 1966 article summarizing the site (1966). It appears that the artifacts were examined after the initial excavation, possibly by Brody or Colberg, with assistance from E. Boyd of the Museum of International Folk Art, particularly the imported ceramics. Most of the decorated wares are cataloged with descriptive tags, which likely represent Boyd's identifications.

Table 7.11. LA 8671 Imported Artifacts.

| Material | Brody and Colberg 1966 | Ferg 1984 | Total |
|---|---|---|---|
| Imported Ceramics | 145 | 7 | 152 |
| Glass | 51 | 3 | 54 |
| Metal | 90 | 0 | 90 |
| Other | 7 | 0 | 7 |
| Total | 293 | 10 | 303 |

*Ceramics*. The Brody and Colberg excavations recovered 164 imported ceramic sherds, and the Ferg excavations recovered an additional 11 sherds that were refitted into seven fragments. Nineteen sherds were identified as twentieth century American stoneware and are not included in the following analyses. Together imported ceramics make up 50.16 percent of the imported materials, 12.17 percent of all ceramics in the assemblage, and 9.8

percent of the entire assemblage. The assemblage includes white refined earthenware, porcelain, one stoneware sherd, and unrefined earthenware majolicas and Mexican lead-glazed ceramics. Boyd identified at least ten types of imported ceramics, three of which (plain whiteware, English spatterware, and shell-edged ware) were also recovered in the trash pit by Ferg. There are a total of 24 paste and decoration combinations present in the assemblage, but with the exception of undecorated whiteware, each type is represented by only a few sherds. Undecorated whiteware makes up 57.69 percent of the imported sherds, followed by Sponged/spatter ware with polychrome floral design (5.77%), and sherds with a blue banded annular design (5.77%) (Table 7.12).

According to Boyd's identifications, the ceramics are primarily English wares dating to the first half of the nineteenth century, including blue-banded "Queen's ware," Staffordshire transferware, two potential copies of Staffordshire wares that may be American in origin, other English transferwares, shell edged wares, and both Boyd and Ferg identified sherds of English spatterware in red- and blue-on-white. Interestingly, Boyd also identified a ceramic sherd to Maastricht, a Dutch pottery producing town, and another to "Maastricht, Nemur [Namur]" which may indicate she could not identify whether the ceramic was from the Dutch center, or from Belgium.

Table 7.12. LA 8671 Imported Ceramics, by Form and Decoration.

| Decoration | Bowl | Jar | Plate | Tea cup | Indeterminate | Total |
|---|---|---|---|---|---|---|
| Clear glaze (plain) | 4 | — | 2 | — | 77 | 83 |
| Sponged/spatter, polychrome, floral design | — | — | 9 | — | — | 9 |
| Annular, blue banded | 8 | — | — | — | 1 | 9 |
| Painted, black, floral design | — | — | 8 | — | — | 8 |
| Gilded, painted, teal and brown, non-figurative/abstract design | — | — | — | — | 4 | 4 |
| Annular, teal banded | — | — | — | — | 3 | 3 |
| Mexican lead glaze, yellow | — | 3 | — | — | — | 3 |
| Glaze, red and tan | — | — | — | — | 3 | 3 |
| Sponged/spatter, red, non-figurative/abstract | — | — | — | — | 3 | 3 |
| Decal, polychrome, floral design | — | — | 2 | — | — | 2 |
| Annular, blue and black banded | 2 | — | — | — | — | 2 |
| Transfer, red, landscape design | — | — | — | 2 | — | 2 |
| Majolica, unknown | — | — | — | — | 2 | 2 |
| Majolica, unknown polychrome | — | — | — | — | 2 | 2 |
| Glaze, yellow | 2 | — | — | — | — | 2 |
| Edged, blue | — | — | — | — | 1 | 1 |
| Transfer, black, multiple/compound | — | — | 1 | — | — | 1 |
| Annular, green banded | — | — | — | — | 1 | 1 |
| Painted, blue, indeterminate design | — | — | — | — | 1 | 1 |
| Transfer, blue, floral | — | — | — | — | 1 | 1 |
| Painted, purple and green, geometric design | — | — | — | — | 1 | 1 |
| Albany and bristol glazed | — | — | — | — | 1 | 1 |
| Gilded, copper | — | — | 1 | — | — | 1 |
| **Total** | **16** | **3** | **23** | **2** | **101** | **145** |

The four majolica sherds appear to be an earlier Puebla Polychrome type (1650–1725) (Fox and Ulrich 2008), which was produced in both Puebla and in Mexico City (Fournier and Blackman 2008). This type is surprisingly early for the region and may not be directly related to the nineteenth century occupation of LA 8671. It is possible these sherds were collected from the nearby colonial village site of San José de las Huertas. One Puebla Polychrome sherd was collected during excavations there, which Atherton (2013:176) interpreted as an heirloom piece. Finally, Brody and Colberg mention several unidentified wares that may be German or Japanese in origin and date to the early twentieth century, likely based on Boyd's notations (Brody and Colberg 1966:17) (Figure 7.5).

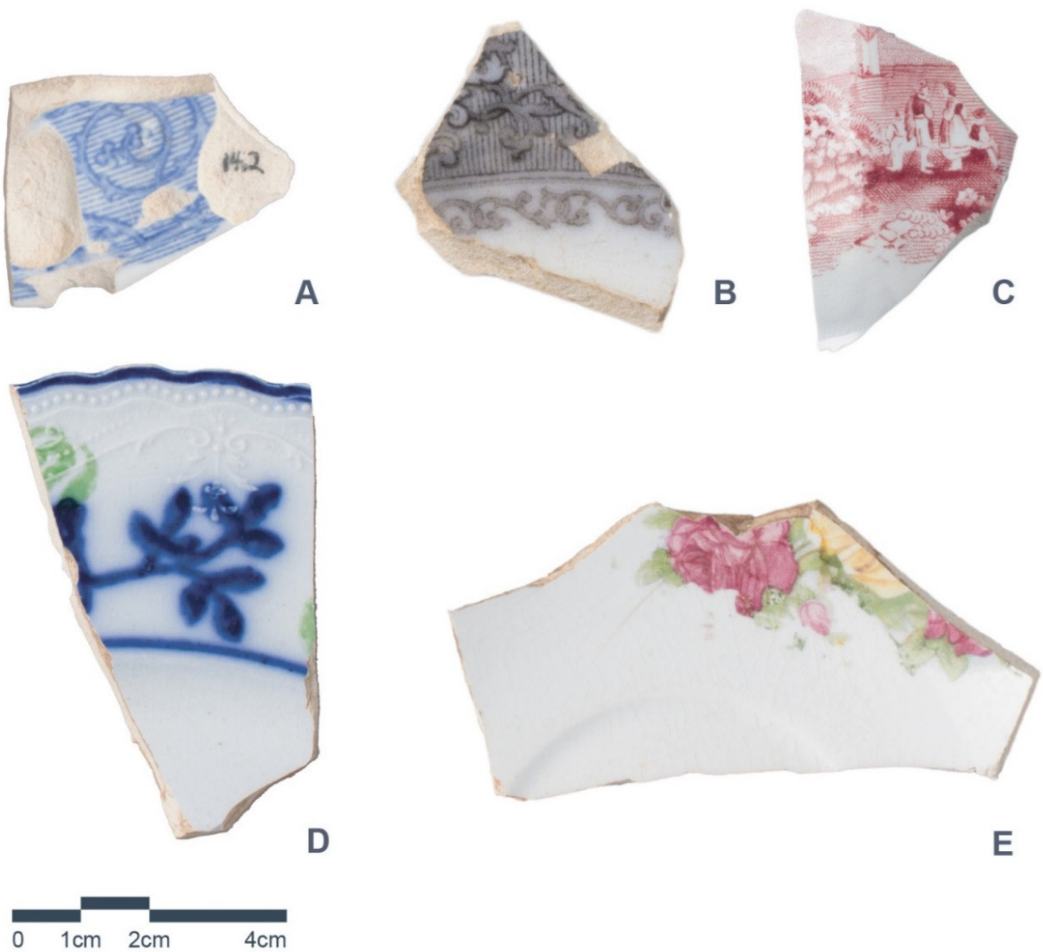


**Figure 7.5. LA 8671 imported ceramic sherds. Courtesy of the Maxwell Museum of Anthropology. Photographs by Oscar Camorlinga. A) interior, blue transferware, catalog no. 2013.84.54; B) soup plate base, interior, black transferware, catalog no. 2013.54.61; C) Romantic design, paneled bowl, exterior, red transferware, catalog no. 2013.84.88; D) embossed plat rim, interior, stamped and glazed, Namur, Belgium, catalog no 2013.84.57; E) plate base, interior, "Spode," catalog no. 2013.84.59. All ceramics identified by E. Boyd.**

Form could only be identified for 49 of the imported ceramics. Except for undecorated sherds, each decorative combination only had one identified form. For example, all identified annular decorated sherds were bowls, and all identified Sponged/spatter decorated sherds were plates, suggesting that very few vessels are represented. In total, 31 identified sherds are plate sherds (63.26% of identified forms), 16 (32.65%) are bowl sherds, two are teacups, and the three Mexican lead-glazed sherds are likely jar or pitcher sherds. Vessel form could not be identified for the four majolica sherds, although one handle fragment is present.

*Metal*. A total of 90 metal artifacts were recovered by Brody and Colberg and none by Ferg. Forty artifacts were small iron fragments that were too degraded to be identified. There were also at least three copper fragments that also could not be identified, but which may have been slag or related to mining. Twenty-one metal artifacts were nails, which E. Boyd sorted between hand forged (*n* = 2), square-cut machine-made (*n* = 6), and those that were too degraded or fragmentary to determine the technology (*n* = 13). Individual artifacts are similar to those from Santa Fe Trail merchant manifests, such as two knife handles, a shoe cleat patented in 1859, a furniture or decorative chest fitting, and a brass kettle bale ear from the Waterbury Brass Company. One fork, one padlock fragment, one plow point, and one flintlock hammer were also identified. A more unusual item was three refitting pieces of cast iron which E. Boyd identified as a “wafer iron,” a tool used to press wafers for communion (or breakfast) (Figure 7.6).


**Figure 7.6. LA 8671 one metal artifact identified by E. Boyd as a wafer press. Catalog No. 2013.84.95. Photo by Oscar Camorlinga. Courtesy of the Maxwell Museum of Anthropology.**

*Glass*. Brody and Colberg (1966) mention that "miscellaneous glass" was recovered during excavations, however it seems they generally considered it to be intrusive trash deposited at the site after its abandonment and did not inventory it in their article. A total of 51 fragments of glass were recovered by Brody and Colberg, but all but two pieces came from Room 2. Other notes regarding late nineteenth century ceramics from Room 2 indicate that this context tended to have later-period artifacts (Brody and Colberg 1966:18). However, all glass collected from Room 2 also came from an excavation level 6–8 inches below the surface. Additionally, Ferg recovered three pieces of glass from the trash pit feature to the north of the house structure, including a piece that was partially melted (the pit was ashy and contained fire-cracked rock, suggesting the trash was burned in place). This indicates that residents at LA 8671 likely did have access to glass items.

The glass fragments are a range of colors and include both bottle fragments, and thin fragments that were more likely serving wares or lamp glass. The bottle glass (*n* = 36, 66.67%) includes dark olive, light amber, aqua, and light yellow-green colors (both the 1966 and 1983 excavations recovered this color). Each of these colors could potentially be found in nineteenth century glass, and olive-colored glass bottles were uncommon after 1880 (Lindsey 2019). Bottle forms include round and square shapes suggesting at least four vessels. No manufacturer's marks were observed.

Glass tablewares (*n* = 17, 31.37%) are frosted, clear, amethyst (though not solarized), and olive in color. Both Brody and Colberg and Ferg each recovered one clear pressed-glass fragment. No forms could be discerned from the pressed glass fragments, but they may have represented plates or tumblers. One glass artifact could not be identified as bottle or serving ware (1.96%). Unlike LA 160 or LA 4968, there is no evidence that the roomblock at LA 8671 ever had glass or selenite windowpanes.

*Other.* Artifacts classified as Other are a wood and metal knife handle, and one well-polished bone bead that appears to be machine-made. The documentary material for LA 8671 in the Maxwell Museum Archives also includes a field inventory that lists four pieces of shoe fragments, including a nearly complete women's shoe sole, and three other sole fragments; and a scrap of leather. Artifact photos from the 1960s include a photo of two shoe soles.

*Functional Analysis.* Artifacts at LA 8671 represent ten functional categories and 30 specific functions (Table 7.13). This is the lowest functional diversity among the four sites in the sample. Due to the proportionately high number of imported ceramic sherds recovered at LA 8671, the assemblage is dominated by the Domestic category (*n* = 175, 56.27%), followed by Unassignable (*n* = 47, 15.11%) and Indulgences (*n* = 34, 10.93%). Domestic is the most diverse functional category, with 10 specific functions identified, followed by Unassignable, with four. All other functional categories had three or fewer specific functions identified, and 34 or fewer artifacts.

Table 7.13. LA 8671 Imported Artifacts by Functional Category.

| Functional Category<br>Specific Function | Count |
|---|---|
| **Domestic** | **175** |
| Bowl | 16 |
| Fork | 1 |
| Kettle | 1 |
| Knife, Indeterminate | 2 |
| Plate | 27 |
| Tea cup | 2 |
| Unidentified Dish, Serving or Eating | 105 |
| Unidentified Glassware | 17 |
| Vessel, Indeterminate | 3 |
| Wafer iron | 1 |
| **Unassignable** | **47** |
| Bottle | 2 |
| Copper fragment | 3 |
| Scrap | 1 |
| Shell | 1 |
| Unidentified | 40 |
| **Indulgences** | **34** |
| Bottle | 34 |
| **Construction/Maintenance** | **24** |
| Chain | 3 |
| Nail, Indeterminate | 2 |

| Functional category<br>Specific Function | Count |
|---|---|
| **Personal Effects** | **11** |
| Bead | 1 |
| Buckle | 3 |
| Leather | 1 |
| Shoe | 6 |
| **Food** | **3** |
| Can | 3 |
| **Arms/Ammunition** | **5** |
| Cartridge | 4 |
| Flintlock hammer | 1 |
| **Economy/Production** | **2** |
| Knife, Indeterminate | 1 |
| Plow point | 1 |
| **Furnishings** | **2** |
| Fitting | 1 |
| Padlock | 1 |
| **Transportation** | **1** |
| Mule shoe | 1 |
| **Total** | **303** |

These proportions most likely represent the impacts of sampling practices during the 1963–1964 excavations. Ceramics would have been preferred for their dating utility, while it is possible that smaller glass fragments and architectural remains such as window glass or some nails may have been interpreted as intrusive and discarded from surface or near-surface contexts. Like LA 160, the functional distribution of the assemblage at LA 8671 is shaped by the limited scale of excavations and small sample collected.

The ceramic assemblage, however, still has a surprising size and diversity for a small site that is not close to any major market centers. Albuquerque is over 40 km (25 mi) away and Alameda is 29 km (18 mi) away. As noted above, the paste-decoration combinations present seem to indicate that each category only represents one or very few vessels, suggesting intermittent acquisition, and site residents were not able or chose not to purchase large sets or even small quantities of matched dishware. Matched table settings were considered an important part of nineteenth century European American middle-class dining, but were not necessarily accessible or desired by other racial and ethnic groups (DiZerega Wall 1999). Mullins (1999a) describes how mismatched sets of ceramics observed in African-American households may indicate acquisition through informal or barter exchange, while in an analysis of mismatched sets from a series of nineteenth century working-class homes in Sydney, Australia, Crook (2000) suggests the variation is due to ceramics being acquired in an as-needed basis only, from second-hand shops and market bazaars. More locally, Clark (2012) also noted a lack of matching teaware, but greater proportions of larger serving vessels at nineteenth century Hispanic homestead sites in southeastern Colorado. She suggests this artifact pattern may be because residents emphasized large social gatherings and meals, rather than smaller Victorian tea service.

*Barela-Reynolds House Imported Artifacts*

A total of 5,949 imported artifacts were collected from excavations at the Barela-Reynolds house. However, artifacts and stratigraphy in the test units indicated that many were in mixed or disturbed contexts and did not necessarily reflect entirely nineteenth century activities or surfaces. Many artifacts collected were found to be surface trash from the 1950s and later, which had accumulated during ongoing use of the house by the Taylor family from 1953 onwards.

Of the 5,949 artifacts collected, 1,817 artifacts were identified during initial laboratory analysis and during catalog production to have very likely been produced after 1900. These artifacts are primarily colorless bottle glass and reflect the dramatic increase in product availability after the railroad arrived in Las Cruces in 1881. They are most likely not related to occupation activities during the period of interest and will not be discussed in detail here. It is likely many unidentifiable fragments of metal also date to later occupation of the site, but they could not be confidently dated to the twentieth century, and so are not excluded. Two-hundred and twelve artifacts that were classified as organic (peach pits), faunal (egg shells and turtle shells), or architectural samples (adobe and mortar) by excavators at the other three sites in the sample, were also removed from consideration here. The remaining 3,920 artifacts consist of a range of glass, Mexican, European, and American ceramics, a range of metal artifacts, and miscellaneous materials such as leather, chalk, and early rubber (Table 7.14).

Table 7.14. Barela-Reynolds House Imported Artifacts, by Functional Category and Material.

| Functional Category | Ceramic | Glass | Lithic | Metal | Other | Total |
|---|---|---|---|---|---|---|
| Arms and Ammunition | — | — | — | 6 | — | 6 |
| Construction and Maintenance | 22 | 320 | 1 | 499 | 4 | 846 |
| Domestic | 431 | 31 | — | 3 | — | 465 |
| Economy and Production | — | — | — | 2 | — | 2 |
| Entertainment and Leisure | 1 | 2 | — | 1 | 1 | 5 |
| Food | — | 8 | — | 8 | — | 16 |
| Furnishings | 2 | 72 | 1 | 1 | 22 | 98 |
| Indulgences | 15 | — | — | 17 | — | 32 |
| Personal Effects | 4 | 4 | — | 6 | 50 | 64 |
| Unassignable | 1 | 1180 | 6 | 1116 | 83 | 2386 |
| **Total** | **476** | **1617** | **8** | **1659** | **160** | **3920** |

*Ceramics*. A total of 431 ceramic sherds were identified as vessel fragments imported from outside the New Mexico territory. The ceramics represent vessels from farther south in Mexico, Europe, and the eastern U.S. Imported ceramics are 10.99 percent of the imported artifact assemblage, 39.54 percent of the total ceramic assemblage, and 9.41 percent of the total artifact assemblage. While paste type could not be identified for all sherds based on catalog descriptions ($n$ = 3 indeterminate paste), at least six major groups were identified within the assemblage. The predominant paste type was white refined earthenware ($n$ = 307), although porcelain ($n$ = 18), stoneware ($n$ = 8), unrefined earthenware ($n$ = 93), and two yellowware sherds ($n$ = 2) were identified.

Ninety-four paste-decoration combinations were identified, including six unidentified majolica types, 11 Mexican lead-glazed types and two redware types (Table 7.15).

Table 7.15. Barela-Reynolds House Imported Ceramics, by Paste and Decoration.

| Decoration | No data | Porcelain | Refined Earthenware | Stoneware | Unrefined Earthenware | Yellowware | Total |
|---|---|---|---|---|---|---|---|
| Albany type slip and Bristol glaze | — | — | — | 2 | — | — | 2 |
| Annular, black and brown banded | — | — | 2 | — | — | — | 2 |
| Annular, blue and brown banded | — | — | 2 | — | — | — | 2 |
| Annular, blue and green banded | — | — | 7 | — | — | — | 7 |
| Annular, blue banded | — | — | 5 | — | — | — | 5 |
| Annular, brown banded | — | — | 1 | — | — | — | 1 |
| Annular, cream banded | — | — | 1 | — | — | — | 1 |
| Annular, gray and blue banded | — | — | 1 | — | — | — | 1 |
| Annular, green and blue banded | — | — | 1 | — | — | — | 1 |
| Annular, green banded | — | — | 2 | — | — | — | 2 |
| Annular, Mexican lead glaze, brown bands | — | — | — | — | 2 | — | 2 |
| Annular, Mexican lead glaze, green and brown bands | — | — | — | — | 2 | — | 2 |
| Annular, polychrome bands | — | — | 3 | — | — | — | 3 |
| Annular, red and black banded | — | — | 1 | — | — | — | 1 |
| Annular, red banded | — | — | 1 | — | — | — | 1 |
| Annular, salt glaze, orange and green banded | — | — | — | — | 1 | — | 1 |
| Annular, yellow and green banded | — | — | 1 | — | — | — | 1 |
| Black glaze | — | — | — | 2 | — | — | 2 |
| Brown glaze | — | — | 3 | — | — | — | 3 |
| Clear glaze (plain) | — | 7 | 207 | — | 1 | — | 215 |
| Edged, blue feathered | — | 1 | 8 | — | — | — | 9 |
| Edged, molded, blue, indeterminate design | — | — | 1 | — | — | — | 1 |
| Glaze, light blue | — | — | 3 | — | — | — | 3 |
| Glaze, yellow | — | — | — | — | — | 1 | 1 |
| Impressed, geometric design | — | — | — | — | 1 | — | 1 |
| Lustered, geometric design | — | — | 1 | — | — | — | 1 |
| Lustered, indeterminate design | — | — | 1 | — | — | — | 1 |
| Lustered, molded, floral design | — | 1 | — | — | — | — | 1 |
| Lustered, silver, floral design | — | — | 1 | — | — | — | 1 |
| Majolica, unknown | — | — | — | — | 9 | — | 9 |
| Majolica, unknown blue on white | — | — | — | — | 1 | — | 1 |

Table 7.15. Continued.

| Decoration | No data | Porcelain | Refined Earthenware | Stoneware | Unrefined Earthenware | Yellowware | Total |
|---|---|---|---|---|---|---|---|
| Majolica, unknown green and brown | — | — | — | — | 1 | — | 1 |
| Majolica, unknown green on white | — | — | — | — | 5 | — | 5 |
| Majolica, unknown orange and white | — | — | — | — | 1 | — | 1 |
| Majolica, unknown polychrome | — | — | — | — | 2 | — | 2 |
| Mexican lead glaze, brown | — | — | — | — | 11 | — | 11 |
| Mexican lead glaze, dark green | — | — | — | — | 32 | — | 32 |
| Mexican lead glaze, green and black | — | — | — | — | 1 | — | 1 |
| Mexican lead glaze, green and brown | — | — | — | — | 2 | — | 2 |
| Mexican lead glaze, green and light brown | — | — | — | — | 1 | — | 1 |
| Mexican lead glaze, orange | — | — | — | — | 2 | — | 2 |
| Mexican lead glaze, polychrome, geometric design | — | — | — | — | 2 | — | 2 |
| Mexican lead glaze, red and yellow, geometric design | — | — | — | — | 2 | — | 2 |
| Mexican lead glaze, yellow and brown | — | — | — | — | 1 | — | 1 |
| Mocha, dendritic, yellow and brown | 1 | — | 1 | — | — | — | 2 |
| Molded, geometric design | — | 1 | 5 | — | — | — | 6 |
| No decoration | — | — | — | 1 | 5 | — | 6 |
| Painted, black and green, floral design | — | — | 1 | — | — | — | 1 |
| Painted, black and green, indeterminate design | 1 | — | 1 | — | — | — | 2 |
| Painted, blue and black, indeterminate design | — | 1 | — | — | — | — | 1 |
| Painted, blue and green, floral design | — | — | 1 | — | — | — | 1 |
| Painted, blue, Asiatic design | — | 1 | — | — | — | — | 1 |
| Painted, blue, geometric design | — | — | 1 | — | — | — | 1 |
| Painted, blue, indeterminate design | 1 | — | 2 | — | — | — | 3 |
| Painted, flow blue, indeterminate design | — | — | 2 | — | — | — | 2 |
| Painted, green, floral design | — | 1 | 3 | — | — | — | 4 |
| Painted, green, geometric design | — | — | 1 | — | — | — | 1 |
| Painted, light blue, indeterminate design | — | — | 5 | — | — | — | 5 |
| Painted, light green, indeterminate design | — | 1 | — | — | — | — | 1 |
| Painted, light pink, indeterminate design | — | 1 | — | — | — | — | 1 |
| Painted, polychrome, floral design | — | 1 | 4 | — | — | — | 5 |
| Painted, polychrome, geometric design | — | — | 1 | — | — | — | 1 |

Table 7.15. Continued.

| Decoration | No data | Porcelain | Refined Earthenware | Stoneware | Unrefined Earthenware | Yellowware | Total |
|---|---|---|---|---|---|---|---|
| Painted, red, floral design | — | — | 1 | — | — | — | 1 |
| Painted, red, geometric design | — | — | 1 | — | — | — | 1 |
| Red glaze | — | — | 1 | — | 8 | — | 9 |
| Salt glaze, gray | — | — | — | 2 | — | — | 2 |
| Salt glaze, light brown | — | — | — | 1 | — | — | 1 |
| Sponged/Spattered, blue, indeterminate design | — | — | 2 | — | — | — | 2 |
| Sponged/Spattered, blue, non-figurative/abstract design | — | — | 3 | — | — | — | 3 |
| Sponged/Spattered, green, non-figurative/abstract design | — | — | 1 | — | — | — | 1 |
| Sponged/Spattered, red and blue, indeterminate design | — | — | 2 | — | — | — | 2 |
| Transfer, black, geometric design | — | — | 2 | — | — | — | 2 |
| Transfer, blue, architectural design | — | — | 1 | — | — | — | 1 |
| Transfer, blue, floral design | — | — | 4 | — | — | — | 4 |
| Transfer, blue, geometric design | — | — | 1 | — | — | — | 1 |
| Transfer, blue, indeterminate design | — | — | 1 | — | — | — | 1 |
| Transfer, blue, landscape design | — | — | 1 | — | — | — | 1 |
| Transfer, orange and black, indeterminate design | — | — | 1 | — | — | — | 1 |
| Transfer, purple and blue, Oriental design | — | — | 1 | — | — | — | 1 |
| Transfer, red, floral design | — | — | 2 | — | — | — | 2 |
| Unknown decoration | — | 2 | — | — | — | 1 | 3 |
| Yellow glaze | — | — | 1 | — | — | — | 1 |
| **Total** | **3** | **18** | **307** | **8** | **93** | **2** | **431** |

Undecorated whitewares are the most common decorative combination in the assemblage (*n* = 207, 48.03% of imported ceramic assemblage), followed by dark green lead-glazed wares from Mexico (*n* = 32, 7.42%), then brown lead-glazed wares (*n* = 11, 2.55%). All other decorative combinations are represented by less than 10 sherds, more often less than five sherds. The highly diverse but fragmented assemblage is not surprising given how much the site area has been disturbed over time.

The form of only 51 sherds (11.83%) was identified: 15 bowl fragments, 12 cups, 17 plates, 1 crock, 1 jar, and 5 unidentified serving dish fragments. There were 380 dish sherds whose form could not be identified. In addition to tablewares, the Barela-Reynolds house assemblage includes 45 other ceramic artifacts. There are 15 smoking pipe fragments, 20 brick fragments, 3 ceramic buttons, 2 tile fragments, 2 early insulators, 1 pendant, and 1 ceramic marble in the assemblage as well.

Fifty-eight sherds (13.45% of imported ceramics) have pastes and/or glazes that suggest they are Mexican lead-glazed wares, such as those described by Barnes (1980), and utilized throughout the nineteenth century. This is a high number compared to the other sites in the sample. LA 8671 contained three sherds (1.83% of imported ceramics), LA 4968 contained 27 sherds (2.83% of imported ceramics), and LA 160 contained none.

As described briefly in Chapter 5, Mexican lead-glazed wares, or *loza colorada*, were likely produced in many locations throughout Mexico and potentially southern Texas. Production was probably more widely distributed (and less controlled) than majolicas, however there is currently no evidence that it was produced in the El Paso area or southern New Mexico (Fournier 1997). Fournier (1999) also notes that towns near mining centers or along routes to mining centers often produced lead-glazed wares. Petrographic work suggests that production regions might be identifiable based on paste and temper characteristics. Four sherds from the Barelas-Reynolds assemblage that were examined petrographically had very fine pastes with almost no inclusions, which may mean they were produced near Mexico City or Puebla (Fournier 1997), although considerably more petrographic work is necessary for a confident identification.

Studies of store inventories and probate inventories in Chihuahua, Sonora, and New Mexico, indicate that Mexican lead-glazed ceramics had a similar economic value as other locally produced indigenous or Pueblo ceramics, which is to say, they were cheaper than Mexican majolicas and substantially cheaper than European or Asian ceramics (Fournier 1997). Unlike imported porcelains, which were almost exclusively used as serving wares, lead-glazed ceramics were used for a wide range of activities, including storage, housewares, serving, and cooking. One of the most common forms of lead-glazed wares observed in excavations at San Elizario, Texas is a small *jarro* used for serving hot chocolate and other hot beverages (Fournier 1997). Both wheel and mold forming techniques were used for lead-glazed wares, and both Spanish and indigenous forms were produced. Fournier (1997) notes that lead-glazed wares were mostly sold in markets and at *ferias* (trade fairs), and that Parral likely served as a distribution center to merchants returning to New Mexico. Lead-glazed wares may have served a similar functional and economic role that Puebloan matte paint polychrome serving wares (which are nearly absent in the Barela-Reynolds assemblage) did in the Santa Fe area. While Parral is more distant from Mesilla than Santa Fe, both locations are several hundred kilometers away. Accessing Mexican *loza colorada* suggests very different trade relationships than Puebloan matte paint polychrome.

*Metal.* As noted in Chapter 4, there are some irregularities regarding metal artifacts collected at the Barela-Reynolds house. However, in cases where catalog pages appear to be missing, field counts have been used to broadly characterize metal artifacts. A total of 1,659 metal artifacts collected from excavations date to prior to 1900 or could not be confidently identified as dating to later periods. The variety of metal artifact types recovered is considerable, however the majority are unidentified fragments (*n* = 690, 41.59%), nails (*n* = 428, 25.80% of metal artifacts), or unidentified thin plate metal, categorized as strap or strips (*n* = 363, 21.88% of metal artifacts) (Table 7.16). Remaining metal artifact types occur in quantities of less than 25. They include brad nails, screws, screw-on bottle caps, wire, slag, and other items. Functional categories represented by metal artifacts include Construction/Maintenance (30.08% of metal artifacts), Unassignable (67.27%), Indulgences, Food, Personal Effects, Arms/Ammunition, Domestic, Economy/Production, and even Entertainment/Leisure is represented by one metal jack.

*Glass.* Using the catalog analyses of the Barela-Reynolds house material is complicated for glass artifacts due to the high amounts of material from the site's twentieth century occupation. The person who initially analyzed the imported artifact assemblage from the site interpreted nearly all glass to be related to post-railroad activity and to date to 1880 or later. Because few manufacturing details about the glass were recorded to help differentiate pre-1900 artifacts, this 1880 date was used as the cut-off for glass artifacts. After this material is excluded, there are 1,617 fragments of glass remaining in the Barela-Reynolds house assemblage. Glass forms represented include bottle shards (*n* = 1,168), window glass (*n* = 320), lamp glass (*n* = 71), canning lids (*n* = 10), jars (*n* = 5), salt-shaker shards (*n* = 6), two marbles, and one each of a cup fragment, a button, a bowl, and a lightbulb. Sixteen glass artifact types were identified, and there were at least 15 fragments whose form could not be confidently identified.

Table 7.16. Barelas-Reynolds House Metal Artifacts, by Functional Category.

| Functional Category / Specific Function | Count |
|---|---|
| **Unassignable** | **1116** |
| Unidentified | 690 |
| Strap/strip | 363 |
| Bar | 17 |
| Lump | 12 |
| Wire | 9 |
| Ring | 4 |
| Cap | 4 |
| Slag | 3 |
| Bottle cap | 3 |
| Pipe | 3 |
| Brace | 2 |
| Square container | 1 |
| Handle | 1 |
| Rod | 1 |
| Coin? | 1 |
| Bearing | 1 |
| Pedal? | 1 |
| **Construction/Maintenance** | **499** |
| Nail, indeterminate | 428 |
| Screw | 24 |
| Brad nails | 22 |
| Wire | 7 |
| Bolt | 6 |
| Washer | 3 |
| Tacks | 2 |
| Wire mesh | 2 |
| Staple | 1 |
| Bolt and nut | 1 |
| Bar | 1 |
| Pipe | 1 |
| Saw blade | 1 |

| Functional Category / Specific Function | Count |
|---|---|
| **Indulgences** | **17** |
| Bottle cap (alcohol) | 17 |
| **Food** | **8** |
| Can | 8 |
| **Personal Effects** | **6** |
| Coin | 3 |
| Clothing snaps | 2 |
| Rivet | 1 |
| **Arms/Ammunition** | **6** |
| Cartridge | 4 |
| Shell casing | 2 |
| **Domestic** | **3** |
| Clothespin | 2 |
| Plate | 1 |
| **Economy/Production** | **2** |
| Wire mesh | 1 |
| Tack, indeterminate | 1 |
| **Furnishings** | **1** |
| Handle | 1 |
| **Entertainment/Leisure** | **1** |
| Jack | 1 |
| **Total** | **1659** |

Bottle glass is the most common glass artifact type at the Barela-Reynolds house. Glass colors were assigned during the initial analysis of the material and are represented here as they were recorded in the artifact catalog (Table 7.17). Amber is the most common color in the pre-1880 glass (45.14%), most likely because almost all clear glass in the collection was interpreted to post-date 1880. Light green glass is the next most common color (13.44%), followed by dark green (5.08%), green (2.23%), clear (1.49%), natural unclarified glass (1.24%), amethyst (1.24%), and multicolored (1.11%). All other colors, including pink, cobalt and aqua, appear in quantities under 10 fragments.

Table 7.17. Barela-Reynolds House Glass Bottle Artifacts, by Color.

| Color | Count | Percent |
|---|---|---|
| Amber | 729 | 62.41 |
| Light green | 217 | 18.58 |
| Dark green | 82 | 7.01 |
| Green | 37 | 3.17 |
| Clear | 26 | 2.23 |
| Amethyst | 20 | 1.71 |
| Natural | 20 | 1.71 |
| Multiple | 18 | 1.54 |
| Cobalt | 9 | 0.77 |
| White (milk) | 3 | 0.26 |
| No data | 2 | 0.17 |
| Aqua, Blue/Green | 1 | 0.09 |
| Light green | 1 | 0.09 |
| Pink | 1 | 0.09 |
| Beige and pink | 1 | 0.09 |
| Beige | 1 | 0.09 |
| **Total** | **1168** | **100.00%** |

*Other*. The Other material category for the Barela-Reynolds house assemblage is particularly ambiguous, due to the high amount of fragmentary material likely related to construction or remodeling of the buildings on the site. There are 372 artifacts in the assemblage classified as Other and which may date to 1900 or earlier. In some cases, such as with plastic artifacts or artifacts related to electricity, pre-1900 would represent the very earliest part of the artifact's potential production period. Building materials include asphalt, wood, and plaster. Materials related to household furnishings or heating include coal, charcoal, and cinders. Other category materials also include leather, rubber, potentially early period plastic, and aluminum.

*Functional Analysis.* Ten functional categories are represented in the Barela-Reynolds assemblage: Unassignable (*n* = 2,386, 60.87%), Construction/Maintenance (*n* = 846, 21.58%), Domestic (*n* = 465, 11.86%), Personal Effects (*n* = 64, 1.63%), Furnishings (*n* = 98, 2.50%), Indulgences (*n* = 32, 0.82%), Food (*n* = 16, 0.41%), Arms/Ammunition (*n* = 6, 0.15%), Entertainment/Leisure (*n* = 5, 0.13%), and Economy/Production (*n* = 2, 0.05%). The large Unassignable category is dominated almost equally by bottle glass fragments and unidentified scrap metal, however this is likely partially due to metal artifacts being unavailable for analysis and relying on field counts for some units, rather than artifact descriptions.

Within these broad functional categories, approximately 104 specific functions were identified (Table 7.18). The Unassignable category is the most diverse, with 38 specific functions. However, much of this diversity is due to very small amounts of highly

Table 7.18. Barela-Reynolds House Imported Artifacts, by Functional Category and Specific Function.

| Functional Category<br>Specific Function | Count |
|---|---|
| **Arms/Ammunition** | **6** |
| Cartridge | 4 |
| Shell casing | 2 |
| **Construction/Maintenance** | **846** |
| Asphalt | 2 |
| Bar | 1 |
| Bolt | 6 |
| Bolt and nut | 1 |
| Brad nails | 22 |
| Brick | 20 |
| Nail, Indeterminate | 428 |
| Pipe | 1 |
| Plaster | 1 |
| Saw blade | 1 |
| Screw | 24 |
| Shingle | 1 |
| Staple | 1 |
| Tacks | 2 |
| Tile | 2 |
| Washer | 3 |
| Window glass | 320 |
| Window trim | 1 |
| Wire | 7 |
| Wire mesh | 2 |
| **Furnishings** | **98** |
| Charcoal | 2 |
| Cinder | 5 |
| Coal | 13 |
| Electric plug | 1 |
| Electric wire | 1 |
| Handle | 1 |
| Insulator | 2 |
| Lamp | 71 |
| Light bulb | 1 |
| Tile | 1 |
| **Domestic** | **465** |
| Bowl | 16 |
| Canning lid | 10 |
| Clothespin | 2 |
| Crock | 1 |
| Cup | 13 |
| Jar | 3 |
| Plate | 18 |
| Salt shaker | 6 |
| Tumbler | 5 |
| Unidentified Dish, Serving or Eating | 336 |
| Unidentified Glassware | 6 |
| Unidentified Serving dish | 5 |
| Vessel, Indeterminate | 44 |
| **Food** | **16** |
| Bottle | 5 |
| Can | 8 |
| Jar | 3 |
| **Indulgences** | **32** |
| Bottle cap | 17 |
| Pipe | 15 |
| **Personal Effects** | **64** |
| Button, 2-Hole | 4 |
| Button, 3-Hole | 1 |
| Button, 4-Hole | 13 |
| clothing snaps | 2 |
| Coin | 3 |
| Comb | 2 |
| Leather | 3 |
| Pendant | 1 |
| perfume bottle | 3 |
| Rivet | 1 |
| Shoe | 31 |

Table 7.18. Continued

| Functional Category<br>Specific Function | Count |
|---|---|
| **Unassignable** | **2386** |
| "Fibrous gypsum" | 4 |
| Bamboo | 1 |
| Bar | 17 |
| Basalt | 1 |
| Bearing | 1 |
| Bottle | 1163 |
| Bottle cap | 3 |
| Brace | 2 |
| Burned wood | 1 |
| Cap | 5 |
| Chalk | 2 |
| Coin? | 1 |
| Dowel | 1 |
| Handle | 1 |
| Hose? | 1 |
| Indeterminate | 2 |
| Leather | 3 |
| Metal lump | 12 |
| Organic unknown | 5 |
| Paper liner | 1 |
| Pedal? | 1 |
| Pipe | 3 |
| Plaster | 8 |
| Plastic | 9 |
| Rod | 1 |
| Rubber | 21 |
| Shell | 1 |
| Slag | 4 |
| Slate | 1 |
| Square container | 1 |
| Strap/Strip | 373 |
| Tape | 1 |
| Tube | 2 |
| Unidentified | 714 |
| Wire | 9 |
| Unassignable (cont.) | |
| Wood | 3 |
| **Economy/Production** | **2** |
| Tack, Indeterminate | 1 |
| Wire mesh | 1 |
| **Entertainment/Leisure** | **5** |
| Jack | 1 |
| Marble | 3 |
| Rubber ball | 1 |
| **Total** | **3920** |

fragmentary material and some fragmentary organic material with tentative identifications, such as bamboo, adobe or clay, and chalk. Bottle glass makes up 48.74 percent of the Unassigned functional category. There are 20 specific functions within the Construction/Maintenance category, reflecting the series of expansions and construction projects on the property lots and a range of hardware and materials related to this. For example, 10.92 percent of the total artifact assemblage is nails. There are 13 specific functions within the Domestic category, which is less rich than LA 4968, despite the overall diversity of the Barela-Reynolds assemblage. This is likely in part due to more general analysis of the ceramic dishware, which did not identify specific serving forms such as teacups, saucers, or more specialized dishware. However, there are also fewer items such as knives and utensils, or glassware at the site. The Personal Effects category has 11 specific functions identified, mostly related to clothing. All other functional categories have less than 10 specific functions.

The Barela-Reynolds house is the latest site in the sample, with a complex ownership history and continuous occupation until the late twentieth century. While artifacts that clearly post-date 1900 were removed from the analysis, the large imported artifacts assemblage, with high amounts of bottle glass and construction/maintenance items, is characteristic of later American Territorial and post-railroad historic assemblages, particularly in railroad towns (Boyer 2004a). Site residents very likely consumed a wider range of goods packaged in bottles, jars and cans. The vessel glass at the site included condiments jars, perfume and medicine bottles, and cosmetic jars. More canned foods were also consumed at the site, reflecting greater availability and apparently greater consumption as the railroad terminus moved closer to New Mexico.

Residents at the Barela-Reynolds house also relied more on Mexican lead-glazed wares than any other site in the sample. These ceramics were produced throughout Mexico, but currently there is no evidence they were made in Mesilla/Las Cruces or nearby El Paso. While these are often interpreted as utilitarian wares, there is evidence that a broad range of forms, including household furnishings like candlesticks, cookware, storage, and tableware forms, particularly *jarros* (small mug-like pitchers), were produced and used throughout the nineteenth century (Fournier 1997). The lead-glazed wares at the Barela-Reynolds house are primarily hollowware forms and the vessel walls are thinner than those observed in olive jars (Fournier 1997). There are only four Pueblo historic polychrome sherds at the site and lower amounts of locally made polished wares in the Barela-Reynolds assemblage than the other sites in the sample. Lead-glazed ceramics may have functioned as impermeable or more elaborate serving ware at the site in a similar role as Pueblo historic polychromes at other sites. This may mean that Barela-Reynolds site residents had better access to Mexican pottery sources (such as markets in Parral) than Puebloan pottery sources.

*Question 3 Summary*

The imported artifact assemblages and functional analyses give us an idea of what imported goods residents at LA 4968, LA 160, LA 8671 and the Barela-Reynolds house were acquiring from merchants or other avenues of exchange, and how they incorporated these artifacts into their daily lives. Like other historic period excavations in New Mexico, these sites show that throughout the territory, imported materials were only a small portion of the material life of New Mexicans prior to the railroad (Barbour 2011; Boyer 2004a; Jenks 2011; Scurlock 2007). Imported artifacts make up between 3.04 percent (LA 160) and 23.89 percent (LA 8671) of the artifact assemblages (excluding animal bone) at the three sites with no railroad period component. At the Barela-Reynolds house, which was continuously occupied well after the railroad arrived in Las Cruces in 1881, 85.60 percent of the artifact assemblage consists of imported materials.

The assemblages are not perfectly representative samples. Excavations at LA 160 and LA 8671 were not comprehensive and the excavation and collection techniques used in the 1960s likely skewed some of the artifact proportions at these sites (Table 7.19). LA 160 has a high proportion of artifacts related to Personal Effects, and very little related to Domestic activities, such as tableware. This may be because a household midden was not sampled. LA 8671 stands out from the other three sites in the sample in many ways, most notably, it has a high proportion of imported ceramics and Domestic artifacts, but a much smaller proportion of artifacts related to Construction and Maintenance, possibly because excavators prioritized collecting datable ceramics, but considered glass (such as window glass) to be potentially intrusive.

Table 7.19. Imported Artifacts by Functional Categories (percent).

| | Arms Ammunition | Construction Maintenance | Domestic | Economy Production | Entertainment Leisure | Food | Furnishings | Indulgences | Personal Effects | Unassignable | Transportation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **4968** | 0.20 | 36.46 | 28.41 | 0.41 | 0.15 | 0.38 | 0.96 | 2.57 | 3.18 | 29.98 | 0.29 |
| **160** | 0.62 | 35.65 | 8.20 | 1.25 | 0 | 0.31 | 0 | 3.15 | 21.14 | 29.34 | 0.31 |
| **8671** | 1.96 | 7.84 | 57.19 | 0.65 | 0 | 1.31 | 0.65 | 11.11 | 3.59 | 15.36 | 0.33 |
| Barela-Reynolds house | 0.15 | 21.58 | 11.86 | 0.05 | 0.13 | 0.41 | 2.50 | 0.82 | 1.63 | 60.87 | 0 |

*Note:* The largest categories are highlighted in red, the second largest in yellow (excluding Unassignable).

The differences in functional categories and artifact distributions at each site also highlight changes in consumption through time, as the range of materials easily accessible from the Santa Fe Trail broadened through the late nineteenth century. LA 4968 and the Barela-Reynolds house are the earliest and latest sites in the sample. LA 4968 has primarily imported artifacts related to window glass and the outward appearance of the roomblocks, and ceramic tableware, used in serving and eating meals. The Barela-Reynolds house, which has the latest occupation in the project sample, also has the largest proportion of imported artifacts, particularly metal artifacts and glass bottles. Much of the metal is unidentified strips, many of which are very likely from canned food, and the glass bottles contained a range of alcoholic and non-alcoholic beverages, foods and condiments, and cosmetics, which were cheaper and more easily accessed as railroad stops came closer and closer to New Mexico and goods acquisition required less over-land travel.

There are also similarities in the imported artifact assemblages at the four sites. At all four sites, shoes and clothing fragments, particularly shoe parts, make up a substantial portion of the Personal Effects recovered. As demonstrated in the archival sample, shoes were one of the most frequently purchased items, even in the early Mexican Territorial period, but they were also generally very expensive. Clothing fixings and findings, whether from pre-fabricated clothes or as items for residents to make their own clothing from purchased cloth, were also present at all four sites. This indicates that even when site residents acquired very few imported items, such as at LA 160, they invested in shoes and clothing to augment locally made options, such as moccasins, wool, fur, and leather.

Glass was the most common material type at all of the sites except LA 8671, which may be due to the sampling problems described above. Glass almost always dominates assemblages at historic sites, largely due to the tendency of glass to become highly fragmented, rather that because it played a large role in New Mexicans' lives. LA 4968 and LA 160, both early sites in the sample, have substantial amounts of window glass in the assemblages. It appears that the selenite window coverings in both residences were replaced, potentially around 1840. This change would have been a highly visible investment, apparent to anyone who visited the homes. Replacing selenite with glass also would have changed the interior experience of the home by letting in more light and blocking drafts more effectively than cloth or wood coverings (Cox 1974).

Window glass only appeared rarely in the archival sample, and in small quantities that were probably special orders. It is unlikely window glass was typically available in stores or from travelling merchants in the territory. This implies that site residents or owners at LA 4968 and LA 160—potentially Vicente Valdez in both cases—utilized personal relationships with merchants to import the materials they wanted. Glass panes in particular may have needed a special order to ensure that the correct number and size of panes was received. The Barela-Reynolds house assemblage contained some window glass, but a much higher proportion of bottle glass, demonstrating the impact of the railroad on the availability and consumption of bottled goods in particular.

Alternatively, metal appears to be the most broadly incorporated material type. At all four sites the metal artifacts were highly diverse, both in terms of Functional Categories and specific functions. These materials were evidently highly valued by site residents as well: minor metal working, whether blacksmithing, or decorative tinworking, is suggested at LA 4968 (tinworking scrap), LA 8671 (slag and reused metal fragments), and the Barela-

Reynolds house (slag). Prior to broad availability via the railroad, it appears that metal items were commonly reworked or repaired as much as possible.

Functional analysis provides a way to assess how site residents were using imported artifacts, and to some extent to compare the diversity of artifacts among the sites. Artifacts at each site were sorted into one of eleven broad functional categories and assigned a specific function. "Unassignable" is the broad functional category used when the use of an artifact could not be confidently determined. This is often one of the largest categories at any historic site and is generally dominated by bottle glass that may be alcohol or soda (Indulgences), condiments (Food), or cosmetics (Personal Effects). In much of the following discussion LA 8671 is an outlier that has very different proportions than the other three sites in the sample, most likely due in part to sampling bias. More work is needed on nineteenth century sites in central New Mexico to fully understand what the observed differences mean in terms of market access, socioeconomic class, and consumer choices of the residents at LA 8671.

Construction and Maintenance artifacts, which include goods related to residential architecture, such as window glass, roof slate, brick, and window frames, and the tools and hardware needed to install or maintain building renovations, such as hammers and nails, bolts, and brads, are a major functional category at LA 4968 (36.46%), LA 160 (35.65%), and the Barela-Reynolds house (21.58%). As discussed above regarding window glass, when market access improved with the Santa Fe Trail, residents at LA 160 and LA 4968 primarily invested in items for the structural upkeep and appearance of their homes, particularly replacing selenite windowpanes with window glass. Architectural historians have noted the changes in New Mexico vernacular and public architecture and the emergence of the Territorial style that occurred during the Mexican and American Territorial periods. This style takes advantage of new materials that were available via the Santa Fe Trail and later the railroad, such as milled wood and increasing amounts of metal hardware. It also incorporates elements of Greek Revival style into traditional adobe forms as New Mexicans expanded and remodeled their existing homes (C. Wilson 1991). Windows became larger during this period, probably due to the increased availability of glass panes, with pedimented frames and brick or wood sills.

At LA 4968 and the Barela-Reynolds house, Domestic is the second largest functional category (discounting Unassignable). At LA 160 it is the fourth largest category, and at LA 8671 it is the largest category. At each site this was also a diverse category, due to the range of dish forms that were recovered. However, imported ceramics and domestic items played a relatively small role at each site in comparison to locally made New Mexican ceramics. While site residents certainly used imported dishes, particularly plates, paste-decoration combinations suggest that the dishes were acquired intermittently, and potentially from informal sources (through barter) or small-scale merchants. Residents did not invest in matched sets, nor did they acquire many teacups or saucers or other specialized forms that proliferated in other parts of the U.S. during the Victorian period (Brighton 2011). The small sample of vessel forms that could be identified at each site suggests that white refined earthenware ceramics from British and American sources were used differently than Mexican majolica or lead-glazed wares. Pearlware ceramics were more often plates and flat forms, and other refined whitewares were bowl or cup forms, while Mexican lead-glazed wares were more often hollow forms such as bowls and some drinking vessels and the large majolica sample from LA 4968 was mostly plates and flat forms. Locally made New Mexican ceramics at each site were also almost exclusively hollowware jars and bowls, with only small percentages of soup plates.

Some functions are not well-represented at the sites, which is also informative. The Barela-Reynolds assemblage has no artifacts relating to keeping livestock at the site, either for food or transportation. While many personal effects were found, LA 160 had no artifacts related to home furnishings and decorations, and LA 4968 and 8671 had very few, suggesting that this category of goods was not easily available from Santa Fe Trail imports until later periods when the railroad had come closer and overland packing was minimized. Arms and ammunitions are also poorly represented at all four sites, indicating that despite historical accounts of regular violence and clashes with nomadic tribes, Hispanic households across the territory did not have easy access to firearms. LA 4968, with seven artifacts, has the greatest quantity, but three of these are metal arrowheads. Based on morphological characteristics, Boyer (2012) thinks these arrowheads were most likely Apache-manufactured.

## Conclusions

In this chapter I have used both archival and archaeological evidence to begin to answer three main questions: 1) what goods were imported into the New Mexico Territory? 2) How did goods circulate throughout the territory? 3) What imported goods did site residents acquire and how did they incorporate them into their daily lives? The answers to these questions help to contextualize the imported artifact assemblages from each site and lay a foundation for comparing the four sites in the sample. During most of the nineteenth century, imported materials were costly compared to locally produced goods, and not all of the sites were located close to market centers where they would have had easy access to merchants and a selection of products. The imported materials represent investment of time and resources. They also reflect social relationships leveraged by site residents to access markets and imported goods. Finally, the acquisition and use of imported materials was a daily practice that was shaped by changing identities within nineteenth century New Mexico. What goods site residents consumed, how they were acquired and how they were used indicates whether site residents maintained locally or regionally oriented identities.

The archival sample of merchant ledger books and bills of lading analyzed here gives some quantitative understanding of the range of imported goods in the New Mexico territory. The sample shows what goods were imported the most, what goods cost the most and least, and how prices and availability changed between 1830 and the 1870s. Fabric, sewing materials, and pre-fabricated clothing and shoes were some of the most common and expensive items imported into the New Mexico territory throughout the nineteenth century. These items, particularly shoe parts, were found at all four sites in the sample, indicating that site residents also valued these materials and prioritized acquiring them. The archival sample also demonstrated that imported goods grew cheaper and more diverse over time due to changes in production technology and transportation networks, so that by the 1870s, the cost of ceramic dishware, for example, had fallen well below the cost of pre-fabricated clothing, tools, and many other types of common goods. However, despite increasing availability, some items, such as household furnishings, some leisure items like musical instruments, and window glass were never in high demand and apparently were only acquired through special orders. This implies that for some imported goods, a personal relationship with a merchant was needed to place an order (likely on credit) and receive it up to a year or more later.

Manuel Alvarez, Elsburg and Amburg, José Chávez, and other top-tier merchants imported the bulk of goods into the territory. They used their social connections with retailers and bankers in the eastern U.S. to make large purchases, often on credit, and resold these items to local stores run by agents, or to other lower-tier merchants in New Mexico. These sales also were often made on credit, to be paid with wool, sheep, or agricultural crops that the merchants could then sell to U.S. forts or eastern buyers for cash. Top-tier merchants were integrated closely with one another across the territory through social ties of family and marriage. Small-scale merchants, however, most likely only participated in commercial activity intermittently, and it was only one activity among a range of other economic pursuits.

Merchant activity and imported goods were not distributed evenly across the territory or through time, however. Census records in combination with county commercial license records provide an idea of commercial activity within the three site regions—Santa Fe County, Bernalillo County, and Doña Ana County. Santa Fe County had the greatest amount of activity, both in terms of value of merchandise imported by merchants, and the number of merchants active. However, it appears that Hispanic merchant activity in this county peaked in 1870, followed by a steep decline. Bernalillo County had the next highest amount of merchant activity, and based on census data, it appears that more Hispanic merchant activity and wealth was concentrated in Bernalillo County and areas directly south. This activity appears to have peaked in the 1860s and gradually declined after that. Doña Ana County had the least amount of documented commercial activity but the highest proportion of European American merchants in the archival sample, and a steep increase after the railroad arrived in 1881.

Market access and merchant activity do not guarantee that site residents developed relationships and acquired imported goods from every merchant available. Site assemblages tell us more about the consumption choices residents made. Artifacts related to shoes and clothing dominated the Personal Effects category at all four sites and it is clear these items, while costly, were priorities for New Mexicans across the territory. Additionally, while glass was the most common material type at all sites (except LA 8671), it appears that metal goods were imported for the widest range of activities and were likely curated or repaired for ongoing or new uses.

The assemblages are not perfectly representative samples. Both excavation sampling procedures and chronological differences create differences in the imported assemblages among the four sites. Excavations at LA 160 and LA 8671 were not comprehensive and the excavation and collection techniques used in the 1960s skewed some of the artifact proportions at these sites. LA 160 has a high proportion of artifacts related to Personal Effects, and very little related to Domestic activities, such as tableware. This may be because a household midden was not sampled. LA 8671 stands out from the other three sites in the sample in many ways, most notably, it has a high proportion of imported ceramics and Domestic artifacts, but a much smaller proportion of artifacts related to Construction and Maintenance, possibly because excavators prioritized collecting datable ceramics, but considered glass (such as window glass) to be potentially intrusive. The Barela-Reynolds house, which has the latest occupation in the project sample, also has the largest proportion of imported artifacts (85.60%), particularly metal artifacts likely related to canned food and glass bottles, which were cheaper and more easily accessed after the railroad arrived.

To assess how invested site residents were in consuming imported goods and maintaining regional relationships with merchants, we can look at what kinds of products were imported and assess how integrated they were into daily life. One way to assess this is by comparing assemblage diversity among the four sites. An assemblage with a highly diverse array of specific functions suggests that imported artifacts were incorporated into many aspects of daily life, and the goods may have been acquired from many merchants or in many separate purchases. A limited range of specific functions suggests that imported goods were acquired only to solve specific problems, and their effect on daily life was minimal.

Comparing diversity can be approached in two ways: richness and evenness. Richness is the number of different types in a population, such as the number of species in a vegetation survey plot, or in this case, the number of specific functions identified. Evenness is how the population is distributed across different types: are most of the plants just one species, with only a few representatives of the others (an uneven population)?

Table 7.20 shows the distribution of the imported artifact assemblages by functional category and the distribution of specific functions, by functional category at each site. Using raw numbers, the Barela-Reynolds house appears to have the richest diversity, with 104 specific functions. However, 36.53 percent of these specific functions are within the Unassignable category, which includes things like 'tube' and 'organic unknown.' If the Unassignable category is dropped, LA 4968 has the richest diversity, with 86 specific functions. However, richness is highly sensitive to sample size and the Barela-Reynolds house also has the largest sample of imported artifacts (*n* = 3,920). LA 160 and LA 8671, which have very similar assemblage sizes (318 and 303 artifacts, respectively) also have a similar number of specific functions identified. Looking at the distribution of artifacts by functional category shows that the relationship between sample size and richness is not linear—at three of the four sites, the largest and second largest functional categories are not necessarily the most diverse, although the Construction and Maintenance and Domestic categories have some level of prominence at all four sites. These categories warrant closer inspection.

Table 7.20. Top: Artifacts by Functional Category (percent) Bottom: Specific Functions by Functional Category (count).

| | Arms Ammunition | Construction Maintenance | Domestic | Economy Production | Entertainment Leisure | Food | Furnishings | Indulgences | Personal Effects | Unassignable | Transportation | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4968 | 0.20 | 36.46 | 28.41 | 0.41 | 0.15 | 0.38 | 0.96 | 2.57 | 3.18 | 29.98 | 0.29 | 100.00 |
| 160 | 0.62 | 35.65 | 8.20 | 1.25 | 0 | 0.31 | 0 | 3.15 | 21.14 | 29.34 | 0.31 | 100.00 |
| 8671 | 1.96 | 7.84 | 57.19 | 0.65 | 0 | 1.31 | 0.65 | 11.11 | 3.59 | 15.36 | 0.33 | 100.00 |
| Barela-Reynolds house | 0.15 | 21.58 | 11.86 | 0.05 | 0.13 | 0.41 | 2.50 | 0.82 | 1.63 | 60.87 | 0 | 100.00 |
| | | | | | | | | | | | | |
| 4968 | 5 | 14 | 23 | 5 | 2 | 1 | 3 | 3 | 26 | 14 | 4 | 100 |
| 160 | 2 | 7 | 9 | 1 | 0 | 1 | 0 | 2 | 5 | 6 | 1 | 34 |
| 8671 | 2 | 2 | 10 | 2 | 0 | 2 | 2 | 1 | 4 | 4 | 1 | 30 |
| Barela-Reynolds house | 2 | 20 | 13 | 2 | 3 | 3 | 10 | 2 | 11 | 38 | 0 | 104 |

*Note:* The largest/richest categories are highlighted in red, the second largest/richest in yellow (excluding Unassignable).

Evenness is more resistant to impacts from sample size, although it may be more problematic with small samples (Kintigh 1989; McCartney and Glass 1990). I used the Shannon Index to calculate a measure of evenness among the specific functions within the Construction and Maintenance category for each site and among the paste-decoration combinations of decorated tableware present at each site. The Shannon Index (J) produces an index number between 0 and 1, where 1 represents complete evenness (an equal quantity of artifacts in each specific function), and 0 the opposite (where only one function is present). A high level of evenness among Construction and Maintenance artifacts suggests that the site residents consistently acquired a wide variety of imported goods that were integrated into many different tasks, whereas a low level of evenness suggests that items were acquired specially to solve a particular problem and were not regularly integrated. Among decorated tableware, evenness has different implications. Evenness of decorative types in ceramics has been used as a measure of matched sets (Cromwell 2017), but these are unlikely in any of the site assemblages here. Instead, a higher level of evenness may suggest that ceramics were acquired through regular, small purchases, whereas a lower level of evenness indicates that at least some ceramics are matching, and more ceramics may have been acquired from a single source or within a single purchase.

The Shannon Index results for the Construction and Maintenance category at each site indicate that in general, artifacts are not very evenly distributed across the specific functions (Table 7.21). LA 160, which has seven specific functions within the Construction and

Table 7.21. J Index Values for Specific Functions within the Construction and Maintenance Functional Category.

| Site | # of specific functions | J index |
|---|---|---|
| 4968 | 14 | 0.37840 |
| 160 | 7 | 0.32359 |
| 8671 | 2 | 0.54356 |
| Barela-Reynolds house | 20 | 0.40479 |

*Note*: 0 represents minimum evenness (i.e. only one function is represented) and 1 represents perfect evenness.

Maintenance group, has the lowest index score—i.e. the least even distribution. This is because over 85 percent of the category is made up of window glass. LA 4968, which has the next lowest index score, shows a similar circumstance, where 42.16 percent of the category is window glass, and 51.44 percent is selenite fragments from windowpanes. As discussed above, this seems to indicate that while LA 4968 has a high richness of specific functions for imported artifacts, and a large sample size, but residents at these two earlier sites were not actually integrating a wide range of imported materials into their daily lives. Rather, they focused on specific changes, such as window glass. This suggests residents (or the property owner, Vicente Valdez) utilized a personal relationship with a merchant to make special orders for windowpanes. This is a costly and highly visible form of consumption for site residents. If it was accompanied by other changes to the homes, such as Greek Revival styling around the windows and doors, it may demonstrate their and engagement with broader American ideals for domestic architecture. However, it does not appear that site residents made substantive changes to their personal possessions or private lives.

The Barela-Reynolds house has the third lowest index score, but despite having the greatest richness within the Construction and Maintenance category, the assemblage is still fairly uneven. LA 8671 had the most even artifact distribution within Construction and Maintenance. However, at this site only two specific categories were identified within this group, and the site had an unusually low proportion of artifacts within the Construction and Maintenance group generally, probably due to bias in the excavation and collection practices.

Unlike Construction and Maintenance, the decorated ceramics show very high levels of evenness (Table 7.22). This was expected, since at all four sites most paste-decoration

Table 7.22. J Index Values for Paste-decoration Combinations in Decorated Ceramics.

| Site | # of Decorated sherds | # of Paste-decoration combinations | J index |
|---|---|---|---|
| 4968 | 625 | 136 | 0.83259 |
| 160 | 17 | 15 | 0.98599 |
| 8671 | 66 | 23 | 0.90777 |
| Barela-Reynolds house | 210 | 89 | 0.88208 |

*Note*: 0 represents minimum evenness (i.e. only one function is represented) and 1 represents perfect evenness.

categories were only represented by a few sherds, suggesting almost no likelihood of matched sets, and intermittent acquisition. A comparison among the four sites shows that LA 4968 had the most 'skew' despite having the largest sample size and greatest richness of types. This is apparently driven by higher amounts of white refined earthenware blue banded annular wares, and unknown green-on-green majolica sherds. Annular wares, or 'dipt wares' as they were commonly called in potters' inventories, were some of the most common decorated wares exported from Britain to the United States. After about 1840, blue was by far the dominant color. The Maryland Archaeological Conservation Lab describes them as "almost always found in hollow utilitarian vessel forms—mugs, pitchers/jugs, bowls and chamber pots" (Samford and Miller 2002) as they are at LA 4968—71.01 percent were bowls. It appears that while residents at LA 4968 were able to purchase more matching ceramics than any other site in the sample, the "matched" wares were one of the most common and affordable minimally decorated types available at the time. Most likely, blue-banded annular wares could be found in any merchant's inventory time and time again and they could be gradually accumulated. This pattern seems to be in direct contrast to the merchant relationship suggested by the window glass.

The Barela-Reynolds house decorated ceramics show the next highest index score for evenness (though the assemblage still has very little to suggest matching wares). In this assemblage the "evenness" is driven by the large amount of dark green Mexican lead-glazed earthenwares. These ceramics are 15.24 percent of the decorated wares overall, while the next largest group is brown Mexican lead-glazed, then unknown majolicas. Clearly Mexican decorated wares, rather than British or American whitewares were an important part of the dishware at the Barela-Reynolds house.

The Shannon Index for decorated ceramics suggest that, among the four sites in the sample, LA 4968 and the Barela-Reynolds house have the greatest likelihood for more matched dishware. However, the particulars of what dishes may be matching or near-matching and the roles these dishes may have had at the table are very different at each site. At LA 4968, imported ceramics comprised only 1.12 percent of all the ceramics recovered at the site. It is unlikely that residents in the Valdez household regularly served their meals into individual, matching place settings.

It is far more likely that most meals were soups or stews made from sheep or goat meat, or (less often) dried beef (Moga and Moore 2018). The meals would have been served in Puebloan polychrome or polished ware bowls and cooked in mica-slipped jars and deep bowls. There were enough New Mexican-made ceramics at the site cook and serve meals to large groups, possibly work parties or the extended family and servants or slaves in the household (if any were present). The family owned what was probably only a small number of "matched" settings in plain whiteware (of various paste types) and blue annular ware ceramics, which they could have used infrequently to entertain a small number of guests. These wares were likely gathered intermittently through small, affordable purchases and because the designs were so common, they could easily be replaced with a "match" purchased from any merchant. The archival sample indicated that while top-tier merchants like Felipe Chávez purchased ceramics in large lots, most merchants only felt the need to acquire a dozen or half dozen settings in a year.

The Valdez family also owned a small amount of more elaborated decorated European wares, such as sponge-decorated wares and a few transferwares, but probably only one or two dishes of each type. In other settings, archaeologists have observed that family table settings tended to be matched sets of plain white dishes (to symbolize moral purity) and teawares used for entertaining tended to be more elaborately decorated and likely to display the household's wealth (DiZerega Wall 1991; Wilkie 2003). The LA 4968 household may have retained New Mexican made wares for their intimate family meals, majolica green-on-green plates and Puebla blue-on-white small cups for serving chocolate to elite Hispanic guests, and plain or blue annular near-matching tableware on the rare occasions they served European Americans meals. This likely happened on at least a few occasions, since María de la Paz married an Irish-American soldier, John Conway, and the family likely also had connections to at least one merchant to place orders for window glass.

At the Barela-Reynolds house, imported ceramics comprise 39.54 percent of the total ceramics recovered at the site. Given that only a small percentage of the New Mexican made ceramics at the site were polished and only four sherds were polychromes, it is likely that the majority of servingwares used for eating meals at the site were cheaper imported glazed whitewares, or Mexican lead-glazed wares, with some American or British painted and dipt wares as well. New Mexican made ceramics were used for food and water storage, and some cooking, rather than serving and eating. Meals at the Barela-Reynolds house would have included purchased cuts of meat rather than home-butchered, and had more canned foods, bottled condiments, and bottled water and alcohol than the other sites in the sample. After the late 1860s it is unlikely that the Reynold or Griggs families consumed meals at the site, as they had moved to other Territorial style homes a few streets away, as had Mariano Barelas and his family. However, store clerks, employees, or servants and their families may have continued to live at the property, in rooms behind the plaza-front stores.

LA 160 and LA 8671 assemblages both demonstrate near perfect evenness. While at LA 160 this may be due to the small sample size and lack of domestic refuse generally, at LA 8671 the high proportion of ceramics in the imported assemblage (50.16% of imported artifacts) is an indication that imported ceramics are over-represented and were targeted for collection during excavation. High diversity in the assemblage regardless of the proportionately large sample size suggests that residents at LA 8671 may have had particularly erratic or diverse acquisition of ceramics, either from a wide range of merchants, or frequent small purchases year after year when inventories differed.

Residents at each site in the sample developed daily practices around the acquisition and consumption of products imported from outside the New Mexico territory. These goods were acquired from merchants or traders, and residents' access was determined by market access (number and proximity of merchants with inventory) and social relationships that allowed them to negotiate purchases, whether through cash payments, credit, or barter, with these merchants. What goods were acquired, and how they were consumed and integrated into daily life, was in part shaped by whether site residents were oriented towards local or regional identities and social networks. Several factors were considered when interpreting whether consumption practices at a site were local or regional in orientation: the proportion of imported artifacts relative to local artifacts at a site, market access in the site region, the richness of artifact types (specific functions and ceramic types), and the evenness of the distribution of artifact types within the Construction and Maintenance functional category and among decorated ceramic types. Each of these factors is influenced by railroad access during the site occupation period and excavation sampling techniques.

LA 4968 is located within Santa Fe County, which as the highest levels of merchant activity (114 individual names in 1850, 33% of which were Hispanic surnames) and, along with LA 160, has greatest market access among sites in the sample. Although LA 4968 has only 3.89 percent of imported artifacts in its assemblage, this proportion is not unusual for northern New Mexican sites prior to the arrival of the railroad. Basic comparison of assemblage richness suggests that LA 4968 may have had the most diverse imported artifact assemblage among the sample sites, even though it is also one of the earliest sites in the sample. However, closer examination of the assemblage evenness, particularly within the Construction and Maintenance category and decorated ceramics, shows that residents at LA 4968 tended to consume large quantities of specific items, such as window glass, and very little of other specific functions. This suggests that imported goods were in fact only integrated into specific, carefully chosen aspects of daily life, such as the windowpanes of the roomblocks at the site, while investment in other materials, such as ceramic dishware, was minimal and intermittent.

LA 160 most likely had similar market access as LA 4968, and imported goods represent a similar proportion of the overall assemblage (3.54%). However, because of the small sample size, consumption patterns are harder to discern at this site. Most of the imported artifact assemblage is from 1959 excavations led by Stewart Peckham, and it does not appear that he was able to sample a domestic refuse midden. Instead, the assemblage is dominated by Personal Effects such as shoe tacks, collected from units within the roomblock.

However, like LA 4968, it appears that residents at LA 160 also acquired glass windowpanes for the roomblock windows, possibly at a similar time period. This suggests investment in the outward appearance of the architecture at the site, and a personal relationship with a merchant to special-order the panes.

LA 8671 is an outlier in the site sample for several reasons: it contains a higher proportion of imported goods (23.89% of total assemblage) than LA 4968 and LA 160, despite being occupied during approximately the same time period (1830s to 1870s) and most likely by residents of a lower economic class. Furthermore, LA 8671 was located in the region with the least market access, in terms of proximity to major market centers and merchant activity in the county. However, unlike the other sites in the sample, LA 8671 had a surprisingly low proportion of artifacts related to Construction and Maintenance at the site, and a high proportion of Domestic artifacts. Furthermore, the decorated ceramics at LA 8671 were the second most-diverse (in terms of evenness) in the site sample. This may mean that residents were only able to acquire small numbers of ceramics at a time, but they did so frequently or from a larger array of sources. Coupled with the diversity and high proportion of tuff-tempered New Mexican ceramics at the site, discussed in Chapter 5 and 6, it is possible that the imported wares were acquired during purchasing trips to Santa Fe. Evidently residents at LA 8671 prioritized acquiring imported ceramics, even when it was difficult to do so, but did not incorporate imported goods into many other realms of their daily lives, such as architecture.

The Barela-Reynolds house is the latest site in the sample, with an occupation that extended after the arrival of the railroad in 1881, and into the twentieth century. The size of the imported assemblage reflects this major change in material availability: imported artifacts make up 85.60 percent of the overall assemblage. The Barela-Reynolds house property was partially owned by top-tier European American merchants from the 1860s onwards, although the merchants themselves maintained their residences in Territorial style homes nearby instead of on-site. The site's ownership and location directly on the Mesilla plaza, amid several other merchant stores, likely gave residents excellent market access, despite the overall lower merchant activity in Doña Ana County. However, in some ways the assemblage appears similar to LA 160 and LA 4968. For example, Construction and Maintenance and Domestic artifacts dominate the imported assemblage. Unlike the Cuyamungue sites, however, the construction materials are more diverse than window glass, with an array of nails and adobe fragments as well. The decorated ceramics are also "more diverse" in that they are more evenly distributed across types than at LA 4968, but less diverse than at LA 8671 due to the high numbers Mexican lead-glazed wares and majolicas.

This chapter begins the process for developing consumer profiles of the four sites in the sample, based on the imported artifacts at each site. Looking at imported artifact assemblages, market access and merchant ledgers, we can see that residents at each of the four sites in the sample developed their own strategies for accessing and consuming imported materials from Europe, the eastern United States, and Mexico. In the final chapter, this information will be combined with local New Mexican ceramics data from Chapters 5 and 6 to develop complete consumer profiles for each site and place them in context with our broader understanding of nineteenth New Mexico to understand changes in local and regional identities.

# Chapter 8: Consumer Profiles

Chapters five through seven provided a close examination of the historic New Mexican ceramics and imported artifacts at each of the four sites in the project sample. The results from each type of analysis provided complex and sometimes contradictory views into consumption at each site. Chapter 5 presented a technological analysis of New Mexican ceramics at each stage of production, from clay selection to firing. A simple consideration of the variation at each individual stage of production suggested that LA 8671 had the greatest diversity of technological styles and possible pottery sources, and the ceramics at the Barela-Reynolds house had the least. Chapter 6 added complexity to this picture by considering whole constellations of techniques as multivariate clusters to identify microstyles. When the full suite of technological characteristics was considered, the greatest number of microstyles were identified in the Barela-Reynolds assemblage, and LA 4968 had the least. Finally, Chapter 7 considered imported artifacts and several measures of diversity. These data indicated that LA 160 and LA 4968 incorporated imported items into their daily lives the least, and probably relied on local merchant connections to acquire them. Conversely, LA 8671 had a high proportion of imported artifacts with a high amount of diversity. Site residents here may have been relying on a broader network of merchants, potentially extending north to Santa Fe.

These different characteristics of the material assemblages at each of the four sites in the project sample show considerable variety in Hispanic household consumption strategies and material culture during the Mexican and American Territorial periods. Considering each material type individually also showed variation within strategies at each site, and ways that consumption patterns for local and imported goods may be interrelated. However, considering these artifact classes individually only gives partial pictures of consumption for each household. The rest of this chapter will bring the results of these different analyses together to develop consumer profiles for each site and interpret how they might reflect consumer relationships and Hispanic identity within the model presented in Chapter 3.

Chapter 1 detailed how New Mexican archaeology dealing with Hispanic identity is challenged by a lack of detailed excavation and research in the Territorial periods, frameworks that do not adequately consider scale, and insufficient comparative research. To address scale, this dissertation uses a model that places vecino and regional Hispanic identities on a spectrum of scale (symbolized as "local→regional spectrum") wherein vecino identity operated on a close, local scale, and Hispanic ethnicity tied people together at a regional or even territorial scale. How people prioritized different identities shaped their daily practices of acquiring and using material culture. New Mexicans needed to create and maintain consumer relationships to acquire tools to build their homes, to tend their fields and raise their livestock, and to acquire pottery to store their water and cook and serve their food. The material goods New Mexicans chose to acquire and who they acquired them from reflects how they defined themselves with and against other identities on the landscape. In considering the daily practices of acquisition and consumption of material culture—behaviors that are very visible to archaeologists—there is an opportunity to understand regional Hispanic and/or local vecino identity in the daily lives of typical New Mexicans during the tumultuous nineteenth century.

Consumer profiles were developed for each site to place them on the local→regional spectrum as a basis for comparisons among them. Table 8.1 details the specific material expectations for local vecino and regional Hispanic consumer relationships. Consumer profiles are built from multiple lines of evidence, which are drawn from analyses of New Mexican ceramics and imported artifacts and framed in terms of the number and distance of consumer relationships. A profile with a few, proximate material sources suggests that site residents invested in more personal, direct consumer relationships. A profile with many, distant material sources suggests that consumer relationships were impersonal or indirect. It shows site residents prioritized a range of consumer relationships and social networks outside their local vecino community.

Table 8.1. Characteristics of Consumer Profiles.

| Artifact Class | Emphasizing Local Vecino Relationships | Emphasizing Regional Hispanic Relationships |
|---|---|---|
| New Mexican Ceramics | New Mexican ceramics show few microstyles, suggesting regular acquisition from just a few production groups or families.<br><br>New Mexican ceramics are almost entirely from local producers. | New Mexican ceramics show greater variety in microstyles, suggesting no consistent relationships with producers.<br><br>More ceramics from multiple regions of New Mexico, suggesting emphasis on long distance consumer relationships or a greater disconnect between producer and consumer. |
| Imported Ceramics, Glass, Metal | Fewer imported goods, especially in relation to regional market access.<br><br>Imported goods represent a limited range of functions.<br><br>Local modifications and repurposing of imported goods to fit local needs | A high proportion of imported goods.<br><br>Imported goods are from a variety of sources.<br><br>High diversity of imported goods.<br><br>Goods used in a public setting are aligned with U.S. or Mexican status and citizenship narratives. |

These are not hard and fast ‘rules’ for interpretation of material remains at the four sites, or at historic Hispanic sites in New Mexico generally. The archaeology at each site must still be considered first within its own context. Furthermore, the results are never consistently ‘local’ or ‘regional’ across all lines of evidence. This is not surprising, as the two classes of artifacts—New Mexican ceramics and imported materials (which can span anything from furniture nails to perfume bottles)—are used in different ways and accrue different social meanings. Local and regional identities are mediated by other social identities, especially gender, age, and class. Therefore, each profile must consider the individual characteristics and artifact biographies present, which give additional detail and context to characterizing consumer practices.

## Results

Consumer profiles for each site are summarized in Table 8.2 and graphically represented in Figure 8.1. They show at least three, possibly four different consumer strategies. LA 4968 has the most emphasis on local consumer relationships, which was surprising. The site was occupied by an upper-class family and located only 26 kilometers from Santa Fe, the economic and social hub of the territory. Residents had the social opportunity and economic ability to acquire a wide range of goods from throughout the territory and abroad. LA 160 also has a consumer profile that prioritizes local relationships, however the artifact assemblage represents an incomplete sample, especially in terms of imported artifacts. The Barela-Reynolds house in Mesilla is another upper-class residence owned by top-tier merchants who would have been well-connected to acquire a range of imported and New Mexican-made goods. It appears that unlike the Cuyamungue sites, they did maintain relationships with a high number of ceramic production groups in the area and were oriented towards Mexico for imported ceramic serving wares. LA 8671 was the most surprising. This site is marginal both in terms of market access and the economic standing of the occupants. However, this is the second-most regional consumer profile of the sample,

Table 8.2. Comparison of Consumer Profiles.

| Site (profile type) | New Mexican Ceramics | | Imported Artifacts | | | | |
|---|---|---|---|---|---|---|---|
| | Microstyles | Clay Recipes | Imported Artifacts (% of total) | Imported Ceramics (% of ceramic total) | Functional Groups | Specific Functions | Merchant Licenses |
| LA 160 (upper-class local, incomplete) | 6–7 | 6–7 | 3.54 | 0.25 | 9 | 34 | 1850: 114 (33% Hispanic)<br>1862: 113 (48% Hispanic)<br>1893: 165 (36% Hispanic) |
| LA 4968 (upper-class local) | 5–6 | 5–6 | 3.89 | 1.12 | 11 | 100 | 1850: 114 (33% Hispanic)<br>1862: 113 (48% Hispanic)<br>1893: 165 (36% Hispanic) |
| LA 8671 (lower-class regional, Santa Fe orientation) | 6 | 6 | 23.89 | 12.17 | 10 | 30 | 1853: 21 (89% Hispanic)<br>1883: 128 (24% Hispanic) |
| Barela-Reynolds House (upper-class regional, Mexico orientation) | 7–9 | 4 | 85.60 | 39.54 | 10 | 104 | 1853: 38 (50% Hispanic)<br>1889: 135 (25% Hispanic) |

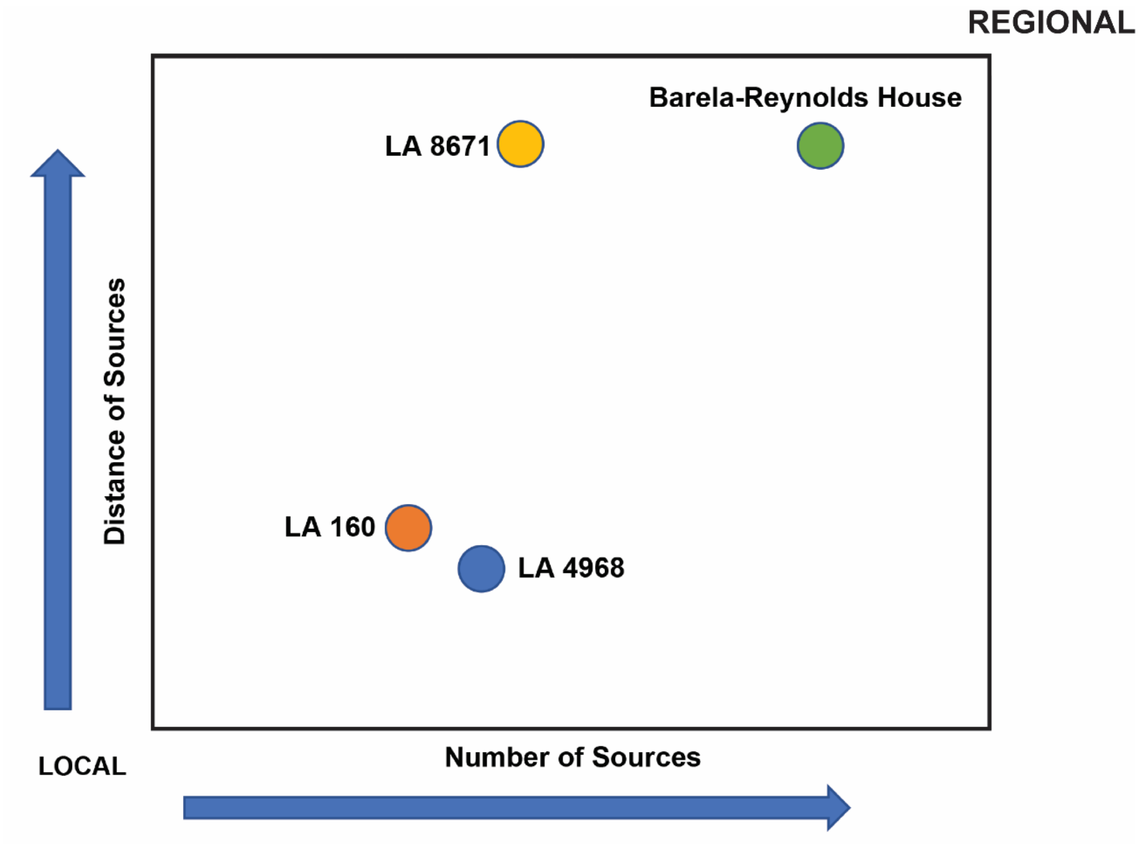


**Figure 8.1. Schematic showing the four sample sites on the vecino→Hispanic spectrum. Each site is qualitatively placed based on analysis results presented in Table 8.2.**

with high numbers of imported artifacts, and a diverse array of New Mexican ceramics, including those from outside the region.

*LA 4968 Consumer Profile Type: Upper-class Local*

LA 4968 is a large Hispanic rancho with multiple structure mounds and trash features located along both sides of U.S. Highway 84/285. The site has a convoluted recording history, but portions of the site within the highway right-of-way were excavated by OAS in the early 2000s (Boyer 2018a; Moore 2018a, 2018b). Excavated features include Structure 1, a C-shaped residential structure with seven rooms wrapped around a courtyard area. Two additional structures were excavated and interpreted as granaries. Unexcavated features include at least one other residential structure (Structure 5) and several mounds, some of which may be structures. Four trash-filled borrow pits were also excavated and many other trash pits and trash scatters were recorded outside of the right-of-way excavation area.

Based on archival research by Natasha Williamson (2018a), the site was most likely owned by Vicente Valdez between 1828 and his death in 1868. Vicente Valdez was an upper-class landowner in the area who purchased several parcels of property in the Cuyamungue Grant and had deep roots in the area. In the 1860 census he was listed as the head of his household with at least six others living with him, possibly at LA 4968. After his death, the property was inherited by his daughter, María de la Paz. María left the residence soon after in 1871 when she married John Conway and moved to Santa Fe, although the land was still used for grazing (Williamson 2018a).

The consumer profile at Vicente Valdez's home suggests residents were prioritizing very local consumer relationships. They primarily consumed New Mexican ceramics made by Tewa potters in the immediate vicinity and while they did consume imported materials, these goods were incorporated into their lives in specific limited ways, primarily through installing glass windowpanes and using majolica and European plates and flat form dishes. The consumer profile for LA 4968 is placed at the most local end of the local→regional spectrum due to the limited diversity and local nature of New Mexican ceramics, low amounts of imported goods, and the limited, local ways that imported goods were incorporated into daily practice and reinterpreted by residents at the Valdez rancho.

*New Mexican Ceramics.* The LA 4968 initial sample included 47,354 historic New Mexican ceramics analyzed by OAS and 1,726 sherds analyzed by myself, for a total of 49,080 sherds. The New Mexican ceramics were some of the least diverse among the four sites in the sample. Eight paste groups were identified in petrographic analysis, representing perhaps 5–6 distinct clay recipes. The two largest optical paste groups were variations of fine tuff and very fine sand, which represent over 30 percent of the assemblage, followed by crushed granite and sand, which is another 16.59 percent. Both of these temper types are very likely local to the Española Basin and probably associated with Tewa pueblos in the area. Frank and Harlow (1997) note that by 1830 Nambé Pueblo was a major pottery producer in the area, including polychromes, polished wares, and sand-tempered mica-slipped ceramics (Frank and Harlow 1997; Mera 1939), although the ceramics also could have been produced at Santa Clara, San Ildefonso, Ohkay Owingeh, Pojoaque, or Tesuque. Of these, Pojoaque Pueblo was the closest to the Cuyamungue sites (approximately 3 km), followed by Nambé (3.4 km), Tesuque (7.7 km) San Ildefonso (11 km), Santa Clara (17.7 km), and Ohkay Owingeh (21.5 km) (all distances are approximations based on aerial measurements rather than road travel) (see Figure 7.2).

Statistical analyses also identified five (k-medoids) to seven (k-modes) microstyles in the plain ware assemblage, showing similar diversity as the petrographic results. However, the microstyles were not only delineated by temper type. Instead, mica-slipped ceramics with a range of tempers grouped together in large clusters, while polished ceramics split into several groups. The cluster groups were not well delineated and nearly every group overlapped others in some way. This could mean that the microstyles were closely related to each other, for example if the microstyles represent several communities of practice within the same pueblo.

Taken together, the technological and statistical analyses of New Mexican ceramics show that the Hispanic consumers living at LA 4968 acquired their pottery from their nearest neighbors, and possibly maintained close relationships with a limited number of pottery producers. This indicates that although residents lived approximately 16 km from Santa Cruz de Cañada and 26 km north of Santa Fe, they were more thoroughly embedded within their own highly local networks of exchange.

*Imported Artifacts.* The imported assemblage at LA 4968 must be interpreted in the context of the market access enjoyed by site residents. Vicente Valdez's family was most likely wealthy and would have had greater economic means to acquire imported materials than many other New Mexicans in this period. Furthermore, their location 26 kilometers north of Santa Fe meant that they were living near the highest concentration of merchants in the territory. Based on merchant licenses sold, Santa Fe County had 114 active merchants in 1850 (33% of which had Hispanic surnames), 113 in 1862 (48% Hispanic surnames), and 165 in 1893 (36% Hispanic surnames). There was also a higher concentration of top-tier merchants in Santa Fe County, men who would have had the economic and social means to import larger amounts and greater varieties of material goods, which would have then been available to the Vicente family. In general, people living in this region would have had the greatest opportunity to interact with and acquire imported goods from well-connected merchants, both Hispanic and European American. Together, these numbers mean that residents at LA 4968 (and LA 160) had the greatest market access in the project sample.

The imported artifact assemblage does not reflect this high level of market access. There were 3,567 imported artifacts recovered during excavations and analyzed by OAS, representing 3.89 percent of the total artifact assemblage (not including animal bone) at the site, the smallest proportion among the four sites after LA 160 (which is likely incomplete). However, because the assemblage is so large, 11 functional categories and 100 specific functions were identified. There are other indications that the Valdez family did not prioritize or integrate imported materials. The Construction and Maintenance category of artifacts shows low measures of evenness across specific functions. This means residents were acquiring few types of materials and only using them for specific tasks rather than broadly integrating them into their daily lives.

Within Construction and Maintenance artifacts, the Valdez family primarily acquired window glass to replace selenite windows in the residential structures. In fact, window glass was the most common imported artifact type in the assemblage. Window glass was not easy to acquire in territorial New Mexico and often had to be specially ordered. To do this, the Valdez family needed a direct, potentially personal relationship with a merchant to acquire the glass for them. These are characteristics of local consumer relationships. Conversely, by replacing selenite windows with glass panes in their homes, the Valdez family made a large investment to make a publicly visible change in their home. Glass windows were associated with the Territorial style of architecture, which was based on Greek Revival architecture in the eastern United States (Bunting 1976). Glass windowpanes were an important part of 'Americanizing' domestic and public architecture in New Mexico and are an example of the Valdez family trading out a local solution for lighting their home, for an imported one.

Low evenness (relatively) was also observed among decorated imported ceramic types, demonstrating that among the four sites in the sample, residents at LA 4968 were more likely to have matched sets of dishware for their table. This could be interpreted as investment in American domestic consumer ideals for matched dishware, as described in Chapter 3. However, most matched ceramics in the assemblage were blue-banded whitewares, which were some of the cheapest, most common minimally decorated ceramics on the market at the time. These ceramics could have been gradually accumulated from any merchant and did not necessarily require a large up-front investment or special order from the Valdez family. This suggests a more casual, ad hoc consumer pattern relating to imported tableware. While the Valdez family were upper-class and established landowners in the area, they were not interested in American expectations for appropriate upper and middle-class table service.

Finally, there were a series of metal artifacts in the LA 4968 assemblage that OAS interpreted to be scrap remains from using a punch to create objects from sheet metal (Boyer et al. 2018:391). The metal scraps have edges with a negative scalloped shape that is similar to scalloped edges on many pieces of New Mexican tinwork. Boyer and colleagues hypothesize that the metal remains are associated with Ygnacio Valdez, listed in the 1860 census as a tinner living in Cuyamungue, who may have been Vicente Valdez's nephew (Boyer et al. 2018:396). The metal scraps do appear to be clear evidence of re-working imported materials (in this case, sheet metal and tin cans) into new objects for local use. Punched metal pieces could have been part of furniture, lamp and candle sconces, rolled into tinklers for dress or horse tack, practical items like dishes, or frames for religious art (Coulter and Dixon 2004).

Examination of the form and function of the imported and New Mexican ceramic assemblages adds some complexity to the identity strategies employed at LA 4968. Residents at LA 4968 also consumed majolica ceramics from Mexico in larger quantities than other sites in the sample (21.41% of the imported ceramics). However, it appears that majolica, European ceramics, and New Mexican ceramics all played different roles at the table. Majolica forms were mostly flat forms such as plates, whereas New Mexican polished ceramics and European ceramics were mostly bowls and other hollowwares. This suggests that ceramics from different national markets were associated with different food or culinary practices. Cooking, serving, and eating in this upper-class New Mexican Hispanic household was complex, multicultural, and a potentially loaded activity with implications regarding many different social identities. While these practices are not specifically articulated along the local→regional spectrum in my model, they show the depth of complex and potentially contradictory behaviors related to the acquisition and use of ceramics.

Fewer imported goods, imported materials being re-purposed for local production and manufacture, and close relationships with fewer merchant sources are all consumer patterns characterized as local strategies in the research model (see Table 8.1). Despite having good market access via Santa Fe and the economic and social connections to acquire a wide range of imported materials, residents at the Valdez rancho pursued almost exclusively local consumer strategies.

One exception is the large quantity of window glass at the site, imported to replace selenite windows in Structures 1 and 5. This could have been a very public display of consumption that was aligned with American ideals for domestic architecture and the New Mexico Territorial reinterpretation of Greek Revival architectural style. As C. Wilson (1997a:53) notes: “Decorative elements applied to old adobe buildings were physically superficial, but at the same time symbolically significant as the tangible signs of a new regime.” It is not an uncomplicated symbol, however, as there were many material benefits to glass-paned windows in terms of light and clarity. While window glass was highly uncommon in New Mexico prior to American occupation, with was in plaza-facing windows of the Palace of the Governors and appears in invoices of Bent and St. Vrain as early as

1839–1840 (Beyreis 2012:168), suggesting that window glass was a symbol of status and comfort as much as it was of national allegiances.

*LA 160 Consumer Profile Type: Incomplete, Upper-class Local*

LA 160 was originally thought to be a Hispanic residential site with associated trash pits, dating to the 1830s. Further analysis demonstrated the site was actually a Hispanic residence dating to the 1830s–1860s, with unassociated trash scatters that date to 1870–1900 (Moore 2018d). The residential structure and a nearby trash feature were sampled by Stewart Peckham in the 1960s prior to widening of U.S. Highway 84/285. The construction project destroyed the structure, but Peckham's notes and collected artifacts were analyzed by OAS and included in their work on the site in the early 2000s, which excavated three unassociated trash scatters on the other side of the highway.

Archival research by OAS indicates that the residence was probably that of Felipe Sena, who eventually lost it in 1854 when he mortgaged it to Vicente Valdez, the same owner of the property at LA 4968 (Williamson 2018). Because the two sites are so similar, comparison between the two emphasizes the degree to which our understanding of LA 160, and most likely other sampled sites like it, represents a very incomplete story. We only have a small sample of artifacts excavated from the structure and two features in the 1960s, plus a sample from the later trash features, which were also heavily impacted by construction prior to excavation.

What we can learn about LA 160 is that like LA 4968, it appears to be an upper-class household in a tight land-grant community where consumers maintained local relationships to acquire New Mexican pottery. Imported materials were more difficult to interpret at LA

160 due to limited sampling, and functional analysis shows how skewed the artifact representation is in the assemblage.

*New Mexican Ceramics.* The LA 160 initial sample included 8,468 ceramics analyzed by Stewart Peckham and OAS. Like the New Mexican ceramic assemblage at nearby LA 4968, the ceramics are not very diverse. Eight paste groups were identified in petrographic analysis, representing perhaps 6–7 distinct clay recipes. Fine tuff and sand temper made up 32.24 percent of the assemblage, followed by granite with abundant mica (23.32 percent). Both temper types are probably local to the Española Basin and associated with Tewa pueblos in the area. As noted above, the ceramics were likely produced at Nambé, but could have been made at Santa Clara, San Ildefonso, or Ohkay Owingeh, Pojoaque, or Tesuque (see Figure 7.2).

Statistical analyses identified seven (k-medoids) to six (k-modes) microstyles in the plain ware assemblage. LA 160 had the largest initial sample used in statistical analysis, although the variables offered less resolution due to OAS data recording methods. The analysis produced well-defined k-medoids clusters, and two clusters correlate strongly with Polished Interior with Mica Slip and Smudged Interior/Mica Slip Exterior descriptive types. The other clusters appear to group by temper. Statistical analysis of LA 160 generally identified more clusters with better delineation than the sample for LA 4968, although the assemblages are likely quite similar. This may be due to sample sizes and differences in detail offered for surface textures.

*Imported Artifacts.* Based on geographic location and economic class, residents at LA 160 likely enjoyed the same high level of market access as those at LA 4968, described above. However, only 318 imported artifacts were collected from excavations and imported artifacts only make up 3.54 percent of the total collected assemblage. Most of these were collected by Peckham from in and around the residential structure.

Nine functional categories and 34 specific functions are represented in the assemblage, less than any other site in the project sample. The categories are skewed compared to LA 4968 and other Territorial Period sites, with Personal Effects and Domestic categories over-represented. However, these over-represented categories do show evidence that the occupants of the structure at LA 160 were well-off. Pieces of jewelry, clothing fastenings and shoe fragments, as well as majolica and pearlware show the ability of residents to purchase expensive goods.

Other measures of artifact diversity and evenness for LA 160 do more to highlight the incomplete nature of the assemblage sample than provide information about consumer practices. LA 160 had the lowest score for evenness within Construction and Maintenance artifacts due to 85 percent of the category being window glass. The site had the highest score for evenness in decorated imported ceramics, showing that no matched vessels were found.

While the picture for imported artifacts at LA 160 is incomplete, residents at LA 160 most likely had very similar consumer practices as at LA 4968, with strategies focusing on local merchants and minimal incorporation of imported goods into daily life. Based on the New Mexican ceramics, the consumer profile at LA 160, though incomplete, appears to prioritize localized relationships. This places LA 160 very near LA 4968 on the local→regional spectrum, with slightly more diversity in their consumer relationships to acquire New Mexican pottery.

*LA 8671 Consumer Profile Type: Regional, Lower-class (Santa Fe oriented)*

LA 8671, known as the Ideal Site, is in many ways the most remote site in the project sample. It is located in the Las Huertas Valley near present-day Placitas, on the north side of the Sandia Mountains. It is approximately 10 kilometers from Algodones, and approximately 40 kilometers from Albuquerque. While the site was distant from major population centers, there was a network of small villages along the Las Huertas Valley in the mid-nineteenth century. LA 8671 contains a three-room house with an attached ramada kitchen area, an animal pen, and at least two trash pit features. The artifact assemblage suggests that the site was occupied between the 1830s and 1870s. Histories collected from local residents by Brody and Colberg (1966) suggest that the site was the rancho of the Zamora family, who were among the settlers who re-occupied the valley after residents were ordered to evacuate the area due to raiding by Apache and Navajo groups in the 1823. It is not known if the Zamoras were returning settlers or new to the area.

The site features and artifact assemblage suggest residents at LA 8671 were lower class individuals of modest means. Typical indicators of wealth, such as house size, larger quantities of majolica or Asian ceramics, or jewelry were not present and there was only one possible furniture fitting. Features at the site did not indicate that the family owned substantial livestock or property. Instead, the site appears to represent a lifestyle typical in small New Mexican settlements during this period, where residents participated in a subsistence economy that could have been a mix of small-scale agriculture, raising small amounts livestock, collecting and selling wild products such as firewood or piñon, and potentially some mining or trading (Deutsch 1989).

Given these characteristics, I expected the consumer practices at LA 8671 to be highly localized, with the majority of New Mexican ceramics produced at nearby Santa Ana Pueblo and/or the Santa Ana settlement at Ranchitos or even San Felipe Pueblo, and very few imported materials with an emphasis on small durable tools and personal items that could be easily transported and purchased from travelling peddlers. Instead, the New Mexican ceramic assemblage and imported artifacts at LA 8671 show that the residents at the site were integrated into diverse networks in the local and larger region, with close ties to the Española Valley, and potentially Santa Fe. While the family living at LA 8671 had limited economic means, they had extensive social connections in the territory that they used to acquire and use a high proportion of imported materials and a diverse range of New Mexican ceramics, including polished wares from Tewa Pueblos.

*New Mexican Ceramics.* There were 736 historic New Mexican ceramics analyzed from this site. New Mexican ceramics at LA 8671 exhibited the greatest range of optically-identified temper and inclusion types among the four sites in the sample. Petrographic analysis identified 15 paste groups, representing at least six distinct clay recipes for New Mexican sherds and two paste groups related to Mexican lead-glazed sherds. Some of this variation reflects the geologic diversity of central New Mexico, but there was also evidence of substantial amounts of tuff-tempered polished black ceramics from the Española Basin and other ceramics with coarse vitrified tuff likely manufactured at Cochiti or Santo Domingo pueblos. LA 8671 also had the greatest diversity among the four sites in refiring hues ($n$ = 5), indicative of ceramics made using multiple clay sources. This diversity only partially reflected in the microstyles identified with statistical analysis. Six microstyles were identified in k-medoids analysis and seven microstyles in k-modes analysis. However, while the cluster analyses did not necessarily identify a high number of potting communities supplying LA 8671, they did identify the tuff-tempered polished black ceramics described above as a distinct microstyle.

Together the technological and statistical analyses of New Mexican ceramics at LA 8671 show that site residents maintained consumer relationships with a higher number of potting communities than the Cuyamungue sites, and they acquired these ceramics from both local and more distant locations. Based on temper and inclusion characteristics, as much as 15 percent of the ceramics at LA 8671 may have come from areas outside the Albuquerque Basin, particularly from areas to the north through Cochiti and on to Santa Fe.

*Imported Artifacts*. Of the three site regions in the sample, I argue that LA 8671 and Bernalillo County had the poorest market access, particularly prior to the arrival of the railroad in 1880. Merchant activity in the county, as seen in licenses and census data, was less than in Santa Fe County, but potentially there was more Hispanic wealth concentrated in this region. In 1853, 89 percent of the merchant licenses were to people with Hispanic surnames. In the 1860 census, the richest Hispanic merchants were listed as living in Bernalillo County and Valencia County. Top-tier European American merchant Henry Connelly was also listed in Albuquerque. In 1883, Hispanic surnamed merchants had dropped to 24 percent.

LA 8671 was not conveniently close to the market centers of Albuquerque or Bernalillo, nor the primary Santa Fe-Valencia travel routes. Residents in the Placitas area may have had to rely on peddlers or traders who traveled to San Felipe Pueblo or through the growing mining towns in the mountains, or, they could have engaged in small-scale commercial activity of their own, working as Comancheros, or wagoneers or muleteers on the Santa Fe Trail.

In contrast to the poor market access, imported artifacts make up 23.89 percent of the total assemblage at LA 8671, which is high compared to LA 160 and LA 4968, as well as other Territorial period excavations in New Mexico. However, the assemblage is not very diverse, with only ten functional categories and 30 specific functions identified. Domestic was the largest category, while Construction and Maintenance, which is well represented at the other three sites in the sample, is a small category with very limited diversity at LA 8671. The Construction and Maintenance artifacts had a high evenness score, but that is because there were only 24 artifacts spread over two specific functions.

Site residents acquired a surprising quantity of imported materials compared to their use of New Mexican ceramics and lithics, but they were predominantly items for individual use, such as tableware, clothing items such as buckles and shoes, or bottles of rum. One possible explanation for the high proportion of imported goods in this low-market region is that LA 8671 residents were acquiring their ceramics and other imported materials from merchant sources that did not appear in license lists used to assess market access. These alternative sources could have been Comanchero traders, small-scale itinerant peddlers who did not bother with licenses, or wagoneers who used their wages on the Santa Fe Trail to make small purchases in Santa Fe or St. Louis (where goods would be cheaper).

Ceramic sherds make up 55.15 percent of the imported artifacts. This is the largest percentage observed in the project sample. Some of this may be due to collection methods during excavations because glass and construction materials are under-represented. However, the ceramic assemblage is also more diverse than expected for a small, remote site. The

Shannon Index for imported ceramics showed that decoration types are very evenly represented, again indicating that only one or two vessels of each type are present in the assemblage. It appears that while site residents prioritized acquiring imported ceramics, they were only able to acquire one or two pieces at a time. The pieces were not matched sets, nor did they match in style or color.

The imported artifact data show that residents at LA 8671, despite having limited economic means and poor market access in the traditional sense, had a consumer pattern that prioritized acquiring imported materials, particularly for individual use, and this was done through many small, ad-hoc purchases, possibly from many different sources. This is indicative of a regional consumer profile. The New Mexican ceramic assemblage also shows a regional consumer strategy. A substantial amount of pottery was imported from the Santa Fe area, particularly polished black ceramics. Even New Mexican ceramics that appear to be from the Albuquerque Basin area demonstrate technological diversity suggestive of many potting communities and potentially impersonal or irregularly maintained relationships. The evidence from New Mexican ceramics and imported artifacts together makes it clear that the family living at LA 8671 maintained an array of consumer relationships that stretched up the Rio Grande, through Cochiti and/or Santo Domingo Pueblos, through Santa Fe, and among the Tewa pueblos in the Española Basin. Site residents chose to acquire material goods to meet their daily needs from a diversity of sources that regularly extended beyond their immediate community and the Las Huertas Valley.

The regional consumer profile at LA 8671 may be related to the economic class of the residents. Unlike the Cuyamungue sites or the Barela-Reynolds house, the Ideal Site was not occupied by top-tier merchants (Barela-Reynolds) or upper-class families known to be land grant heirs (LA 160 and LA 4968). The artifact assemblage suggests the site occupants, like most New Mexicans in the nineteenth century, were of modest means, conducting subsistence agriculture and livestock raising, and potentially participating in other mixed economic pursuits such as mining or prospecting. The site is located in a marginal location in relation to larger market centers and the extent of Territorial administrative and military control. LA 8671 residents may have needed to buffer their risks in subsistence and security from raiding. By acquiring ceramics and imported goods from a wide range of local and Santa Fe region sources, LA 8671 residents may have been ensuring that their needs would be met, even if some sources became unavailable. By maintaining many different consumer relationships, site residents had more relationships to draw on if things got bad.

Consumer relationships at this site appear to be oriented firmly to the north, towards Cochiti, and then Santa Fe, rather than south or west towards Albuquerque, or other Hispanic commercial strongholds in Valencia and the Rio Abajo. Nor does there appear to be much evidence of ties to ceramic trade from Mexico, such as majolicas or cheaper lead-glazed wares. It may be that the family at LA 8671 had personal relationships or connections in Santa Fe which gave them improved social access to Tewa potting communities for ceramics and Santa Fe area merchants for imported materials. If the family used infrequent purchasing trips to acquire small quantities of mismatched European and American ceramics, this may have also been an opportunity to acquire polished black serving wares from Tewa potting communities. The alternate may have also been true—as the family traveled north to acquire polished black serving wares from Tewa potting communities with whom they had personal or familial ties, they also acquired small amounts of European or American ceramics, shoes, clothing buckles from Santa Fe merchants.

LA 8671 presents a surprisingly regional consumer profile for a small residential site of limited economic means. LA 8671 appears to be a very typical Hispanic residential site for the mid-nineteenth century. Among Santa Fe houses in the eighteenth and early nineteenth century, 65 percent of houses had 1–4 rooms (C. Wilson 1997a:37), like LA 8671, and most Hispanic settlements in the nineteenth century were widely dispersed along waterways and valleys that provided good land for small-scale subsistence agriculture and some stock.

However, very few sites of this type have been excavated, especially that date to the Territorial periods. Most of the archaeological excavations done for the nineteenth century have been in Santa Fe, which presents an 'urban' view of Hispanic lifestyles and has tended to capture more upper-class residences—not unlike the sample for this project. Without a larger sample of lower-class sites and sites in central New Mexico, it can be hard to determine how 'typical' the regional consumer networks at LA 8671 really are and interpret the full implications for Hispanic identity. Additional excavation and analysis of "lower-class" or more typical one- and two-room households can help demonstrate if the regional consumer pattern observed at LA 8671 was indeed an adaptation related to class and risk, or if other factors such as market access or individual family histories were at play.

*Barela-Reynolds House Consumer Profile Type: Regional, Upper-class (Mexico-oriented)*

The Barela-Reynolds house is a very different site than the other three in the sample. It is the only site that still has a standing structure and is still occupied. It is the latest site in the sample, extending from the 1840s at the earliest, until 1912 and beyond. The owners of the home were known through its history, and included both Hispanic and European American families, many of whom were highly successful merchants. Lastly, it is the only site in southern New Mexico. In many ways the Barela-Reynolds house is so different from the other sites that it is challenging to incorporate it in a comparative sample, but this is precisely why I wanted to include it in this study. Southern New Mexico was always an administrative and cultural part of the Territory and as a border town, Mesilla was a key site for politicians to play out nationalist agendas. Southern New Mexico is still a part of New Mexico when scholars discuss 'New Mexican Hispanic identity' in the regional sense, and so it is important to include it in comparative studies.

The Barela-Reynolds sample comes from test excavations in the backyard and *zaguán* areas of the Taylor-Romero-Barela-Reynolds property. Uncovered features included post holes of a likely jacal structure dating to the 1840s, and trash pits and ash stains related to ongoing occupation of the house after its initial construction in the 1850s. Excavations also showed the area to be fairly disturbed by successive remodels of the home, flooding, and modern modifications like sewer lines (Boone n.d.). The collected artifacts received initial analysis, probably in the 1980s, and an excavation catalog detailing the imported artifacts was created. Since then, no other work has been published with the assemblage, however.

The consumer profile at the Barela-Reynolds house is a mix of regional and local strategies by an upper-class merchant business. The regional aspects of their consumer practices appear to be oriented primarily towards Mexico. The New Mexican ceramics showed low diversity in the technological analysis, but the highest number of identified microstyles in the project. The imported artifacts formed a high proportion of the overall assemblage, and the Construction and Maintenance artifacts show they were well-integrated into daily life. Alternatively, the imported ceramics were not very diverse and there is a high amount of Mexican lead-glazed pottery that appears to have served as cheap servingware at the site.

*New Mexican Ceramics.* I analyzed 659 New Mexican ceramic sherds from this site. The Barela-Reynolds assemblage had the lowest proportion of New Mexican ceramics (14.39%) in the project sample and technological analysis showed little diversity at each stage in ceramic production. Eleven paste groups were identified in petrographic analysis (based on 20 temper types identified in the optical analysis), which appear to represent four local clay recipes. The characteristics observed petrographically in the sand temper indicate that nearly all of the sherds were most likely made in the Mesilla Basin region. Only four matte paint polychrome sherds were in the collection, there was a smaller proportion of polished wares. Paste and temper characteristics suggest that few, if any sherds from the northern New Mexican pueblos were present. The Barela-Reynolds assemblage also had the smallest number of clay hues after refiring ($n$ = 3), suggesting few clay sources or chemically similar clay sources were used to produce the pottery. Surprisingly, statistical analysis identified 7–10 microstyles, more than any other site in the sample, but the clusters were poorly differentiated.

Together the technological and statistical analyses of New Mexican ceramics at the Barela-Reynolds site hint at the potential complexity of historic ceramic production in southern New Mexico. The sherds predominantly appear to be local to the Mesilla Basin region, using mostly Rio Grande sand temper and chemically similar clays. The high number of microstyles suggests that there may have been many production groups on the landscape, and site residents acquired pottery from a range of them. The sources of the Barela-Reynolds pottery assemblage are unknown, but may include Tiwa, Apache, or Hispanic production groups living in the area and utilizing similar clay and temper sources. Site residents may have acquired such a diverse collection of pottery from markets in the area or, because the site also served as a center of business for top-tier merchants, it is possible that the pottery was acquired as payment for imported goods and groceries sold on credit to cash-poor families in the area. Payment with goods was not an uncommon arrangement in the nineteenth century, although there are currently no good archival examples of payment with pottery.

*Imported Artifacts.* While LA 8671 may have had the lowest market access in the sample, due to its distance from major market centers, census and license records indicate that Doña Ana County had the least officially documented commercial activity overall. In 1850 there were only 38 commercial licenses for the county (50% with Hispanic surnames). Unofficial (and undocumented) commercial activity in the form of smuggling may have been quite common in this border town, however (Greenberg 2009). Official commercial activity steadily increased throughout the nineteenth century and exploded after the arrival of the railroad, however. In 1889 there were 135 commercial licenses, but only 25 percent were for merchants with Hispanic surnames. Because the Barela-Reynolds house is located directly on the Mesilla plaza—the commercial center of the town—and because it was owned by top-tier merchants for much of the nineteenth century, I still consider the market access at the Barela-Reynolds house to be quite good.

Based on site ownership and merchant activity in Doña Ana County, I also expected market access here to be better for European and American markets. Commercial activity in the town appears to have been dominated by European American individuals shortly after U.S. annexation, and this alignment only strengthened over time. By the 1860s most of the owners around the Mesilla plaza were European American. In the 1870s the south lot of the

Barela-Reynolds house was owned by the Reynolds and Griggs Company—a pair of European American merchants.

The artifact assemblage at the Barela-Reynolds house is dominated by imported materials, which reflects the later occupation period and use of the site after the arrival of the railroad in Las Cruces in 1883. Imported artifacts at the site make up 85.60 percent of the total site assemblage—substantially more than any other site in the project sample. Functional analysis showed the assemblage to be diverse as well, with 10 functional categories and 104 specific functions represented. The Construction and Maintenance category has the most even distribution in the project sample, indicating that site residents incorporated imported artifacts to meet a broad array of architectural needs.

The large imported artifacts assemblage, with high amounts of bottle glass and Construction and Maintenance items, is characteristic of later American Territorial and post-railroad historic assemblages, particularly in railroad towns (Boyer 2004). Site residents consumed a wider range of goods packaged in bottles, jars and cans. The vessel glass at the site included condiments jars, perfume and medicine bottles, and cosmetic jars. More canned foods were also consumed at the site, reflecting greater availability and apparently greater consumption as the railroad terminus moved closer to New Mexico.

Imported ceramics at the site tell a slightly different story. There are 431 imported ceramic sherds in the assemblage, representing 10.99 percent of the imported material. Ninety-four paste-decoration combinations were identified, including 17 from Mexico. Imported ceramics at the Barela-Reynolds house had the second lowest levels of evenness among the four project sites, meaning that after LA 4968, the assemblage has the most 'matching' vessels. This does not mean there were many matching pieces of European serving ware at the site, however. Instead, the low diversity is driven by high amounts of lead-glazed Mexican ceramics at the site. In fact, the Barela-Reynolds house had higher amounts of lead-glazed Mexican ceramics than any other site in the project (13.42% of imported ceramics). This pottery was probably produced in Mexico City and acquired at *ferias* and markets in Parral. They are mostly hollowware forms and appear to have played the same role as individual serving wares at the Barela-Reynolds house as polished wares did at the other sites in the sample. The lead-glazed ceramics also show that site residents maintained important consumer relationships with Mexico, which influenced their choice in serving ware, even though the large pottery producing pueblos in northern New Mexico were geographically closer.

Together the New Mexican ceramics and imported artifacts at the Barela-Reynolds house demonstrate a consumer profile that was primarily regional and oriented more towards Mexico. Site residents consumed New Mexican ceramics from a high number of potting communities, who were likely local to the area and using the same clays or very similar clays and sand temper. Further clay and sand sourcing research may help delineate if multiple sand temper sources were used in this region. Barela-Reynolds site residents consumed imported materials in greater quantities than the other three sites in the project sample and incorporated imported materials more extensively into their daily lives, including expanding and modifying the house in the Territorial style. Finally, it appears that the regional consumer relationships cultivated by site residents were oriented more towards Mexico, as evidenced by the high amounts of lead-glazed ware at the site and its use as serving ware. While these ceramics would have been similar in cost to New Mexican polychromes and polished wares, their likely market source in Parral is further away than the Santa Fe area.

## Discussion

A final consideration for identifying regional Hispanic consumer strategies is a comparison of the four profiles for similarities among them that might suggest residents are united by common consumer practices. However, the consumer profiles presented here show at least three different strategies at the sites in the sample (see Figure 8.1). Residents at LA 160 and LA 4968 had highly local consumer practices for both New Mexican ceramics and imported materials. LA 8671 and the Barela-Reynolds house each had mixed strategies that reflected more regional consumer networks and practices, but in very different ways. Consumer practices at the sites are shaped by the individual nexus of class, family, and social history that exists at each site, rather than common practices connected by a regional identity.

The assemblage at LA 8671 suggests a mixed regional profile. Residents consumed a range of New Mexican ceramics, with a substantial amount of them from sources outside the Albuquerque Basin, including Cochiti/Santo Domingo area and the Tewa pueblos. Residents also prioritized acquiring imported materials. However, the goods were acquired in an ad hoc fashion rather than large purchases and they are primarily personal or individual items like clothing, alcohol, or individual dishware. The regional profile at LA 8671 does not appear to directly suggest ties to a regional Hispanic identity such as consumer practices held in common with other Hispanic communities or through consumption from top-tier Hispanic merchants with headquarters in the Rio Abajo, such as the Perea or Otero families. Nor does there appear to be evidence of close engagement with Victorian consumer practices related to U.S. ideas of cultural citizenship.

Instead, the consumer practices at LA 8671 appear to be oriented towards the north in Santa Fe and the Española Basin region and may be related more to the economic and social class of the site residents. The occupants at LA 8671 were living in a dispersed settlement pattern rather than a close village community, they were in a marginal location prone to raiding and far from the larger market centers in the territory. They may have decided to mitigate their risk by forming relationships with many different potting communities and traders to acquire their material goods. Additionally, residents at the site may have had their own ties with the Santa Fe area, such as from kin or relationships developed prior to coming to the Las Huertas valley.

Residents at the Barela-Reynolds house also had a mixed regional consumer profile. They consumed New Mexican ceramics from many different potting communities—potentially more than any other site in the sample—but the ceramics all appear to be local to the Mesilla Basin. They also prioritized consuming imported materials and incorporated them into a range of different aspects of daily life, particularly Construction and Maintenance. The imported ceramics, however, show that consumption practices were oriented more towards Mexico for cheap servingwares, rather than the closer New Mexican pueblos or more expensive European dishware.

Alternatively, the highly localized practices at LA 4968 and LA 160 were also somewhat surprising. These sites were occupied by upper-class individuals who presumably had the social connections and resources to acquire large amounts of imported goods and furnish their homes with "all the comforts of living" that European Americans considered essential to performing white middle-class identity and American citizenship. Instead, residents pursued consumer strategies that emphasized highly local relationships. They consumed New Mexican ceramics that were almost exclusively from the nearest Tewa Pueblos and only acquired small quantities of imported artifacts, which they used in limited aspects of daily life.

However, consumer choices at the Cuyamungue sites may have also been closely related to social class and power. Within the American racialized class system, even upper-class landed Hispanic families would have been placed lower on the social hierarchy than White immigrants. Alternatively, within the local New Mexican structures for class and power, the Vicente Valdez family, who with a history of long association with a land grant, who owned large quantities of land, and had the income and resources demonstrated by the Cuyamungue sites (multiple homes with many rooms, to own livestock and grow grain, to support a shepherd, and have glass windowpanes) were near the top of the localized hierarchy. By investing in highly local consumer relationships and strategies, residents at LA 160 and LA 4968 maintained and supported the social structures and networks where they had the most power and influence.

The presence of at least three very different consumer profiles rather than broad similarities across the New Mexico region shows that it is highly unlikely that regional Hispanic identity shaped consumption patterns in Territorial period New Mexico. However, the profiles at LA 8671 and the Barela-Reynolds house did show extensive regional networks. This means that one expectation of my model—that several different consumer profiles were evidence that local consumption strategies were predominant—was incorrect. New Mexican Hispanics had highly variable consumer strategies in this period, and they maintained consumer relationships that extended well beyond the boundaries of their local communities. The nature of these relationships is shaped by the individual histories and the nexus of class, social and market access that existed at each site.

It may be that social class played an important role in the consumption strategies used by New Mexican Hispanics. Regional strategies would have been beneficial to lower-class New Mexicans as a strategy to mitigate risk and develop a wide range of relationships to draw on for resources. The roots of this strategy may be in the multipronged and complex border relationships that have been documented in Late Colonial period *genízaro* buffer communities described by Brooks (2002) and Sunseri (2009) wherein cultural brokers find power and security by situating themselves in a broad web of many varied relationships.

Alternatively, upper-class New Mexican Hispanics had already achieved power and status within their communities. As American racial systems threatened to undermine that status and place elite New Mexicans in secondary space below White European Americans, they doubled-down on their own local power networks and only engaged with American systems in limited ways.

# Chapter 9: Conclusions

The years between 1821, when Mexico declared its independence from Spain and U.S. merchants began to bring large quantities of goods to New Mexico via the Santa Fe Trail, and New Mexican statehood in 1912 are key in the development of modern Hispanic identity. The mid-nineteenth century cultural encounter with European American immigrants marked a shift in social strategies used by New Mexican Hispanics regarding their identities. New Mexicans experienced new products and markets, disenfranchisement through land fraud and competition over resources, changes in government, new racial discourses, and prejudice (Bustamante 1982; Clark 2005; Gómez 2008; Meyer 1978; Nieto-Phillips 2004:99; Reséndez 2005; Weber 1982). Work by historians makes it clear that in this time Hispanic identity in New Mexico changed in response to these political, social, and economic changes. How can we understand or see these changes in Hispanic identity archaeologically? What can we learn about this key moment in the development of modern Hispanic identity by looking at the material culture and consumer patterns of Hispanics living across New Mexico in the nineteenth century?

This research sought to explore the development of modern regional Hispanic identity in the nineteenth century by examining daily practices of consumption at four residential Hispanic sites: LA 160 and LA 4968 near Cuyamungue in the north, LA 8671 near Albuquerque in central New Mexico, and the Barela-Reynolds house in Mesilla in the south. The acquisition and use of material goods is a daily practice structured by social identities. It also provides an arena to continuously restructure identities, making it an important adaptive practice during turbulent periods. What New Mexican Hispanics chose to consume and from whom can tell us about how they identified themselves with and against other social groups on the landscape. Ethnic or community identities are two social identities that can shape daily practice, but consumption practices are also mediated by socioeconomic class, gender, market access, and nationality. These identities and particular historical contexts combine to form the specific nexus of class, family, and social history that defined consumer strategies, particularly acquisition, at each site in my study.

New Mexican Hispanics in the nineteenth century navigated a complex material world where acquiring New Mexican ceramics and imported artifacts meant cultivating and maintaining social relationships that were important for their survival. It also involved engaging with American racial systems and expectations for material consumption that were rooted in ideas about race, class, and civilized behavior. Residents at the four sites in my sample each developed their own strategies to meet their material needs in this environment. Their choices may have been shaped by their class standing and access to power: upper-class Hispanics living at LA 4968 and LA 160 invested in local consumer strategies and nurtured the local relationships that were the source of their extant status and power. Lower-class residents at LA 8671 who were marginally situated in terms of wealth and market access opted to pursue a regional consumer strategy and cultivated many extra-local relationships with pottery producing communities and merchants or traders, potentially spreading their risk and fostering reciprocal relationships for security in difficult times.

In this dissertation I examined New Mexican ceramics, imported artifacts and archival documents to create profiles of consumer practices at four sample sites. These sites span the 1830s through 1912 and beyond. The consumer profiles build an archaeological understanding of community relationships, consumption, and identity in New Mexico during the Mexican and American Territorial periods (1821–1912). Artifact and archival analyses identified considerable variation in how people developed consumer relationships and situationally prioritized local vecino community relationships or broader regional social networks. The material focus of this project illuminated daily relationships and interactions at the core of changing Hispanic communities. The prosaic daily practices of acquiring and using New Mexican pottery or imported nails or cans are often left out of historic records. However, these actions represent important consumer relationships that tell us about how New Mexican Hispanics adapted to the changing social, political, and material circumstances of the nineteenth century.

Chapter 1 of this dissertation summarized work by historians and sociologists that pinpoint the nineteenth century as a key period in the development of modern Hispanic identity. However, our archaeological understanding of these changes is challenged by the limited archaeological work for Hispanic sites occupied in the nineteenth century, theoretical frameworks that do not adequately address scale in identities, and even more limited comparative work across the region. Because of this, archaeologists have little understanding of how New Mexican Hispanic identity may have operated at local (vecino) or regional (ethnic Hispanic) scales. Chapter 1 then introduced a model for comparative analysis of four residential Hispanic sites that uses consumer profiles to place each site along a local to regional spectrum.

Chapter 2 provided a historical overview of the Late Colonial period (1692–1821) through U.S. statehood (1912) in New Mexico. This review served as part culture history and part historiographic critique as it tacked back and forth between documentary and archaeological accounts of the periods. The chapter also included summaries of the economic developments and ethnic or social identity labels popular through these centuries, such as the labels in the *sistema de castas, vecino, genízaro, nuevomexicano* and *hispano*. The review showed that nineteenth century New Mexico could be a tumultuous, sometimes violent interethnic cultural environment. The region experienced significant population growth, movement and expansion of settlements with diverse populations, and a wide increase in the availability of different forms of material culture through the nineteenth century.

Chapter 3 gave an overview of practice theory as the theoretical orientation for the dissertation. Practice theory (sensu Bourdieu 1990; Giddens 1984) is now applied very broadly in American archaeology. This dissertation used the concepts of communities of practice, developed by Lave and Wenger (1991), and technological style (Lechtman 1977) to conceptualize production communities for New Mexican ceramics and communities of consumption (Mills 2016) at the four sites in the project sample. Production communities were identified in the material record via the technological style of New Mexican ceramics, through analyses of each stage of the ceramic production sequence and statistical analyses to explore constellations of technological characteristics that consistently cluster as microstyles. Communities of consumption at each site household and were identified in consumer profiles. Chapter 3 then laid out a model of how consumer profiles are placed on a local→regional spectrum based on the number and distance of consumer relationships reflected in the artifact assemblages and the nature of the consumer relationships with ideas like race, nationality, and citizenship. The chapter laid out material expectations and methods of interpretation to characterize each profile as local vecino or regional Hispanic along the spectrum.

Chapter 4 described each of the sites in the sample. LA 160 is a Hispanic residential site bisected by Highway 84/285. It contained three-room house, outdoor horno, and associated trash scatter that Stewart Peckham excavated in 1959, and unassociated trash scatters excavated by OAS in the early 2000s. The house likely dated to the 1830s through 1860s and the three trash scatters dated to 1870 through 1900. This site excavations represent an incomplete sample of the activities and material culture at the site, which is reflected in skewed assemblage characteristics, particularly for the imported artifacts. LA 4968 was a larger Hispanic residential site located three kilometers away from LA 160. The Office of Archaeological Studies excavated the site in the early 2000s and is a much more complete sample, including a seven-room house, two outbuildings, and several trash features. Wealthy land-owner Vicente Valdez owned the property between 1828 and 1868. He also owned LA 160 between 1854 and 1868. The Valdez family was a wealthy, upper-class family with long association with the Cuyamungue Land Grant. LA 8671 is a Hispanic residential site excavated by a UNM fieldschool led by Dr. J.J. Brody in 1963–1964. The site was probably occupied between the 1830s and 1870s by a lower-class family living in a dispersed settlement pattern along the Las Huertas Valley drainage. The Barela-Reynolds house is located along the main plaza in Mesilla. The house was owned by a series of top-tier Hispanic and European American merchants from the 1840s until the present. Dr. James L. Boone and the NMSU field school conducted test excavations in the *zaguán* and areas behind the house in 1982–1983. The four sites in the sample represent a wide range of geographic and economic circumstances which was ideal for understanding the scale and variation in New Mexican Hispanic identity.

Chapters 5 through 7 presented results from the technological and statistical analyses of historic New Mexican ceramics and the imported goods at LA 160, LA 4968, LA 8671, and the Barela-Reynolds house. In Chapter 5, technological and petrographic analyses of the

New Mexican ceramics demonstrated that while suites of visually similar plain ware types and polychromes were produced across New Mexico, the ceramics in each site assemblage have different amounts of variation at each stage in ceramic production. Occupants of each site acquired their pottery from different numbers of producers. Ceramics at LA 8671 were the most diverse, and residents acquired their pottery from as far away as the Tewa pueblos, while the Cuyamungue sites (LA 160 and LA 4968) and the Barela-Reynolds house had ceramics with less technological variation. Surprisingly, statistical analysis presented in Chapter 6 found slightly different results. K-medoids and k-modes clustering identified the highest number of microstyles at the Barela-Reynolds house ($n$ = 7–10), followed by LA 160 ($n$ = 6–7) and LA 8671 ($n$ = 6–7), and then LA 4968 ($n$ = 5–7).

In Chapter 7, I highlighted several different characteristics of trade and consumption of imported materials at each site. I measured market access in each site region using the number of merchant licenses per county. According to this measure, the Cuyamungue sites clearly had the most access to imported goods, while residents at LA 8671 had the least. And yet, imported materials represent a larger proportion of the total assemblage at LA 8671 (23.89%) than they do at the Cuyamungue sites (3.37–3.89%). The Barela-Reynolds house had a much higher proportion of imported materials (85.60%) due to the site's later occupation into the post-railroad period.

Measures of Construction and Maintenance artifact richness and evenness and imported ceramic richness and evenness gave clues to how residents were incorporating imported goods into their daily lives. After taking into account differences in sample sizes and sampling methods, the Barela-Reynolds house appears to have the greatest richness and evenness of Construction and Maintenance artifacts, showing more incorporation and reliance on imported materials for building maintenance. This is unsurprising, given the later dates of occupation at the site. The home is still standing and has needed continuous maintenance throughout the study period. For imported ceramics, again LA 8671 seemed to show the greatest evenness of ceramics, possibly due to ad hoc or intermittent acquisition from a variety of merchants.

Chapter 8 brought together data from analyses in chapters 5 through 7 to create consumer profiles for each site in the sample. By conceptualizing consumption practices as a local→regional spectrum where local consumer strategies are characterized by close sources and few sources and regional consumer strategies are characterized by distant sources and many sources, LA 160, LA 4968, LA 8671 and the Barela-Reynolds house assemblages were placed relative to each other on this spectrum. The result was at least three distinct consumer profiles: LA 160 and LA 4968 were characterized by very local consumer strategies. They consumed New Mexican ceramics from a few local sources, most likely nearby Tewa pueblos such as Nambé, and consumed limited amounts of imported materials which they incorporated into their daily lives in specific, constrained ways rather than across a broad spectrum of behaviors. LA 8671 presents a regional consumer profile, with distant consumer relationships apparently oriented northwards towards Santa Fe and the Española Basin. The family at this site consumed a surprising amount of New Mexican ceramics from sources outside the Albuquerque Basin and prioritized acquiring imported materials, especially pottery. However, the imported pottery is highly diverse and mismatched, suggesting it was acquired intermittently instead of as large single purchases of matched sets. Finally, the Barela-Reynolds house also has a regional consumer profile, but in this case consumer relationships appear to be oriented more towards Mexico. Cluster analyses hinted at consumer relationships with a very diverse array of southern New Mexican potting communities, while the imported assemblage showed that Barela-Reynolds house residents imported a high amount of lead-glazed wares from Mexico and incorporated other imported artifacts into diverse parts of daily life.

I designed this research with the idea that social identity, specifically ethnic identity, shaped the daily practices of consumption of New Mexican Hispanics in the nineteenth century, and so looking at the material patterns of consumption at Hispanic archaeological sites would help me "see" changes in Hispanic identity that occurred during the tumultuous period between Mexican Independence and U.S. Statehood. I thought that by considering consumption practices and consumer relationships as a local to regional spectrum, I would be able to bring the relationship between local vecino community identity and regional Hispanic ethnic identity into greater focus. Instead, what I have found is that consumer strategies at each site were shaped by their unique nexus of class, family, and social history and the lack of similarities among the four consumer profiles suggests that regional Hispanic identity did not shape the daily consumption of New Mexican ceramics and imported materials.

However, it may be that social class did. LA 160 and LA 4968 both exhibited highly localized consumer profiles despite being owned by wealthy families with deep connections to the Cuyamungue Land Grant and to Santa Fe. While histories of the American Territorial period frequently emphasize the partnerships and cooperation of Hispanic elites with American politicians, boosters, and land speculators, the archaeology at the Cuyamungue sites indicates that some wealthy Hispanics decided to remain focused on the local relationships that were the source of their power and authority. Vicente Valdez, who owned the property at LA 4968 and eventually owned the property at LA 160 was wealthy and upper-class, but he was not necessarily at the very top of New Mexican Hispanic society. The very highest tier of Hispanic merchants, for example, listed personal assets at over $10,000 and up to $225,000 in the 1860 U.S. census. Individual examples of Hispanic cooperation (or collusion) with European American military, businessmen, or speculators include governors and lieutenant governors, territorial secretaries, and top-tier merchants who left a documentary trail. Vicente Valdez only claimed $2,700 in assets in 1860, making him rich, but not necessarily part of the "1%."

Alternatively, LA 8671, was occupied by what appears to be a lower-class family and located in a more marginal area without good access to market centers. This site had a consumer profile that prioritized a wide variety of regional relationships, both in terms New Mexican ceramics and imported artifacts. It may be that the family at this site sought to mitigate risk by cultivating many different relationships outside their immediate Las Huertas Valley community. There may have been several benefits to this kind of strategy for poorer New Mexicans. LA 8671 was located near the edge of U.S. administrative and military control. During the Mexican Territorial period in 1824, the nearby settlement of San José de las Huertas had been evacuated due to intense raiding in the area. Settlers were able to temporarily move to surrounding communities like Algodones and Bernalillo where they had connections to support them. People began to return to the Las Huertas Valley as early as the 1830s, but it seems reasonable that both new and returning settlers maintained a "backup plan" by maintaining strong relationships in other regions in case violence circumstances began again. Another potential benefit relates to the expansion of Hispanic settlements during the American Territorial period. As the population grew and threats of raiding diminished, Hispanic settlement expanded along valleys and river drainages. A wider regional network may have made mobility and migration to new villages easier as settlers in new regions kept close ties with mother villages.

## Where is Regional Hispanic Identity and How Do We Study It?

If there is no regional-level community (or constellation) of practice surrounding consumption, and the consumer profiles in the project sample do not have any strong indications that regional Hispanic identity shaped consumer practices and relationships, does this mean regional Hispanic ethnic identity did not exist in Territorial period New Mexico? I think many New Mexicans and scholars would vehemently argue 'no.' There are an array of other avenues to pursue to explore archaeologically how Hispanic identity developed and changed during the nineteenth century.

If regional Hispanic identity is not particularly visible in daily consumption practices, it may be more easily seen in intermittent or "non-daily" practices. For example, regional identity may have been transitory and problem-oriented in this period, as New Mexican Hispanics coalesced and briefly united along ethnic lines when resistance was needed, for example to fight rebellions, or organize for legal battles over land grants. As postulated by Rodríguez (1987), boundaries around New Mexican Hispanic identity may have crystallized in response to threats to cultural or political sovereignty, or competition over resources. In this case, special events, particularly those that emphasize integration, such as religious festivals, weddings and funerals, political events like elections and campaigns, or even circumstances like rebellion and active resistance, where ethnic boundaries solidified in the face of threats or resource competition, may be visible sites of regional identity. If this is the case, material culture from public spaces such as churches and plazas, or municipal structures may be informative. Some work in this regard has already been started, such as Albert Gonzalez's examination of the destruction of Turley's Mill during the Taos Rebellion (Gonzalez 2015).

The results may also be an indication that the roots of regional Hispanic identity are in the local community. Through responses to ongoing threats to cultural sovereignty and village lifeways, commitment to the natal community may have become a symbolic core in the self-definition of New Mexican Hispanic identity. Kutsche (1979b) and others (Deutsch 1989; Van Ness 1979) have recognized the central role village identity plays in modern regional Hispanic identity. Other work (Anaya 2020; Maciel and Gonzales-Berry 2000; Rodríguez 2017) identifies *querencia*, the deep, long-standing connection to a land base, often in the form of community land grants, but potentially also as a connection to one's village community, as a core component of Hispanic identity. Village communities were the core of daily life and remained so into the twentieth century as more and more people sought new opportunities for land ownership through homesteads, wage work outside their villages, or were drawn into cities. It may be that the commitment to the local village is a defining feature of regional Hispanic identity, visible archaeologically in the diverse consumer profiles recorded during this project.

Right now, these alternate explanatory narratives are speculation. The more work that is done in historic New Mexican archaeology, the more complex the view of Hispanic society becomes. Variation becomes visible within and among communities, within classes, and among production groups. The analyses and data collected over the course of this research provide fruitful ground for additional comparative analyses and the development of new models and hypotheses to test. Continued comparative research, especially with more carefully constructed samples and full re-analysis of complete legacy collections will continue to inform us of how Hispanic consumption varied along axes of gender, class, race and ethnic identity, and market access. For example, the role of the local community in the development of regional identity can be explored by comparing production and consumption practices among 'parent' villages, and 'splinter' villages that developed along waterways as grazing lands became overcrowded (Deutsch 1989; Pratt et al. 1986). Some work of this nature has already been done for late nineteenth century and early twentieth century Hispanic communities. Clark (2012) looked closely the role of connections to the regional Hispanic community in the definition of place and local community and economy at late nineteenth century Hispanic homesteads in southeastern Colorado. Hegberg (2016) looked at how local community definitions and affiliations among a cluster of Hispanic homesteads in northeastern New Mexico changed over several decades between 1890 and 1940.

## Moving the Needle

It is my intention that the work undertaken in this dissertation helps to 'move the needle' of historic New Mexican archaeology in several ways. Prior to this work, detailed comparative analyses, especially with a framework to account for scale, had not been done on historic Hispanic sites, especially sites from the nineteenth century. The work here begins to show how diverse Hispanic archaeology is in New Mexico. Additionally, this work contributes substantially to the technological understanding of historic New Mexican plain ware ceramics. Previously, extensive technological analysis of this class of ceramics, which extends across the entire state, had not been conducted. Through petrographic analysis, X-ray images, and refiring analysis, this project has produced a dataset detailing techniques used at each stage in the ceramic production sequence. It has demonstrated how much variation exists within broadly defined descriptive types and offers hints of how much we have yet to understand about historic ceramic production and circulation in understudied areas such as southern New Mexico. There is also more to learn about continued pottery production at pueblos in central New Mexico such as San Felipe and Sandia, and their potential roles in ceramic exchange. These topics have not been as extensively studied as ceramic production in other pueblos, possibly because they stopped producing polychromes early in the nineteenth century.

Understanding the predominance of local consumer patterns and the degree of variation at the four sites in the project sample is also a major contribution of this research. Previously there was not enough comparative research completed among Territorial period Hispanic sites to appreciate this level of difference among Hispanic practices across the territory. By conducting comparative analysis among four sites and bringing them all within a single local→regional framework for interpretation, this research shows nuances in variation in Hispanic material practices that we were only beginning to see in individual site studies. This research has brought into better focus how individual historic narratives and other social identities such as class shaped New Mexican Hispanic consumer strategies and their responses to changes wrought by cultural, political, and economic entanglement with the United States.

This dissertation contributes to a larger ongoing conversation in New Mexico and in the nation about what it means to be Hispanic—what it meant in the past, what it means in

New Mexico, and what it means today. Many other scholars and everyday people are also participating in that conversation using archival history, family history, personal experiences, genetics, language, political and demographic analysis. This work provides a new perspective because it uses material culture—the stuff of intimate and prosaic daily actions—and includes sites and stories that were not detailed in historical documents. The material objects at each of these sites and the stories we can tell with them offer a richness and anchor for personal connections with the past that are different from history and archival documents. I hope that all or part of these stories can be useful to New Mexicans as they talk about their pasts and present and can expand how we talk about the history of Hispanics and Latinos in New Mexico and the United States generally.

# Appendices

# Appendix A

# Barela-Reynolds House Catalog Data

Table A.1. Barela-Reynolds House, Field Specimen Excavation Catalog.

| Unit | Level | New Mexican Ceramics | Imported Ceramics | Glass | Lithic | Metal | Other | Total |
|---|---|---|---|---|---|---|---|---|
| E41N0 | 1-0 | 8 | 2 | 19 | | 17 | | **46** |
| E41N0 | 2-0 | 12 | 3 | 32 | | 14 | 8 | **69** |
| E41N0 | 3-0 | 46 | 19 | 22 | | 16 | 2 | **105** |
| E41N0 | 3-1 | | 1 | | | | 3 | **4** |
| E41N0 | 3-2 | 4 | 4 | 10 | | 12 | 17 | **47** |
| E41N0 | 4-0 | 4 | 2 | 4 | | 2 | 1 | **13** |
| E41N0 | 4-3 | | 1 | | | | | **1** |
| E41N0 | 5-0 | 1 | | | | | | **1** |
| E41N0 Ext | no data | | 2 | | | | | **2** |
| E41N0 Ext | 1-0 | | 7 | 10 | | 42 | 1 | **60** |
| E41N0 Ext | 2-0 | | 4 | | | 10 | | **14** |
| E41N0 Lower | 2-0 | | 7 | | | | | **7** |
| E41N0 Lower | 4-0 | | 2 | | | | | **2** |
| E44N22 | 1-0 | 6 | 4 | 16 | | 21 | 2 | **49** |
| E44N22 | 3-0 | 7 | 7 | 3 | 1 | 2 | 2 | **22** |
| E44N22 | 4-0 | | | 1 | | | | **1** |
| E44N22 | 5-0 | 1 | | | | | | **1** |
| J1 | 1 | | 26 | 20 | 1 | 133 | 45 | **225** |
| J1 | 2 | 28 | 30 | 14 | | 39 | 2 | **113** |
| J1 | 3 | 26 | 16 | 104 | 1 | 38 | 27 | **212** |
| J1 | 4 | 41 | 8 | 31 | | 44 | 2 | **126** |
| J1 | 5 | 30 | 5 | 22 | 1 | 17 | 16 | **91** |
| J1 | 6 | 8 | 6 | 4 | | | 1 | **19** |
| J1 | no data | | 3 | | | | | **3** |
| J2 | 1 | 5 | 8 | 70 | | 103 | 14 | **200** |
| J2 | 2 | 43 | 25 | 29 | | 43 | 1 | **141** |
| J2 | 3 | 44 | 17 | 38 | | 20 | | **119** |
| J2 | 4 | 28 | 17 | 24 | 1 | 13 | 54 | **137** |
| J2 | 5 | | | 3 | | 3 | | **6** |
| J2 | 3-1 | 11 | 4 | 10 | | 11 | 1 | **37** |
| J2 | 4-2 | 11 | 3 | 11 | | 21 | | **46** |

Table A.1. Continued.

| Unit | Level | New Mexican Ceramics | Imported Ceramics | Glass | Lithic | Metal | Other | Total |
|---|---|---|---|---|---|---|---|---|
| J3 | 1 | 1 | 3 | 37 | | 69 | 7 | **117** |
| J3 | 2 | 25 | 12 | 9 | | 29 | 3 | **78** |
| J3 | 3 | 11 | 1 | 1 | 1 | | | **14** |
| J3 | 3-1 | 30 | 5 | | | | 72 | **107** |
| J3A | 5-1 | 3 | 1 | | | 2 | | **6** |
| J4 | 2 | | | | | | 12 | **12** |
| J5 | 2 | 1 | 1 | | | 1 | | **3** |
| J5 | 3 | 3 | 7 | 1 | | | | **11** |
| J6 | 1 | 19 | 13 | 162 | | 23 | | **217** |
| J6 | 2 | 6 | 5 | | | 14 | | **25** |
| J6 | 3-1 | 6 | 2 | 13 | | 4 | | **25** |
| J6 | 3-2 | 4 | 12 | 37 | | 29 | | **82** |
| J6 | 4-1 | 5 | 2 | 7 | | 5 | 1 | **20** |
| J6 | 4-2 | 7 | 18 | 23 | | 45 | | **93** |
| J6 | 5-1 | 2 | 1 | 8 | | 4 | | **15** |
| J6 | 5-2 | 1 | 2 | 2 | | 3 | 1 | **9** |
| J7 | 1-0 | 16 | 18 | 237 | | 109 | 5 | **385** |
| J7 | 2-1 | 2 | 3 | 10 | | 18 | 1 | **34** |
| J7 | 2-2 | | 9 | 112 | | 31 | 19 | **171** |
| J8 | 2-0 | 4 | | 6 | | 5 | | **15** |
| J9 | 2-0 | | 3 | 8 | | 14 | 1 | **26** |
| N4E43 | 1-0 | 5 | 7 | 9 | | 7 | | **28** |
| N4E43 | 2-0 | 19 | 6 | 32 | | 24 | | **81** |
| N4E43 | 3-0 | 43 | 14 | 7 | | 14 | | **78** |
| N4E43 | 4-0 | 8 | 3 | | | 1 | | **12** |
| N4E43 | 5-0 | | 1 | | | | | **1** |
| S6W1 | 1-0 | 1 | 1 | 61 | 1 | 7 | 3 | **74** |
| S6W1 | 2-0 | 7 | 9 | 14 | | 10 | | **40** |
| S6W1 | 3-0 | 9 | 4 | 11 | | 20 | | **44** |
| S6W1 | 4-0 | 7 | 8 | 8 | | 46 | | **69** |
| S6W1 | 5-0 | 3 | 3 | 17 | | | 3 | **26** |
| SS1 | 1-0 | | | 278 | | 102 | 1 | **381** |
| SS1 | 1-2 | | 1 | 9 | | | | **10** |

Table A.1. Continued.

| Unit | Level | New Mexican Ceramics | Imported Ceramics | Glass | Lithic | Metal | Other | Total |
|---|---|---|---|---|---|---|---|---|
| SS1 | 2-0 | 1 | 4 | 147 | | 17 | | **169** |
| SS1 | 2-1 | | 1 | 47 | | 6 | | **54** |
| SS1 | 2-2 | | 4 | 2 | | 2 | 0 | **8** |
| SS1 | 3-0 | 3 | 7 | 232 | | 75 | 1 | **318** |
| SS1 | 3-1 | | 1 | 2 | | 1 | 18 | **22** |
| SS1 | 3-2 | 2 | 6 | 1 | | | | **9** |
| SS1 | 4-0 | | 1 | 3 | | 5 | | **9** |
| SS1 | 4-1 | 3 | 1 | 10 | | | | **14** |
| SS1 | 4-3 | | | | | | 1 | **1** |
| SS1 | 5-0 | | | 1 | | | | **1** |
| SS1 | 6-0 | | | 1 | | | | **1** |
| SS1A | 1-0 | 3 | 3 | 4 | | 1 | | **11** |
| SS1A | 1-1 | | | 17 | | 14 | | **31** |
| SS2 | 1-0 | 3 | 11 | 368 | | 82 | 5 | **469** |
| SS2 | 1-1 | 7 | 16 | 104 | | 4 | | **131** |
| SS2 | 2-0 | | | 70 | | 47 | 18 | **135** |
| SS2 | 2-1 | 1 | 1 | | | 5 | | **7** |
| SS2 | 4-2 | 1 | 1 | | | | 0 | **2** |
| SS3 | 1-0 | 5 | 7 | 79 | 1 | 148 | 35 | **275** |
| SS3 | 2-0 | 2 | 14 | 273 | | 287 | | **576** |
| SS3 | 2-1 | 2 | 1 | 2 | | 1 | 1 | **7** |
| SS3 | 3-2 | 15 | 5 | 71 | | 36 | 10 | **137** |
| SS3 | 4-0 | | 2 | 4 | | 3 | | **9** |
| Total | | 660 | 494 | 3054 | 8 | 1991 | 417 | 6624 |

Table A.2. Barela-Reynolds House, Field Artifact Tally (transcribed from Boone field notes, 1983).

| | | Ceramics | | | | | | | Metal | | | | Glass | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | Level | Wheel Glaze | Wheel Plain | Hand-formed | Factory-made | Tile | Pipes | Whole Vessel | Bone | Nail | Other (Metal) | Metal Components | Vessel | Window | Miscellaneous | Total |
| E41N0 | 1 | | | 5 | 7 | | | | | 42 | 30 | | 11 | 33 | 55 | **183** |
| E41N0 | 1 | | | 3 | 2 | | | | | 15 | | | 5 | 13 | 15 | **53** |
| E41N0 | 2 | | | 8 | 4 | | | | 17 | 10 | 2 | | 3 | 17 | 3 | **64** |
| E41N0 | 2 | 1 | | 10 | 13 | | | | | 14 | 2 | | 7 | 16 | 3 | **66** |
| E41N0 | 3 | | | 44 | 13 | | | | 52 | 14 | 13 | | 7 | 16 | | **159** |
| E41N0 | 3-1 | 1 | | | | | | | | | | | 1 | | 2 | **4** |
| E41N0 | 3-2 | | | 4 | 2 | | | | 3 | 5 | | 4 | 4 | | 7 | **29** |
| E41N0 | 3-3 | | | | | | | | | | 1 | | | | | **1** |
| E41N0 | 4 | | | 4 | 3 | | | | 4 | | 1 | | 4 | | | **16** |
| E41N0 | 4-3 | | | 1 | | | | | | | | | | | | **1** |
| E41N0 | 5 | | | 1 | | | | | 1 | | | | | | | **2** |
| E44N22 | 1 | | | 6 | 3 | | | | | 6 | 8 | | 13 | 2 | 2 | **40** |
| E44N22 | 3 | 2 | | 7 | | | | | 3 | 2 | | | 2 | 1 | 4 | **21** |
| J1 | 1 | 3 | 1 | 6 | 19 | | | | 61 | 69 | 64 | | 85 | 29 | | **337** |
| J1 | 2 | 4 | 6 | 24 | 17 | | 1 | | 31 | 23 | 12 | | 24 | 7 | | **149** |
| J1 | 3 | 2 | | 26 | 12 | | 1 | | 34 | 32 | 5 | | 7 | 4 | | **123** |
| J1 | 4 | 9 | | 40 | 14 | | 7 | | 60 | 36 | 11 | 1 | 19 | 5 | | **202** |
| J1 | 5 | 4 | 3 | 36 | 17 | | 7 | | 36 | 14 | 50 | 1 | 15 | 8 | | **191** |
| J1 | 6 | 1 | | 7 | 4 | | | | 16 | | | | 3 | 1 | | **32** |
| J2 | 1 | 1 | | 5 | 6 | | | | 52 | 52 | 16 | | 54 | 15 | | **201** |
| J2 | 2 | | 4 | 35 | 18 | | | | 37 | 22 | 36 | | 16 | 13 | | **181** |
| J2 | 3 | 1 | | 43 | 14 | | | | 34 | 5 | 8 | | 26 | 12 | | **143** |
| J2 | 3-1 | 2 | | 11 | 2 | | | | 8 | 1 | 4 | | 9 | 1 | | **38** |
| J2 | 4 | 1 | | 28 | 15 | | | | 20 | 8 | 3 | | 14 | 11 | | **100** |
| J2 | 4-2 | 1 | | 11 | 1 | | | | 9 | 13 | 3 | | 2 | 9 | | **49** |
| J2 | 5 | | | | | | | | 3 | 3 | | | 3 | | | **9** |

Table A.2. Continued.

| | | Ceramics | | | | | | | Metal | | | | Glass | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | Level | Wheel Glaze | Wheel Plain | Hand-formed | Factory-made | Tile | Pipes | Whole Vessel | Bone | Nail | Other (Metal) | Metal Components | Vessel | Window | Miscellaneous | Total |
| J3 | 2 | | | 6 | 6 | | | | 6 | 5 | 17 | | 7 | 2 | | **49** |
| J3 | 3 | | | 11 | 1 | | | | 15 | | | | 1 | | | **28** |
| J3 | 3-1 | | | 33 | 3 | | | | 75 | | | | | | | **111** |
| J4 | 2 | | | 17 | 4 | | | | 38 | 3 | | | 2 | | | **64** |
| J5 | 2 | | | 1 | 1 | | | | 2 | 1 | | | | | | **5** |
| J5 | 3 | | | 3 | 3 | | | | 80 | | | | 1 | | | **87** |
| J6 | 1 | 1 | | 19 | 11 | | | | 2 | 18 | 5 | 2 | 167 | 25 | | **250** |
| J6 | 2 | | | 7 | 5 | | | | 4 | 8 | 6 | 1 | 41 | XXX | | **XXX** |
| J6 | 4-1 | 1 | | 5 | | | | | 86 | 3 | 1 | | 5 | 2 | | **103** |
| J6 | 4-2 | 2 | | 7 | 14 | | | | 21 | 27 | 16 | 1 | 18 | 5 | | **111** |
| J6 | 5-1 | | | | | | | | 18 | 2 | 1 | | 7 | 2 | | **30** |
| J6 | 5-2 | | | 1 | 2 | | | | 2 | 2 | 1 | | 1 | 1 | | **10** |
| J7 | 1 | 4 | | 17 | 12 | | | | 65 | 9 | 108 | | 238 | 5 | | **458** |
| J7 | 2-1 | 1 | | 4 | 1 | | | | 22 | | 15 | | 8 | 2 | | **53** |
| J7 | 2-2 | | | | 9 | | | 1 | 4 | 11 | 23 | | 116 | 15 | | **179** |
| J8 | 2-1 | | | 5 | | | | | 11 | 4 | 1 | | 6 | | | **27** |
| J9 | 2-1 | 2 | | | | | | | 12 | | 13 | | 9 | | | **36** |
| N4E43 | 1 | | | 10 | 4 | 1 | | | 4 | 3 | 2 | | 5 | 3 | | **32** |
| N4E43 | 2 | | 2 | 18 | 5 | | | | 10 | | 3 | | 6 | 6 | | **50** |
| N4E43 | 3 | 3 | 6 | 37 | 5 | 0 | | | 18 | | 21 | | 5 | 2 | | **97** |
| N4E43 | 4 | 1 | 2 | 6 | 1 | 0 | | | 5 | 1 | | | | | | **16** |
| N4E43 | 5 | | | | | | | | 4 | | | | | | 50 | **54** |
| S6W1 | 1 | | | 1 | | 1 | | | 1 | 2 | 3 | | 58 | 3 | | **69** |
| S6W1 | 2 | 1 | | 8 | 7 | | | | 4 | 3 | 10 | | 13 | 2 | | **48** |
| S6W1 | 3 | 1 | | 9 | 2 | | | | 5 | 11 | 6 | | 9 | 1 | | **44** |
| S6W1 | 4 | 1 | | 8 | 2 | | | | 22 | 10 | 1 | 1 | 9 | | | **54** |

Table A.2. Continued.

| | | Ceramics | | | | | | | Metal | | | | Glass | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | Level | Wheel Glaze | Wheel Plain | Hand-formed | Factory-made | Tile | Pipes | Whole Vessel | Bone | Nail | Other (Metal) | Metal Components | Vessel | Window | Miscellaneous | Total |
| S6W1 | 5 | | | 5 | 2 | | | | 9 | 14 | 35 | | 12 | | | **77** |
| SS1 | 1 | | | | | | | | 2 | 19 | 83 | 6 | 253 | 13 | | **376** |
| SS1 | 1-2 | | | | 1 | | | | | | 3 | 1 | 10 | | 1 | **16** |
| SS1 | 2 | | | 2 | 4 | | | | | 5 | 12 | | 146 | 4 | | **173** |
| SS1 | 2-1 | | | | 1 | | | | | | 6 | | 70 | 2 | | **79** |
| SS1 | 2-2 | | | | 3 | | | | 4 | | 2 | | 1 | 1 | | **11** |
| SS1 | 2-2 | | | | | | | | 6 | | | | | | | **6** |
| SS1 | 3 | 6 | | 2 | | | | | 11 | 14 | 60 | 2 | 226 | 4 | 1 | **326** |
| SS1 | 3 | | | | | | | | 1 | | 1 | | | | | **2** |
| SS1 | 3-1 | | | | 1 | | | | 3 | | 1 | | 1 | 1 | | **7** |
| SS1 | 3-2 | | | | | | | | 3 | | | | 1 | | | **4** |
| SS1 | 3-2 | | | 2 | 11 | | | | | | | | | | | **13** |
| SS1 | 4 | | | | | | | | 1 | | 2 | | 1 | 2 | | **6** |
| SS1 | 4-1 | | | 3 | | | | | | | | | 4 | 1 | | **8** |
| SS1 | 4-2 | | 1 | | | | | | 5 | | | | | | | **6** |
| SS1 | 4-3 | | | | | | | | | | | | 1 | | | **1** |
| SS1 | 5 | | | 2 | | | | | 1 | | | | | 1 | | **4** |
| SS1 | 6 | | | | | | | | | | | | | 1 | | **1** |
| SS1A | 1 | 1 | 2 | 2 | | | | | 3 | 1 | | | | 4 | 1 | **14** |
| SS1A | 1-1 | | | | | | | | 4 | | 1 | | 18 | | | **23** |
| SS1A | 2 | | | 1 | | | | | 1 | | | | 2 | | | **4** |
| SS2 | 1 | | 2 | 2 | 5 | | | | 3 | 5 | 76 | | 363 | 17 | | **473** |
| SS2 | 1-1 | | 1 | 6 | 28 | | | | 13 | 4 | | | 98 | 6 | | **156** |
| SS2 | 2 | | | | | | | | 3 | 2 | 45 | | 72 | 3 | | **125** |
| SS2 | 2-1 | | | 1 | 1 | | | | 1 | | 5 | | | | | **8** |
| SS2 | 2-2 | | | | | | | | | | | | | | | |

Table A.2. Continued.

| | | Ceramics | | | | | | | | Metal | | | Glass | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unit | Level | Wheel Glaze | Wheel Plain | Hand-formed | Factory-made | Tile | Pipes | Whole Vessel | Bone | Nail | Other (Metal) | Metal Components | Vessel | Window | Miscellaneous | Total |
| SS3 | 1 | 3 | | 5 | 1 | | | | 4 | 28 | 120 | | 78 | | 33 | **272** |
| SS3 | 2 | 1 | | 2 | 1 | | | 1 | 29 | 87 | 200 | 2 | 263 | 5 | | **591** |
| SS3 | 2-1 | | | 2 | 1 | | | | 10 | | 1 | | 1 | 1 | 1 | **17** |
| SS3 | 3-2 | 1 | | 14 | 2 | | | 2 | 2 | 2 | 20 | | 7 | | 4 | **54** |
| SS3 | 4 | | | | 2 | | | | 8 | | 3 | | 4 | | | **17** |
| **TOTAL** | | **63** | **30** | **651** | **348** | **2** | **16** | **4** | **1146** | **741** | **1223** | **26** | **2736** | **XXX** | **182** | **7453** |

*Note:* XXX denotes portion of the fieldnotes that were unreadable.

# Appendix B

# Paste and Temper Data

# Full Petrographic Paste Group Descriptions

## LA 160

*Paste Group 1 and 1a*

Paste Groups 1 and 1a are potentially related paste recipes. They are characterized by very dense paste with few voids and moderately dense sub-rounded granite/augite monzonite sand temper. The paste for Group 1 averages 80.77 percent matrix, 18.07 percent aplastics, and 1.16 percent voids, while Paste Group 1a is averages approximately 74.06 percent matrix, 21.53 percent aplastics, and 4.41 percent voids. Group 1a has a higher amount of very fine sand than Group 1, evidenced by the lower percentage of clay matrix. These groups are roughly equivalent to Groups 1 and 1a for LA 4968 and may represent similar clay preparation techniques.

The temper appears to be augite monzonite or granite sand with sparse volcanic lithics and a mix of hornblende, heavily weathered feldspars and sparse mica rods. The granitic sand is composed of primarily weathered plagioclase with less than 10 percent augite. Sometimes there are myrmekite growths in the feldspars, suggesting a distinct granite source for the sand. The temper is 30–35 percent medium sand and 20–25 percent coarse sand, with the rest of the aplastics comprised of fine-silt sized quartz-feldspar sand and ash that is probably natural to the clay source. Group 1a aplastics are generally coarser than Group 1, with approximately 10 percent very coarse granitic sand, 25–20 percent coarse sand, and approximately 50 percent medium sand.

Voids are very sparse and irregular in shape. Most of them appear to be remnants of burned-out organic material, based on the shape and carbonized ring of clay.

*Paste Group 2*

Paste Group 2 is the most common paste type for LA 160. It is a very dense ashy to sandy paste with rare voids and very rare aplastics larger than fine-grain size. The paste is an average of 82.61 percent matrix, 14.41 percent aplastics (62% are fine-grained), and 2.97 percent voids. The paste is so dense that the dyed epoxy did not fully penetrate the sherds. It ranges between very ashy to very silty/sandy.

Aplastics larger than ash particles or silt are uncommon in the paste but include occasional fine-grained rounded tuff and mudstone that appears to have been mixed in the clay in a non-plastic state—the edges are crisp and there are strong color differences between the mudstone and surrounding matrix. In some specimens, rounded mudstone is the most common aplastic. There are also generally small amounts of fine mica rods that appears to be a natural constituent of the clay. When present, the mica is often oriented parallel to the vessel walls.

*Paste Group 3*

Paste Group 3 is represented by one sherd, sp 3313. It has a gritty dense paste with distinctive crushed basalt temper. The paste is 82.59 percent clay matrix, and 16.54 percent aplastics, and less than 1 percent voids. The basalt is coarse-grained and dominated by tabular plagioclase phenochrysts and pyroxenes. The particles are also heavily stained with hematite, especially encroaching on augite crystals. The hematite is distinctively red in both PPL and plain light. The sherd was identified by OAS archaeologists as Puname Polychrome, probably from Zia Pueblo.

*Paste Group 4*

Paste Group 4 is represented by one sherd, sp 3338. It is very similar to Paste Group 2 and is probably related in that it is a very dense, ashy gritty paste with some mica and few voids or larger aplastics. Some tuff and quartz can be discerned in the paste. Group 4 is differentiated from Group 2 by having fewer aplastics than the average for Group 2. The paste consists of 97.33 percent matrix, 2.1 percent aplastics and 0.57 percent voids.

*Paste Group 6*

Paste Group 6 consists of silty, ashy matrix with a full range of sizes of angular aplastics that may represent crushed rock temper or residual clay from a granitic/diorite source. The paste is an average 77.19 percent matrix, 21.32 percent aplastics, and 1.49 percent voids.

The temper appears to be crushed granitic rock, possibly granite or gneiss. Most grains are weathered plagioclase and undulous quartz with very little mica or mafic lithics. However, large mica tabs are found throughout the paste. Other lithic types include sparse volcanics and rare sandstone and/or diorite. Micas are sometimes altered to calcite. Monomineralic inclusions include plagioclase, calcite, olivine, biotite, and unmixed clay blobs. Voids are minimal and irregular in shape.

The paste constituents suggest this paste group is from a severely weathered residual clay source.

*Paste Group 7*

Paste Group 7 is represented by one sherd (sp 3326). The paste is very fine ash with degraded mica and sparse very coarse and granule-sized rounded particles of what may be vitric tuff or scoria/pumice. The paste is 85.99 percent matrix, 12.74 percent aplastics and 1.26 percent voids.

The tuff appears to be the only aplastic larger than silt in the paste, and averages 1,534 microns in length. Voids are also sparse and irregularly shaped. Most appear to be remnants from organic burn-out.

*Paste Group 8*

Paste Group 8 is represented by one sherd (sp 3329). It is characterized by exceedingly fine ashy paste with almost no mineral aplastics or any kind expect for sparse rounded grains of tuff that is also very fine grained and extremely vitric.

There are irregular voids throughout the paste, these are generally more common than the tuff temper, though they often co-occur. It appears that the paste is so dense that staining did not penetrate the thin-section very well, and it was not possible to confidently differentiate aplastics from voids for additional metrics. The only monomineral is fine mica and extremely rare undulous quartz or augite. The paste appears slightly birefringent, possibly indicating a calcareous source.

*Paste Group 9*

Paste Group 9 is represented by one sherd (sp 3327). It has silty paste with little to no ash, little grit, and small amounts of angular granite and volcanic lithic temper. The paste is on average 83.33 percent matrix, 16.01 percent aplastics and 0.66 percent voids. Aplastics are dominated by very fine quartz and feldspar sand that is probably natural to the clay source.

The temper consists of medium to large subangular-angular lithics that largely are granites dominated by plagioclase and undulous quartz. Basalt is also common. Less common lithics include tuff and cryptocrystalline volcanics that may be andesite or rhyolite. Monomineralics include mica, sparse hornblende, and very fine-grained calcite flakes, which may be an alteration product from mica or augite.

**LA 4968**

*Paste Groups 1 and 1a*

Paste Group 1 is represented by nine specimens. It is closely related to Paste Group 1a but has a higher ratio of vitric ash to very fine sand in the paste. Paste Group 1 paste is very fine ash with little to no sand aplastics. There are sparse medium rounded to subrounded sand inclusions that include possible augite monzonite or granite, tuff, basalt, and two specimens had one sandstone grain each, mudstone pellets, and cryptocrystalline lithics. Monominerals in the fine fraction include quartz, weathered plagioclase, some mica (though less than Paste Group 1a), and more commonly calcite. The paste of Paste Group 1 consists of approximately 83.67 percent matrix, 14.9 percent aplastics, which includes vitric ash. Voids are sparse and irregularly shaped vughs, probably from organic burn-out. They represent 1.43 percent of the sherd area.

Paste Group 1a is represented by eight specimens. It is a moderately dense paste with roughly equal amounts of very fine quartz-feldspar sand and vitric ash. The paste appears to be poorly mixed, with clay pellets that have altered to calcite in some cases. Aplastics larger than 250 microns are uncommon and consist of granite, vitric tuff, and in sp 2861 one grain of mica schist or volcanic lithic (sp 1777). Very fine sand consists of monomineral grains of heavily weathered plagioclase, quartz, mica, or rare hornblende, calcite, or augite. Aplastics on average comprise on average 13.71 percent of the paste area, of which only 3.1 percent of the particles are larger than very fine sand-sized.

The difference between the two is that Paste Group 1a contains roughly equal or greater amounts of very fine sand to ash particles, whereas Paste Group 1 contains almost exclusively ashy particulate in the clay. This suggests slightly different clay sources used by potters who otherwise maintained similar temper and clay preparation practices.

*Paste Group 2*

Paste Group 2 is represented by eight specimens. It is a predominantly sandy, dense paste with little to no ash, and frequently mica. The temper is coarse, subangular granite or monzonite with occasional volcanic or metamorphic lithics. The sherds are an average 72.5 percent matrix, 25.27 percent aplastics, and 2.55 percent voids.

Aplastics are dominated by fine-grained rounded and subrounded sands comprised of undulous quartz, and weathered plagioclase with frequent mica and augite flakes. Added temper is evenly and moderately distributed and consists of primarily subangular heavily weathered granite 100–200 microns in size. Other aplastics larger than very fine sand-sized include basalt, mafic volcanic lithics, possible limestones characterized by cryptocrystalline calcite and one dolomite grain in sp 2637.

Voids are more common than in Paste Groups 1 and 1a, and include both irregular and elongated shapes, but are not common enough to indicate orientation.

*Paste Group 3*

Paste Group 3 is highly micaceous residual paste with large coarse mica schist aplastics. The paste is highly porous with only 73.51 percent clay matrix, 21.48 percent aplastics, and 5.01 percent voids. The mica is tabular and laminated muscovite, which is also predominant in the quartz-mica schist inclusions that are probably naturally included in the residual clay. There is some iron oxide weathering and evidence of burnt-out organics.

*Paste Group 4*

Paste Group 4 is very similar to Paste Groups 1 and 1a. It is a sandy paste with vitric ash and moderately dense granite temper. The paste has an average of 74.28 percent matrix, 23.54 percent aplastics, and 2.18 percent voids.

The temper is large-medium subrounded sand that is dominated by granite, but also includes sparse volcanics such as basalt and or andesite, and possible sandstone and limestone.

Voids are uncommon and irregularly shaped rather than elongated. They range between 72 and 1,616 microns in size.

*Paste Group 5*

Paste Group 5 consists of three specimens and is very similar to Paste Group 4, but with slightly smaller, finer granite temper. Paste Group 5 consists of ashy, somewhat sandy paste with moderately dense subrounded mixed sand temper. The paste has an average of 75.00 percent matrix, 22.00 percent aplastics, and 3.00 percent voids.

The temper is medium-small subrounded sand that is dominated by monominerals of quartz and feldspar that are probably residual from granitic sources. There are some polycrystalline conglomerates that suggest this. Possible limestone and dolomite are also sparsely interspersed among the aplastics, suggesting sedimentary mixture in the sand source. Voids are sparse, 142 microns average size, and irregularly shaped.

*Paste Group 6*

Paste Group 6 has very similar paste characteristics to Paste Group 1, with dense amounts of vitric ash and a small amount of very fine sand. Aplastics in Paste Group 6, however, are differentiated by the addition of large devitrified tuff fragments. The matrix is 90.80 percent of the sherd area, aplastics are 8.23 percent and voids are very sparse at 0.95 percent. There are two specimens in this paste group.

*Paste Group 7*

Paste Group 7 has very similar paste characteristics to Paste Group 1a, with a dense mixture of very fine sand and vitric ash. Temper in Paste Group 7, however, is differentiated by the addition of large devitrified tuff fragments. The matrix is 85.34 percent of the sherd area, aplastics are 13.74 percent, and voids are very sparse at 0.92 percent. There are five specimens in this paste group.

## LA 8671

*Paste Group 1*

Paste Group 1 is a porous earthenware paste tempered with quartz-feldspar sand that includes some volcanic lithics. The group averages 66.55 percent matrix, 25.27 percent aplastics, and 9.82 percent voids.

Silt particles make up an average 0.92 percent of the matrix, although this varies between 1.31 in sp 1442 and 0.52 percent in sp 750. The clay is only moderately well-mixed and clay pellets were noted in sp 750 and 747.

Aplastics are subrounded sand that is approximately 60–80 percent quartz, weathered orthoclase and plagioclase feldspars, and 20–40 percent mixed volcanic that are dominated by granite, followed by dark felty lithics that are possibly tuff, rhyolitc, or latite. There are occasional hornblende fragments, both as monominerals and accessories in lithics. Many lithics are heavily weathered and altered with sericite and clay minerals.

Voids vary in size and orientation. Most are elongated channels at shallow angles to vessel walls. There are 2 to 3 irregularly shaped voids from organic material in each sherd. Voids range between 106 and 527 microns in size, and represent 5.77 to 12.49 percent of the sherd area.

*Paste Group 2*

Paste Group 2 is a porous earthenware made from naturally sandy paste with mixed volcanic sand temper and natural quartz, feldspars, and mica. The paste is on average 71.74 percent matrix and 18.72 percent aplastics.

Aplastics consist of mixed volcanic sand. The sand is very fine and fine grained and dominated by quartz and altered feldspars with perthitic and myrmekitic intergrowths. Lithics are often dominated by granite or monzonite, but felty volcanics such as tuff, porphyritic andesite, and basalt are also common. Sp 1113 has one mica schist grain observed, and sp 761 and 1203 each had one sandstone grain.

Voids are elongated channels, typically parallel to each other but at an angle to the vessel walls. The average 523 microns in length and comprise an average 9.54 percent of the sherd area, which is similar to Paste Group 1.

*Paste Group 3*

Paste Group 3 is an earthenware with extremely sandy paste dominated by dense quartz and feldspar subrounded to subangular grains interspersed with a moderate amount of coarse-grained volcanic sand or crushed rock. The sherds average 70.59 percent matrix, 19.58 percent aplastics, and 9.84 percent voids. The matrix is difficult to see or assess through the dense sand.

Potentially natural aplastics are very fine sand and consist primarily of undulous quartz and feldspar monominerals. Altered orthoclase, polysyntheic plagioclase microcline are all common. Biotite flakes are present, but rare. Many minerals are altered with sericite. The coarse fraction consists of coarse-grained sand and/or crushed rock, which comprise approximately 43 percent of the aplastics. Granite/monzonite appears to be the most common, as well as basalt, tuff conglomerate (porphyritic tuff?) and porphyritic andesite. The coarse fraction is also well-sorted.

Voids are moderate to sparse, and typically short channels or irregular shapes from burnt-out organics. They are mostly parallel to the vessel walls but angled and irregular in sp 1202. This paste group appears to be related to Paste Groups 1 and 2 by materials and construction but is on a continuum with regards to aplastic density, possibly due to vessel function.

*Paste Group 4*

Paste Group 4 is a dense earthenware with moderate amounts of coarse rounded tuff temper. The sherds average 82.18 percent matrix, 11.75 percent aplastics and 6.07 percent voids. The matrix is ashy, silty and well-mixed. Natural aplastics include sparse quartz and feldspar with occasional biotite rods, pyroxene grains, mymekitic feldspar and ash, which is particularly visible in and around voids.

Temper is dominated by large rounded vitric tuff grains that average approximately 900 microns in length, with rare basalt grains in sp 743.

Voids are rare, irregular in shape, and often are filled with ashy particulate.

*Paste Group 5*

Paste Group 5 consists of earthenwares with silty, sandy paste and primarily crushed hornblende latite temper. The sherds average 79.79 percent matrix, 13.47 percent aplastics, and 6.75 percent voids. The matrix is silty but well sorted, with few voids. The sand is typically very fine and consists of rounded to angular quartz and feldspar.

The coarse fraction is dominated by crushed hornblende latite. The temper is medium to coarse in size and angular. Sp 756 appears to be a local glazeware and may be a holdover glazeware from nearby Galisteo region. Monominerals consist of angular feldspar, quartz, and hornblende with sparse mica and augite.

Voids are sparse and have random orientation. Those that are elongated are at an angle to vessel walls and parallel to each other, suggesting coil manufacture and potentially some shearing forces.

*Paste Group 6*

Paste Group 6 is a medium grained earthenware with very dense quartz-feldspar sand and moderate to sparse coarse crushed volcanic temper. The paste is on average 74.06 percent matrix, 22.54 percent aplastics, and 3.40 percent voids. The matrix is hard to assess due to the density of the aplastics, but appears to be red, slightly birefringent and finely textured. Sp 1481 has some poorly mixed clay pellets without any high density of aplastics.

Aplastics are dominated by medium grained angular and subangular quartz and feldspar particles. The feldspar is dominated by plagioclase with polysynthetic twinning and is not heavily altered by sericite or other evidence of weathering. These aplastics are evenly distributed and very dense. Hornblende, mica, and small pyroxenes are also interspersed throughout the paste.

The coarse fraction temper consists of a range of monzonite and other plutonic lithics. The average size of temper is 475 microns long (medium) and they are typically subangular, possibly indicating the addition of crushed rock. Sp 762 is dominated by basalt, with intermediate volcanics such as tuff and possibly augite latite. Sp 883 has a range of volcanics, including tuff, hornblende latite, monzonite, basalt and lithics dominated by cryptocrystalline textures. There is some variation in medium-large aplastic density.

Voids are very small and sparse, and oriented parallel to vessel walls. Typically only 5–10 were noted per sherd.

*Paste Group 7*

Paste Group 7 is a sand, homogenous light tan paste with grog temper and very few other aplastics or lithics. The matrix comprises an average 82.18 percent of the paste. It has a silty texture with abundant fine fraction sand. It is well-mixed and slightly birefringent.

Aplastics are primarily coarse-sized crushed sherd temper. Total aplastics, including fine sand, comprise an average 16.37 percent of the paste. The grog appears to be of similar texture as the surrounding clay, but is darker, and has different oxidization. Other occasional inclusions are basalt, quartz, weathered orthoclase, mica, and fine grained volcanics. There are usually very few aplastics present, however.

Voids are rare, irregularly shaped and carbonized from burnt-out organic material. They comprise an average 1.45 percent of the paste.

*Paste Group 8*

Paste Group 8 may be closely related to Paste Groups 1 through 3. It is a porous earthenware with silty matrix, dense fine-grained sand, and sparse distribution of coarse volcanic sand. The matrix comprises an average 77.21 percent of the paste, aplastics are 18.82 percent, and voids are 3.97 percent.

Aplastics have a bimodal size distribution, with a high density of very fine-grained rounded to subrounded quartz-feldspar sand. The sand is dominated by quartz, followed by weathered plagioclase, with occasional mica and hornblende. There is also the rare large orthoclase fragment. Medium and coarse sand is comprised of a range of volcanic lithics, including micro and cryptocrystalline lithics, sparse tuff, weathered basalt, hornblende latite, and what may be porphyritic andesite—coarse grains of quartz and feldspar on a find vitric groundmass.

Voids are elongated channels and planar voids that are parallel to the vessel walls. They are common, average 197 microns in length, and are an average of 3.97 percent of the paste.

*Paste Group 9*

Paste Group 9 is dense vitric ashy clay with small amounts of tuff and basalt aplastics. The matrix is densely packed with very fine vitric ash particles which makes the clay hard to assess. It is reddish tan in PPL and comprises an average 84.03 percent of the sherd area.

Aplastics consist of large, rounded tuff and basalt particles. Aplastics are an average 12.56 percent of the sherd area. The tuff is very vitric and vesicular. Some tuff may be laminated (sp 840). There are also large quartz grains with stress-cracks, and some weathered orthoclase and plagioclase feldspars. There are very rare mica rods which are also mostly degraded to sericite.

Voids average 3.42 percent of the sherd area.

*Paste Group 10*

Paste Group 10 is very similar and possibly related to Paste Group 2. It consists of porous earthenware with dense quartz-feldspar very fine sand and sparse large grained subangular to angular lithic fragments that may be sand or crushed rock. Voids tend to be elongated shrinkage cracks around large aplastics.

The matrix is silty, with high amounts of probably natural angular quartz and feldspar, mostly very fine and fine-sized. The quartz is undulous and the orthoclase is weathered and "dusty" with opaque magnetite. Plagioclase and microcline are also very common and extremely altered by sericite. There is some mica and sparse pyroxene grains. The coarse fraction temper is mixed volcanic lithics dominated by plagioclase monzonite, rounded basalt, and tuff/rhyolite. Possible mica schist was observed in sp 775. Sp 1211 is most diverse, with primarily augite monzonite and basalt, followed by find-grained volcanics with perthitic and microcrystalline textures, and felty volcanics with large tabular feldspars and augite phenocrysts that may be basalt or andesite.

Voids are large, elongated shrinkage cracks, some parallel to the vessel walls, but many forming around the coarse rock temper. Sp 775 has a large crack running most of the length of the thin-section. Sp 1293 has at least one irregular void left by burnt-out organics.

*Paste Group 11*

Paste Group 11 is represented by one sherd (sp 785) and may be related to Paste Group 9. It consists of dense, very fine ashy matrix with only nine aplastics within the coarse size range (0.5–1 mm). There is some mica. Voids are very sparse and irregular in shape. The matrix is 97.29 percent (however, silt-sized particles made up 4.76 percent of the matrix area), the aplastics are 1.46 percent and voids are 1.25 percent of the sherd area.

*Paste Group 12*

Paste Group 12 has one specimen (sp 941). It is a dense earthenware with ashy sandy paste dominated by fine-grained polysynthetic plagioclase. The heavy fraction consists of lithic tuff with a wide range of accessory minerals and phenocrysts.

The fine grained aplastics comprise 18.30 percent of the sherd area and are primarily angular plagioclase. Biotite is common, as is hornblende and augite monominerals. These may be residual from the coarse-grained temper, which is dominated by conglomerate tuff particles with diverse phenocrysts of tabular plagioclase, augite, hornblende, mica, and other pyroxenes. The tuff grains have irregular, anhedral edges and may be crushed.

Voids are sparse and comprise 1.93 percent of the sherd area.

*Paste Group 13*

Paste Group 13 is represented by one specimen (sp 838). It is a dense earthenware with very fine rounded sand aplastics which are probably natural inclusions, and sparse, irregular voids. The matrix comprises 94.06 percent of the paste, aplastics are 3.14 percent, and voids are 2.80 percent.

The paste appears to be gritty and dark brown. Micrites of mica are common. The color of the paste makes it difficult to discern if ash is present. Most aplastics are rounded and sub-rounded quartz sand, but rounded lithics with a felty texture that may be degraded tuff are also present.

*Paste Group 14*

Paste Group 14 is also represented by one specimen (sp 773). It is a dense earthenware similar to Paste Group 13, with very fine rounded sand aplastics, and sparse, irregular voids. However, in Paste Group 14, the reddish matrix comprises only 71.87 percent of the paste, and aplastics are much more common at 23.67 percent. Voids are less than 4.44 percent, but were difficult to quantify using DIA methods because they were consistently contiguous with similarly colored inclusions or had infilling from other microtextured minerals.

Aplastics are very fine rounded sand. The sand is evenly distributed and well-sorted so that there is little size variation among the particles. The sand is predominantly unaltered quartz with some microcline feldspar and rare pyroxenes. Other lithics within the sand particles are microcrystalline and cryptocrystalline volcanics and altered andecite.

*Paste Group 15*

Paste Group 15 has one specimen (sp 1347). It is a dense earthenware with silty paste and very fine sand aplastics that are probably natural inclusions. The matrix comprises 80.37 percent of the paste, aplastics are 14.11 percent and voids are rare at 5.52 percent.

The coarse fraction consists of angular and subangular granite with common fragment of mica. There is also at least one fragment of mica schist and a small amount of microcrystalline volcanic lithics. The coarse fraction appears to be added crushed granite from a well-weathered residual source that also has a high mica content.

## Barela-Reynolds House

*Paste Group 1*

Paste Group 1 is a highly porous, sand tempered earthenware with an average 72.38 percent matrix, 20.96 percent aplastics, and 6.66 percent voids. The matrix is fine, with only small amounts of silt, but is also poorly mixed and appears marbled in PPL. Long streaks of different colored clay are oriented parallel to the vessel walls and voids. There are also sparse coarse sand-sized clay pellets or mudstones. The sand is mostly subrounded and composed of quartz, weathered feldspars and finely textured felty volcanics that probably consist of rhyolite, trachyte, and chert. Some coarser textured plutonics may also be present. Most feldspar, both monomineralic and within lithics is heavily weathered, demonstrated by iron oxide and sericite alteration products. Both plagioclase and orthoclase are present in roughly equal amounts, as well as perthitic and myrmekitic textures. Some variations that may later indicate separate petrofacies include rare (one or two cases) sandstone grains in sp 160, 369, and 590, slightly higher amounts of basaltic volcanics in sp. 347, or the presence of spherulites in sp 136 and 663.

Voids are generally common, 5.23 to 7.89 percent of the sherd area, and are long planar voids. In most cases these are parallel to 20 degrees from vessel edges and each other. Each sherd also often has at least one void produced by the burn-out of organic material, although this generally appears to be incidental rather than intentionally added temper.

*Paste Group 2*

Paste Group 2 appears to be closely related to Paste Group 1. It is also a porous earthenware with volcanic sand temper. The paste approximately 75.85 percent matrix, 21.57 percent aplastics, and 2.58 percent voids. The matrix is finely textured, with 1–2 percent silt sized particles, which is siltier than Paste Group 1. The clay is also better mixed than Paste Group 1 and lacks streaks or marbling, although this paste is generally dark gray and difficult to discern in PPL or XPL. There are very large clay pellets in most samples, reaching 5,761 microns in length in sp 372.

The paste is tempered with lithic sand. The majority of the sand is rounded and very fine-grained. The sand is comprised of weathered quartz, plagioclase, and orthoclase feldspar monominerals and a range of volcanic and plutonic lithics that are also rounded and heavily weathered.

Voids are elongated channels and average 275 microns in length, which is shorter than Paste Group 1. They are also generally oriented at an angle from the vessel walls.

*Paste Group 3*

Paste Group 3 is also closely related to Paste Groups 1 and 2. It is a highly porous sand tempered earthenware with an average 65.74 percent matrix, 25.73 percent aplastics, and 8.52 percent voids. The matrix is finely textured with approximately 1.25 percent silt and it appears to be well-mixed.

The paste is tempered with subrounded sand. The aplastic sizes are normally distributed, with the majority being fine sand, and the largest being approximately 2 mm across. The sand is comprised of primarily quartz and feldspar monominerals with plutonic and volcanic lithics such as granite/monzonite, tuff and intermediates. The feldspars are heavily weathered, often with perthitic textures. At least one limestone grain was observed. Orthoclase is dominant, followed by plagioclase and microcline.

Voids are elongate channels, between 91 and 5,651 microns (5.65 mm) in size. They comprise an average 8.52 percent of the sherd area and were often filled in with clay particulate and calcite growths.

*Paste Group 4*

Paste Group 4 is a porous earthenware tempered with very fine to fine sand and grog. The average paste is 78.81 percent matrix, 16.61 percent aplastic, and 4.58 percent void. The matrix is fine with 0.97 percent of the area silt sized particles. The clay is poorly mixed and play pellets are generally present.

Temper includes sparse crushed sherds, most likely from pottery made from similar clays, as the edges of particles are not well defined. One example in sp 153 appears to be slipped. Other aplastics are dense, well-sorted, fine-grained lithic sand, which may or may not be intentionally added to the paste. The sand primarily rounded to subrounded quartz, with smaller feldspar grains that are sometimes angular or tabular, possibly suggesting a residual clay source. Feldspars are dominated by plagioclase with polysynthetic twinning. Occasional mica and pyroxene monominerals are also present.

The size range of voids is narrow: 2,178 to 274 microns, averaging 440 microns. They are primarily elongated channels from shrinkage, but also include some voids left by burnt-out organics.

*Paste Group 5*

Paste Group 5 is represented by one specimen, sp 165. It is a dense earthenware tempered with fine-grained sand. The paste is 72.87 percent matrix, 24.34 percent aplastics, and 2.79 percent voids. The clay is poorly mixed and there are clay pellets present.

Aplastics are dominated by subrounded to angular fine sand interspersed with large, sparse opaque lithics. The sand is comprised of more than 50 percent quartz and feldspar. Lithic grains are plutonic, probably granite or monzonite, but their small size makes identification difficult. Sparse biotite flakes are also present.

Voids are elongated channels that average 248 microns in length. They are oriented parallel to vessel walls.

*Paste Group 6*

Paste Group 6 is a porous earthenware tempered with volcanic lithic sand of similar composition to Paste Groups 1–3. The clay is silty and the paste averages 67.52 percent matrix, 21.33 percent aplastics, and 11.15 percent voids. Silt, comprises 1.65 percent of the matrix area.

Temper is volcanic lithic sand that is dominated by quartz and feldspars. The feldspar is predominantly microcline and twinned plagioclase. The remaining sand is comprised of approximately 50 percent volcanic and 50 percent granitic grains. The volcanics generally consist of dark, felty mafics such as rhyolite, and sparse basalt. Spherulites are present. The granitic grains are probably monzonite with biotite mica.

Voids are elongated channels that are typically both thinner and shorter than Paste Group 1. Paste Group 6 may represent a similar clay and temper source as Groups 1–3 with different wedging or forming practices.

*Paste Group 7*

Paste Group 7 consists of a non-local red paste tempered with dense, fine-grained sand. The sherds are probably a Mexican-made glazeware. The sherd averages 92.13 percent matrix, 5.85 percent aplastics, with minimal voids. The matrix is fine and dense and a light reddish brown under PPL. Aplastics are well sorted fine-grained sand, or the clay may be self-tempered. Small angular quartz and some weathered plagioclase dominate the aplastics, though mica and calcite are also sparsely scattered throughout the paste. Lithic fragments include subrounded granitic particles with muscovite, and felty volcanics and some micro-crystalline feldspar grains. The average grain size for aplastics is 118 microns.

*Paste Group 8*

Paste Group 8 is represented by one glazeware specimen (sp 128) that is also probably from Mexico. It has a very dense paste with very few aplastics or voids. The sherd area is approximately 93.86 percent matrix, 4.55 percent aplastics, and 1.60 percent voids.

Aplastics are most likely natural to the clay. Fine-grained inclusions consist of quartz and some possible weathered granite. They are generally angular.

Voids are sparse, elongated channels primarily located near the vessel surfaces. The average is 197 microns long. There are some other irregularly shaped voids that may be from mineral loss during firing.

*Paste Group 9*

Paste Group 9 is represented by three specimens. The average paste is 81.21 percent matrix, 16.47 percent aplastics and 2.32 percent voids. The matrix is dark brown to red in plain light and is only moderately well-mixed. The clay is silty with mica laths throughout and sp 362 may also have ash. Aplastics are rounded to subrounded quartz and feldspar that is very heavily weathered. The quartz is stained and undulous, and orthoclase feldspar has sericite intergrowths. This may be heavily weathered sand from a granitic source. The aplastics have an even size distribution, suggesting they are natural inclusions in the clay source.

*Paste Group 10*

Paste Group 10 is represented by one specimen (sp 416). It is a dense, coarsely grained earthenware with crushed monzonite temper and approximately 79.59 percent matrix, 17.92 percent aplastics, and 2.50 percent voids. The paste is dark brown to black in PPL, which makes it difficult to discern how well the clay was mixed.

The aplastics are coarse-grained crushed rock temper and the matrix area is 1.48 percent silt. The monominerals consists of medium sized undulous quartz and heavily altered plagioclase. Large grained lithics consist of dark felty mafics, sparse basalt and rhyolite, and most commonly angular monzonite comprised of heavily weathered microcline and orthoclase feldspars with rare biotite accessories.

Voids are minimal. They are typically irregular in shape and have a short axis. Most voids appear to be due to carbonized organic material.

*Paste Group 11*

Paste Group 11 is represented by one specimen (sp 41). It is a silty paste with subrounded to subangular granite and volcanic medium sand and possible mudstone or unmixed clay inclusions. The matrix makes up 82.72 percent of the paste, inclusions are 15.86 percent and voids are 1.41 percent. The granite is often stained by iron oxide. Other lithic particles in the sand are generally fine-grained and felty, many are most likely rhyolite and possibly some chert or basalt. The aplastics appear to be well-sorted and consistently medium or large, suggesting they are an added temper.

Table B.1. Digital Image Analysis Results (all measurements are in inches).

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 160 | 160_1 | 3311 | 0.71409 | 0.00817 | 0.57028 | 79.860 | 0.00868 | 1.215 | 0.13514 | 18.925 |
| 160 | 160_1 | 3314 | 0.81110 | 0.01652 | 0.58758 | 72.443 | 0.01037 | 1.279 | 0.21315 | 26.279 |
| 160 | 160_1 | 3319 | 0.54321 | 0.00666 | 0.45947 | 84.584 | 0.00649 | 1.195 | 0.07725 | 14.221 |
| 160 | 160_1 | 3325 | 0.55865 | 0.01048 | 0.48143 | 86.177 | 0.00530 | 0.949 | 0.07192 | 12.875 |
| 160 | 160_1 | 3340 | NC | NC | NC | NC | NC | NC | NC | NC |
| 160 | 160_1a | 3322 | 0.85306 | 0.01549 | 0.58763 | 68.884 | 0.01841 | 2.158 | 0.24702 | 28.957 |
| 160 | 160_1a | 3324 | 0.59570 | 0.01505 | 0.45349 | 76.127 | 0.03284 | 5.513 | 0.10937 | 18.360 |
| 160 | 160_1a | 3330 | 0.53450 | 0.00714 | 0.40590 | 75.940 | 0.01811 | 3.388 | 0.11049 | 20.671 |
| 160 | 160_1a | 3333 | 0.52600 | 0.01611 | 0.37232 | 70.783 | 0.02475 | 4.705 | 0.12893 | 24.511 |
| 160 | 160_1a | 3335 | 0.71500 | 0.01634 | 0.56189 | 78.586 | 0.04482 | 6.269 | 0.10829 | 15.146 |
| 160 | 160_2 | 3312 | 0.61390 | 0.01693 | 0.53154 | 86.584 | 0.02451 | 3.992 | 0.05785 | 9.424 |
| 160 | 160_2 | 3315 | 0.70872 | 0.02353 | 0.60287 | 85.065 | 0.00405 | 0.571 | 0.10180 | 14.364 |
| 160 | 160_2 | 3316 | 0.55538 | 0.03110 | 0.41663 | 75.017 | 0.00486 | 0.875 | 0.13389 | 24.109 |
| 160 | 160_2 | 3318 | 0.77568 | 0.02096 | 0.60281 | 77.714 | 0.04042 | 5.211 | 0.13245 | 17.075 |
| 160 | 160_2 | 3320 | 0.78976 | 0.03024 | 0.60640 | 76.783 | 0.00442 | 0.560 | 0.17894 | 22.658 |
| 160 | 160_2 | 3321 | 0.50362 | 0.02379 | 0.45694 | 90.730 | 0.00088 | 0.175 | 0.04580 | 9.095 |
| 160 | 160_2 | 3328 | 0.71300 | 0.03537 | 0.62613 | 87.816 | 0.00920 | 1.290 | 0.07767 | 10.894 |
| 160 | 160_2 | 3331 | 0.50700 | 0.01495 | 0.40696 | 80.268 | 0.07296 | 14.391 | 0.02708 | 5.341 |
| 160 | 160_2 | 3332 | 0.79500 | 0.02788 | 0.60971 | 76.693 | 0.01632 | 2.053 | 0.16897 | 21.254 |
| 160 | 160_2 | 3334 | 0.74141 | 0.02913 | 0.61224 | 82.578 | 0.00499 | 0.673 | 0.12418 | 16.749 |
| 160 | 160_2 | 3336 | 0.62800 | 0.01917 | 0.58990 | 93.934 | 0.02355 | 3.750 | 0.01455 | 2.316 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 160 | 160_2 | 3339 | 0.74300 | 0.01286 | 0.58048 | 78.126 | 0.01587 | 2.136 | 0.14665 | 19.738 |
| 160 | 160_3 | 3313 | 0.52620 | NC | 0.43458 | 82.588 | 0.00459 | 0.871 | 0.08704 | 16.540 |
| 160 | 160_4 | 3338 | 0.53956 | 0.01441 | 0.52515 | 97.330 | 0.00306 | 0.567 | 0.01135 | 2.103 |
| 160 | 160_6 | 3317 | 0.74585 | 0.01393 | 0.54246 | 72.730 | 0.01215 | 1.628 | 0.19125 | 25.642 |
| 160 | 160_6 | 3323 | 0.64537 | 0.01449 | 0.52698 | 81.655 | 0.00869 | 1.347 | 0.10970 | 16.999 |
| 160 | 160_7 | 3326 | 0.69448 | 0.02500 | 0.59722 | 85.994 | 0.00878 | 1.264 | 0.08849 | 12.741 |
| 160 | 160_8 | 3329 | NC | NC | NC | NC | NC | NC | NC | NC |
| 160 | 160_9 | 3327 | 0.66285 | 0.00738 | 0.50618 | 76.364 | 0.00371 | 0.560 | 0.15296 | 23.076 |
| 160 | 160_9 | 3337 | 0.98990 | 0.02249 | 0.89382 | 90.294 | 0.00752 | 0.760 | 0.08856 | 8.946 |
| 4968 | 4968_1a | 1777 | 0.82522 | 0.02844 | 0.75719 | 91.757 | 0.00772 | 0.936 | 0.06031 | 7.308 |
| 4968 | 4968_1a | 1782 | 0.72047 | 0.01399 | 0.67158 | 93.215 | 0.00462 | 0.641 | 0.04427 | 6.144 |
| 4968 | 4968_1a | 2286 | 0.77855 | 0.03438 | 0.67098 | 86.183 | 0.01152 | 1.480 | 0.09605 | 12.338 |
| 4968 | 4968_1a | 2962 | 0.31100 | 0.01206 | 0.26828 | 86.264 | 0.00654 | 2.103 | 0.03618 | 11.634 |
| 4968 | 4968_1a | 3000 | 0.63712 | 0.02428 | 0.55070 | 86.436 | 0.01849 | 2.902 | 0.06793 | 10.662 |
| 4968 | 4968_1a | 3038 | 0.41916 | 0.01807 | 0.37228 | 88.815 | 0.01274 | 3.039 | 0.03414 | 8.146 |
| 4968 | 4968_1a | 3177 | 0.44800 | 0.01826 | 0.38562 | 86.075 | 0.00767 | 1.712 | 0.05471 | 12.213 |
| 4968 | 4968_1a | 3222 | 0.39886 | 0.01638 | 0.33138 | 83.082 | 0.02264 | 5.676 | 0.04484 | 11.242 |
| 4968 | 4968_1 | 1596 | 0.88430 | 0.03136 | 0.71034 | 80.328 | 0.00323 | 0.365 | 0.17073 | 19.307 |
| 4968 | 4968_1 | 1778 | 0.84168 | 0.03648 | 0.74048 | 87.976 | 0.01890 | 2.246 | 0.08230 | 9.778 |
| 4968 | 4968_1 | 1826 | 0.61240 | 0.02180 | 0.53867 | 87.959 | 0.00621 | 1.015 | 0.06752 | 11.026 |
| 4968 | 4968_1 | 1828 | 0.47881 | 0.01541 | 0.45266 | 94.538 | 0.00078 | 0.163 | 0.02537 | 5.299 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 4968 | 4968_1 | 2075 | 0.61401 | 0.02314 | 0.48441 | 78.893 | 0.02100 | 3.420 | 0.10860 | 17.687 |
| 4968 | 4968_1 | 3031 | 0.66518 | 0.02484 | 0.54431 | 81.828 | 0.02791 | 4.195 | 0.09297 | 13.977 |
| 4968 | 4968_1 | 3051 | 0.15789 | 0.00525 | 0.13974 | 88.507 | 0.00052 | 0.329 | 0.01763 | 11.164 |
| 4968 | 4968_1 | 3053 | 0.59603 | 0.02221 | 0.53964 | 90.539 | 0.00429 | 0.719 | 0.05211 | 8.743 |
| 4968 | 4968_1 | 3341 | 0.47526 | 0.01145 | 0.44704 | 94.063 | 0.00208 | 0.438 | 0.02614 | 5.499 |
| 4968 | 4968_2 | 1761 | 0.84418 | 0.04239 | 0.73225 | 86.741 | NC | NC | 0.11193 | 13.259 |
| 4968 | 4968_2 | 2193 | 0.66636 | 0.01957 | 0.54412 | 81.655 | 0.00661 | 0.992% | 0.11563 | 17.353 |
| 4968 | 4968_2 | 2637 | 0.63200 | 0.02077 | 0.47643 | 75.385 | 0.00767 | 1.214% | 0.14790 | 23.401 |
| 4968 | 4968_2 | 2863 | 0.57600 | 0.01570 | 0.44978 | 78.087 | 0.01851 | 3.214% | 0.10771 | 18.700 |
| 4968 | 4968_2 | 2876 | 0.68908 | 0.02522 | 0.51298 | 74.444 | 0.01777 | 2.579% | 0.15833 | 22.977 |
| 4968 | 4968_2 | 2954 | 0.36439 | 0.01170 | 0.26521 | 72.783 | 0.01010 | 2.772% | 0.08908 | 24.446 |
| 4968 | 4968_2 | 2989 | 0.71164 | 0.01972 | 0.49480 | 69.530 | 0.02725 | 3.830% | 0.18959 | 26.641 |
| 4968 | 4968_2 | 3264 | 0.90400 | 0.02627 | 0.61344 | 67.859 | 0.02931 | 3.242% | 0.26125 | 28.899 |
| 4968 | 4968_3 | 2109 | 0.41162 | 0.00464 | 0.31327 | 76.106 | 0.02890 | 7.021% | 0.06945 | 16.873 |
| 4968 | 4968_3 | 2865 | 0.43994 | 0.00849 | 0.33589 | 76.349 | 0.01197 | 2.721% | 0.09208 | 20.931 |
| 4968 | 4968_3 | 2987 | 0.36700 | 0.00389 | 0.26497 | 72.199 | 0.01944 | 5.296% | 0.08259 | 22.505 |
| 4968 | 4968_4 | 2013 | 0.79236 | 0.02518 | 0.58755 | 74.151 | 0.01938 | 2.446% | 0.18543 | 23.403 |
| 4968 | 4968_4 | 2864 | 0.59267 | 0.01561 | 0.47514 | 80.169 | 0.01393 | 2.350% | 0.10360 | 17.481 |
| 4968 | 4968_4 | 3030 | 1.01704 | 0.02977 | 0.78580 | 77.263 | 0.01769 | 1.739% | 0.21355 | 20.998 |
| 4968 | 4968_5 | 2862 | 0.98800 | 0.03323 | 0.83634 | 84.650 | 0.02953 | 2.989% | 0.12213 | 12.361 |
| 4968 | 4968_5 | 3200 | 0.70351 | 0.02214 | 0.58075 | 82.550 | 0.02245 | 3.191% | 0.10032 | 14.260 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 4968 | 4968_5 | 3204 | 0.59603 | 0.03702 | 0.42036 | 70.527 | 0.01677 | 2.813% | 0.15891 | 26.661 |
| 4968 | 4968_6 | 1793 | NC | NC | NC | NC | NC | NC | NC | NC |
| 4968 | 4968_6 | 1795 | 0.35834 | 0.00887 | 0.33428 | 93.285 | 0.00343 | 0.957% | 0.02063 | 5.758 |
| 4968 | 4968_7 | 1792 | 0.62269 | 0.02286 | 0.58943 | 94.659 | 0.00345 | 0.555% | 0.02981 | 4.787 |
| 4968 | 4968_7 | 2029 | 0.41409 | 0.01531 | 0.38910 | 93.966 | 0.00394 | 0.951% | 0.02105 | 5.083 |
| 4968 | 4968_7 | 2030 | 0.60520 | 0.02832 | 0.52926 | 87.452 | 0.00502 | 0.829% | 0.07092 | 11.719 |
| 4968 | 4968_7 | 2183 | 0.51600 | 0.01405 | 0.41944 | 81.287 | 0.00632 | 1.225% | 0.09024 | 17.488 |
| 4968 | 4968_7 | 2861 | 0.98900 | 0.04045 | 0.87252 | 88.222 | 0.01008 | 1.019 | 0.10640 | 10.759 |
| 8671 | i1 | 1442 | 0.65445 | 0.00858 | 0.34618 | 52.896 | 0.07389 | 11.290 | 0.23439 | 35.814 |
| 8671 | i1 | 747 | 0.57500 | 0.00399 | 0.36817 | 64.030 | NC | NC | 0.20683 | 35.970 |
| 8671 | i1 | 750 | 0.55184 | 0.00285 | 0.40259 | 72.955% | 0.06893 | 12.490 | 0.08032 | 14.555 |
| 8671 | i1 | 779 | 0.65725 | 0.00776 | 0.47203 | 71.818% | 0.06247 | 9.504 | 0.12276 | 18.678 |
| 8671 | i1 | 833 | 0.82477 | 0.00902 | 0.61830 | 74.966% | 0.04762 | 5.773 | 0.15886 | 19.261 |
| 8671 | i1 | 951 | 0.50366 | 0.00367 | 0.31535 | 62.612% | 0.05050 | 10.026 | 0.13781 | 27.361 |
| 8671 | i10 | 1211 | 0.48555 | 0.00510 | 0.33143 | 68.259% | 0.06396 | 13.172 | 0.09016 | 18.569 |
| 8671 | i10 | 1293 | 0.34815 | 0.00508 | 0.27074 | 77.766% | 0.01739 | 4.994 | 0.06002 | 17.241 |
| 8671 | i10 | 775 | 0.75403 | 0.00704 | 0.53595 | 71.079% | 0.03552 | 4.710 | 0.18256 | 24.211 |
| 8671 | i11 | 785 | 0.44415 | 0.02057 | 0.43212 | 97.291% | 0.00556 | 1.252 | 0.00647 | 1.457 |
| 8671 | i12 | 941 | 0.42004 | 0.01445 | 0.33507 | 79.770% | 0.00811 | 1.931 | 0.07686 | 18.299 |
| 8671 | i13 | 838 | 0.50792 | 0.00467 | 0.47773 | 94.056% | 0.01424 | 2.804 | 0.01595 | 3.140 |
| 8671 | i14 | 773 | 0.56479 | 0.00364 | 0.40589 | 71.866% | 0.02511 | 4.446 | 0.13379 | 23.689 |
| 8671 | i15 | 1347 | 0.73533 | 0.00939 | 0.59098 | 80.370% | 0.04061 | 5.523 | 0.10373 | 14.107 |
| 8671 | i2 | 1113 | 0.73986 | 0.00737 | 0.55515 | 75.035% | 0.06133 | 8.290 | 0.12337 | 16.675 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 8671 | i2 | 1203 | 0.59597 | 0.00661 | 0.43198 | 72.484% | 0.05234 | 8.782 | 0.11165 | 18.734 |
| 8671 | i2 | 761 | 0.64803 | 0.00540 | 0.43868 | 67.695% | 0.07488 | 11.554 | 0.13447 | 20.751 |
| 8671 | i3 | 1202 | 0.62300 | 0.00870 | 0.39521 | 63.437% | 0.06762 | 10.854 | 0.16017 | 25.709 |
| 8671 | i3 | 759 | 0.60489 | 0.01793 | 0.43284 | 71.557% | 0.07450 | 12.317 | 0.09754 | 16.126 |
| 8671 | i3 | 764 | 0.59734 | 0.01387 | 0.45679 | 76.470% | 0.04020 | 6.730 | 0.10035 | 16.800 |
| 8671 | i3 | 934 | 0.52515 | 0.01015 | 0.37223 | 70.880% | 0.04961 | 9.446 | 0.10332 | 19.674 |
| 8671 | i4 | 1115 | 0.43668 | 0.01073 | 0.34397 | 78.770% | 0.01849 | 4.234 | 0.07422 | 16.996 |
| 8671 | i4 | 1367 | 0.68300 | 0.00386 | 0.58534 | 85.701% | 0.07749 | 11.346 | 0.02017 | 2.953 |
| 8671 | i4 | 743 | 0.68900 | 0.01246 | 0.55828 | 81.027% | 0.03230 | 4.688 | 0.09842 | 14.284 |
| 8671 | i4 | 846 | 0.62800 | 0.00594 | 0.52267 | 83.228% | 0.02522 | 4.016 | 0.08011 | 12.757 |
| 8671 | i5 | 755 | 0.45867 | 0.00853 | 0.37588 | 81.949 | 0.02871 | 6.259 | 0.05409 | 11.792 |
| 8671 | i5 | 756 | 0.50540 | 0.01061 | 0.39655 | 78.462 | 0.05757 | 11.390 | 0.05129 | 10.148 |
| 8671 | i5 | 757 | 0.37342 | 0.00875 | 0.29482 | 78.950 | 0.00968 | 2.593 | 0.06892 | 18.457 |
| 8671 | i6 | 1227 | 0.62321 | 0.01833 | 0.49609 | 79.602 | 0.02958 | 4.746 | 0.09754 | 15.652 |
| 8671 | i6 | 1481 | 0.62000 | 0.02104 | 0.48356 | 77.994 | NC | NC | 0.13644 | 22.006 |
| 8671 | i6 | 762 | 0.85104 | 0.02176 | 0.56069 | 65.882 | 0.05399 | 6.344 | 0.23636 | 27.774 |
| 8671 | i6 | 883 | 0.39723 | 0.02138 | 0.28903 | 72.762 | 0.00996 | 2.508 | 0.09824 | 24.730 |
| 8671 | i7 | 1358 | 0.28938 | 0.01320 | 0.25176 | 86.998 | 0.00365 | 1.260 | 0.03398 | 11.741 |
| 8671 | i7 | 767 | 0.47621 | 0.02573 | 0.36842 | 77.364 | 0.00783 | 1.644 | 0.09997 | 20.992 |
| 8671 | i8 | 1056 | 0.92473 | 0.01047 | 0.65136 | 70.438 | 0.03753 | 4.058 | 0.23584 | 25.503 |
| 8671 | i8 | 772 | 0.63505 | 0.00320 | 0.53339 | 83.991 | 0.02462 | 3.877 | 0.07705 | 12.132 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| 8671 | i9 | 1260 | 0.55607 | 0.01988 | 0.44474 | 79.979 | 0.02409 | 4.333 | 0.08724 | 15.688 |
| 8671 | i9 | 840 | 0.58412 | 0.01030 | 0.52320 | 89.570 | 0.01313 | 2.248 | 0.04779 | 8.182 |
| 8671 | i9 | 957 | 0.70815 | 0.01495 | 0.58445 | 82.531 | 0.02596 | 3.665 | 0.09775 | 13.803 |
| B-R | m1 | 136 | 0.49523 | 0.00473 | 0.37778 | 76.283 | 0.02907 | 5.871 | 0.08838 | 17.846 |
| B-R | m1 | 160 | 0.79224 | NC | 0.62324 | 78.668 | 0.05920 | 7.473 | 0.10980 | 13.859 |
| B-R | m1 | 162 | 0.62283 | NC | 0.45183 | 72.545 | 0.04317 | 6.932 | 0.12783 | 20.523 |
| B-R | m1 | 19 | 0.57798 | NC | 0.41788 | 72.300 | 0.04405 | 7.622 | 0.11605 | 20.078 |
| B-R | m1 | 20 | 0.14800 | NC | 0.10800 | 72.973 | 0.00774 | 5.228 | 0.03226 | 21.799 |
| B-R | m1 | 347 | 0.48864 | 0.00270 | 0.33184 | 67.912 | 0.03857 | 7.894 | 0.11822 | 24.194 |
| B-R | m1 | 369 | 0.59363 | 0.00420 | 0.43915 | 73.977 | 0.03400 | 5.728 | 0.12048 | 20.295 |
| B-R | m1 | 590 | 0.43592 | 0.00283 | 0.32589 | 74.758 | 0.02967 | 6.807 | 0.08036 | 18.435 |
| B-R | m10 | 416 | 0.28081 | 0.00330 | 0.22349 | 79.589 | 0.00701 | 2.497 | 0.05031 | 17.915 |
| B-R | m11 | 41 | 0.73157 | 0.01189 | 0.60518 | 82.724 | 0.01034 | 1.413 | 0.11605 | 15.864 |
| B-R | m2 | 372 | 0.30798 | 0.00381 | 0.22961 | 74.554 | 0.01501 | 4.875 | 0.06336 | 20.571 |
| B-R | m2 | 373 | 0.23658 | 0.00319 | 0.18454 | 78.002 | 0.00519 | 2.195 | 0.04685 | 19.804 |
| B-R | m2 | 685 | 0.35572 | NC | 0.26672 | 74.980 | 0.00242 | 0.681 | 0.08658 | 24.339 |
| B-R | m3 | 205 | 0.49032 | NC | 0.35232 | 71.855 | 0.04999 | 10.195 | 0.08801 | 17.950 |
| B-R | m3 | 227 | 0.50250 | NC | 0.30850 | 61.393 | 0.05923 | 11.787 | 0.13477 | 26.820 |
| B-R | m3 | 269 | 0.83140 | 0.01069 | 0.57788 | 69.506 | 0.04976 | 5.985 | 0.20377 | 24.509 |
| B-R | m3 | 297 | 0.50385 | 0.00410 | 0.33011 | 65.517 | 0.04350 | 8.634 | 0.13024 | 25.849 |
| B-R | m3 | 398 | 0.67366 | 0.00580 | 0.44206 | 65.620 | 0.03799 | 5.639 | 0.19361 | 28.741 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

Table B.1. Continued.

| Site | Paste Group | Sample No. | Total Sherd Area | Silt Area | Matrix Area | Matrix % | Void Area | Void % | Inclusion Area | Inclusion % |
|---|---|---|---|---|---|---|---|---|---|---|
| B-R | m3 | 53 | 0.58248 | 0.00504 | 0.34516 | 59.256 | 0.07833 | 13.448 | 0.15899 | 27.296 |
| B-R | m3 | 535 | 0.65768 | 0.00578 | 0.42636 | 64.827 | 0.04565 | 6.942 | 0.18567 | 28.231 |
| B-R | m3 | 613 | 0.80938 | NC | 0.55038 | 68.000 | 0.04466 | 5.518 | 0.21434 | 26.482 |
| B-R | m4 | 153 | 0.87315 | 0.00274 | 0.76623 | 87.755 | 0.08961 | 10.263 | 0.01730 | 1.982 |
| B-R | m4 | 420 | 0.62097 | 0.00718 | 0.44190 | 71.162 | 0.03599 | 5.796 | 0.14308 | 23.041 |
| B-R | m4 | 429 | 0.70769 | 0.00648 | 0.56311 | 79.571 | 0.01515 | 2.140 | 0.12943 | 18.289 |
| B-R | m4 | 464 | 0.67285 | 0.00540 | 0.54042 | 80.318 | 0.02165 | 3.218 | 0.11078 | 16.464 |
| B-R | m4 | 493 | 0.42755 | 0.00378 | 0.32505 | 76.027 | 0.01330 | 3.111 | 0.08919 | 20.862 |
| B-R | m4 | 508 | 0.58369 | 0.00450 | 0.45544 | 78.027 | 0.01730 | 2.965 | 0.11095 | 19.009 |
| B-R | m5 | 165 | 0.69667 | NC | 0.50767 | 72.871 | 0.01941 | 2.786 | 0.16959 | 24.343 |
| B-R | m6 | 250 | 0.94087 | 0.01291 | 0.57714 | 61.341 | 0.11836 | 12.580 | 0.24537 | 26.079 |
| B-R | m6 | 320 | 0.82056 | 0.00940 | 0.60120 | 73.267 | 0.04925 | 6.001 | 0.17011 | 20.731 |
| B-R | m6 | 466 | 0.78753 | 0.00723 | 0.61443 | 78.020 | 0.05704 | 7.242 | 0.11606 | 14.738 |
| B-R | m6 | 632 | 0.47929 | NC | 0.27529 | 57.437 | 0.09005 | 18.787 | 0.11395 | 23.776 |
| B-R | m7 | 110 | 0.44717 | 0.01715 | 0.42474 | 94.983 | 0.00420 | 0.939 | 0.01824 | 4.078 |
| B-R | m7 | 121 | 0.30338 | 0.01480 | 0.28380 | 93.545 | 0.00679 | 2.239 | 0.01279 | 4.216 |
| B-R | m7 | 64 | 0.49836 | 0.02472 | 0.43794 | 87.876 | 0.01429 | 2.868 | 0.04613 | 9.256 |
| B-R | m8 | 128 | 0.12713 | 0.00158 | 0.11932 | 93.860 | 0.00203 | 1.595 | 0.00578 | 4.545 |
| B-R | m9 | 362 | 0.19176 | 0.00667 | 0.15922 | 83.029 | 0.00589 | 3.072 | 0.02665 | 13.899 |
| B-R | m9 | 687 | 0.67069 | NC | 0.50869 | 75.846 | 0.01549 | 2.310 | 0.14651 | 21.845 |
| B-R | m9 | 693 | 0.12461 | NC | 0.10561 | 84.753 | 0.00196 | 1.575 | 0.01704 | 13.672 |

*Note:* NC = Not Calculated. Due to characteristics of the sherd or quality of the scan, this measurement could not be accurately calculated.

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Table B.2. LA 160 Descriptive type and Temper.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Black-on-cream Undifferentiated** | **346** | **5.76** |
| fine tuff or ash | 212 | 3.53 |
| fine tuff and sand | 65 | 1.08 |
| tuff and mica | 49 | 0.82 |
| mica tuff and sand | 17 | 0.28 |
| large tuff fragments | 3 | 0.05 |
| **Buff Utility Unpolished** | **312** | **5.19** |
| fine tuff or ash | 128 | 2.13 |
| fine tuff and sand | 71 | 1.18 |
| granite with abundant mica | 55 | 0.92 |
| granite without abundant mica | 19 | 0.32 |
| tuff and mica | 17 | 0.28 |
| sand | 8 | 0.13 |
| mica tuff and sand | 7 | 0.12 |
| large tuff fragments | 6 | 0.10 |
| sand and mica | 1 | 0.02 |
| **Highly Micaceous Paste** | **84** | **1.40** |
| highly micaceous (residual) paste | 51 | 0.85 |
| granite with abundant mica | 33 | 0.55 |
| **Historic Black-on-red** | **3** | **0.05** |
| fine tuff or ash | 2 | 0.03 |
| fine tuff and sand | 1 | 0.02 |
| **Historic Organic Paint Undifferentiated No Slip** | **1** | **0.02** |
| fine tuff or ash | 1 | 0.02 |
| **Historic Unpainted Red and Cream Slipped** | **99** | **1.65** |
| fine tuff or ash | 60 | 1.00 |
| tuff and mica | 21 | 0.35 |
| fine tuff and sand | 9 | 0.15 |
| large tuff fragments | 5 | 0.08 |
| mica tuff and sand | 4 | 0.07 |
| **Historic White\Cream Slipped Unpainted** | **142** | **2.36** |
| fine tuff or ash | 89 | 1.48 |
| fine tuff and sand | 25 | 0.42 |
| tuff and mica | 15 | 0.25 |
| mica tuff and sand | 7 | 0.12 |
| large tuff fragments | 4 | 0.07 |
| sand and mica | 2 | 0.03 |

Table B.2. Continued.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Mud Ware** | **3** | **0.05** |
| fine tuff or ash | 3 | 0.05 |
| **Ogapoge Polychrome** | **10** | **0.17** |
| fine tuff or ash | 10 | 0.17 |
| **Polished Interior with Mica Slip** | **765** | **12.74** |
| granite with abundant mica | 360 | 5.99 |
| granite without abundant mica | 229 | 3.81 |
| fine tuff and sand | 113 | 1.88 |
| sand | 31 | 0.52 |
| mica tuff and sand | 25 | 0.42 |
| sand and mica | 4 | 0.07 |
| fine tuff or ash | 3 | 0.05 |
| **Powhoge Polychrome** | **37** | **0.62** |
| fine tuff or ash | 23 | 0.38 |
| fine tuff and sand | 6 | 0.10 |
| tuff and mica | 5 | 0.08 |
| mica tuff and sand | 3 | 0.05 |
| **Puname Polychrome Santa Ana Sand** | **2** | **0.03** |
| sand | 2 | 0.03 |
| **Puname Polychrome Zia Basalt** | **3** | **0.05** |
| gray crystalline basalt | 2 | 0.03 |
| basalt and sand | 1 | 0.02 |
| **Red-on-tan Unpainted** | **37** | **0.62** |
| fine tuff or ash | 27 | 0.45 |
| tuff and mica | 4 | 0.07 |
| fine tuff and sand | 3 | 0.05 |
| mica tuff and sand | 3 | 0.05 |
| **Smudged Interior Mica Slip Exterior** | **1732** | **28.83** |
| granite with abundant mica | 816 | 13.58 |
| granite without abundant mica | 619 | 10.30 |
| fine tuff and sand | 151 | 2.51 |
| sand | 99 | 1.65 |
| mica tuff and sand | 31 | 0.52 |
| sand and mica | 8 | 0.13 |
| fine tuff or ash | 7 | 0.12 |
| tuff and mica | 1 | 0.02 |

Table B.2.  Continued.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Tewa Buff Undifferentiated** | **537** | **8.94** |
| fine tuff or ash | 374 | 6.23 |
| fine tuff and sand | 77 | 1.28 |
| tuff and mica | 34 | 0.57 |
| mica tuff and sand | 19 | 0.32 |
| sand | 13 | 0.22 |
| large tuff fragments | 8 | 0.13 |
| granite without abundant mica | 7 | 0.12 |
| granite with abundant mica | 3 | 0.05 |
| fine sandstone | 2 | 0.03 |
| **Tewa Polished Black** | **555** | **9.24** |
| fine tuff or ash | 385 | 6.41 |
| granite with abundant mica | 53 | 0.88 |
| fine tuff and sand | 48 | 0.80 |
| tuff and mica | 27 | 0.45 |
| mica tuff and sand | 16 | 0.27 |
| granite without abundant mica | 10 | 0.17 |
| sand | 9 | 0.15 |
| large tuff fragments | 5 | 0.08 |
| sand and mica | 2 | 0.03 |
| **Tewa Polished Gray** | **209** | **3.48** |
| fine tuff or ash | 162 | 2.70 |
| fine tuff and sand | 24 | 0.40 |
| granite without abundant mica | 8 | 0.13 |
| tuff and mica | 7 | 0.12 |
| mica tuff and sand | 3 | 0.05 |
| large tuff fragments | 3 | 0.05 |
| sand | 2 | 0.03 |
| **Tewa Polished Red** | **642** | **10.69** |
| fine tuff or ash | 438 | 7.29 |
| fine tuff and sand | 103 | 1.71 |
| tuff and mica | 51 | 0.85 |
| mica tuff and sand | 31 | 0.52 |
| large tuff fragments | 10 | 0.17 |
| sand | 7 | 0.12 |
| sand and mica | 2 | 0.03 |

Table B.2. Continued.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Tewa Polychrome Painted Undifferentiated (Two Slips)** | **149** | **2.48** |
| fine tuff or ash | 83 | 1.38 |
| fine tuff and sand | 25 | 0.42 |
| tuff and mica | 21 | 0.35 |
| mica tuff and sand | 15 | 0.25 |
| large tuff fragments | 3 | 0.05 |
| granite without abundant mica | 1 | 0.02 |
| sand | 1 | 0.02 |
| **Tewa Unpolished Black** | **73** | **1.22** |
| fine tuff or ash | 36 | 0.60 |
| sand | 9 | 0.15 |
| granite with abundant mica | 9 | 0.15 |
| mica tuff and sand | 5 | 0.08 |
| fine tuff and sand | 5 | 0.08 |
| granite without abundant mica | 5 | 0.08 |
| tuff and mica | 4 | 0.07 |
| **Unpolished Micaceous Slip** | **266** | **4.43** |
| granite without abundant mica | 162 | 2.70 |
| granite with abundant mica | 74 | 1.23 |
| fine tuff or ash | 14 | 0.23 |
| sand | 7 | 0.12 |
| highly micaceous (residual) paste | 4 | 0.07 |
| fine tuff and sand | 2 | 0.03 |
| sand and mica | 1 | 0.02 |
| indeterminate | 1 | 0.02 |
| large tuff fragments | 1 | 0.02 |
| **Total** | **6007** | **100.00** |

Table B.3. LA 160 Descriptive type by Temper.

| Temper<br>Type | Count | Percent |
|---|---|---|
| **Fine tuff or ash** | **2057** | **34.24** |
| Tewa Polished Red | 438 | 7.29 |
| Tewa Polished Black | 385 | 6.41 |
| Tewa Buff Undifferentiated | 374 | 6.23 |
| Black-on-cream Undifferentiated | 212 | 3.53 |
| Tewa Polished Gray | 162 | 2.70 |
| Buff Utility Unpolished | 128 | 2.13 |
| Historic White\Cream Slipped Unpainted | 89 | 1.48 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 83 | 1.38 |
| Historic Unpainted Red and Cream Slipped | 60 | 1.00 |
| Tewa Unpolished Black | 36 | 0.60 |
| Red-on-tan Unpainted | 27 | 0.45 |
| Powhoge Polychrome | 23 | 0.38 |
| Unpolished Micaceous Slip | 14 | 0.23 |
| Ogapoge Polychrome | 10 | 0.17 |
| Smudged Interior Mica Slip Exterior | 7 | 0.12 |
| Mud Ware | 3 | 0.05 |
| Polished Interior with Mica Slip | 3 | 0.05 |
| Historic Black-on-red | 2 | 0.03 |
| Historic Organic Paint Undifferentiated No Slip | 1 | 0.02 |
| **Granite with abundant mica** | **1403** | **23.36** |
| Smudged Interior Mica Slip Exterior | 816 | 13.58 |
| Polished Interior with Mica Slip | 360 | 5.99 |
| Unpolished Micaceous Slip | 74 | 1.23 |
| Buff Utility Unpolished | 55 | 0.92 |
| Tewa Polished Black | 53 | 0.88 |
| Highly Micaceous Paste | 33 | 0.55 |
| Tewa Unpolished Black | 9 | 0.15 |
| Tewa Buff Undifferentiated | 3 | 0.05 |
| **Granite without abundant mica** | **1060** | **17.65** |
| Smudged Interior Mica Slip Exterior | 619 | 10.30 |
| Polished Interior with Mica Slip | 229 | 3.81 |
| Unpolished Micaceous Slip | 162 | 2.70 |
| Buff Utility Unpolished | 19 | 0.32 |
| Tewa Polished Black | 10 | 0.17 |
| Tewa Polished Gray | 8 | 0.13 |
| Tewa Buff Undifferentiated | 7 | 0.12 |
| Tewa Unpolished Black | 5 | 0.08 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 1 | 0.02 |

Table B.3. Continued.

| Temper<br>Type | Count | Percent |
|---|---|---|
| **Fine tuff and sand** | **728** | **12.12** |
| Smudged Interior Mica Slip Exterior | 151 | 2.51 |
| Polished Interior with Mica Slip | 113 | 1.88 |
| Tewa Polished Red | 103 | 1.71 |
| Tewa Buff Undifferentiated | 77 | 1.28 |
| Buff Utility Unpolished | 71 | 1.18 |
| Black-on-cream Undifferentiated | 65 | 1.08 |
| Tewa Polished Black | 48 | 0.80 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 25 | 0.42 |
| Historic White\Cream Slipped Unpainted | 25 | 0.42 |
| Tewa Polished Gray | 24 | 0.40 |
| Historic Unpainted Red and Cream Slipped | 9 | 0.15 |
| Powhoge Polychrome | 6 | 0.10 |
| Tewa Unpolished Black | 5 | 0.08 |
| Red-on-tan Unpainted | 3 | 0.05 |
| Unpolished Micaceous Slip | 2 | 0.03 |
| Historic Black-on-red | 1 | 0.02 |
| **Tuff and mica** | **256** | **4.26** |
| Tewa Polished Red | 51 | 0.85 |
| Black-on-cream Undifferentiated | 49 | 0.82 |
| Tewa Buff Undifferentiated | 34 | 0.57 |
| Tewa Polished Black | 27 | 0.45 |
| Historic Unpainted Red and Cream Slipped | 21 | 0.35 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 21 | 0.35 |
| Buff Utility Unpolished | 17 | 0.28 |
| Historic White\Cream Slipped Unpainted | 15 | 0.25 |
| Tewa Polished Gray | 7 | 0.12 |
| Powhoge Polychrome | 5 | 0.08 |
| Tewa Unpolished Black | 4 | 0.07 |
| Red-on-tan Unpainted | 4 | 0.07 |
| Smudged Interior Mica Slip Exterior | 1 | 0.02 |

Table B.3. Continued.

| Temper<br>Type | Count | Percent |
|---|---|---|
| **Sand** | **188** | **3.13** |
| Smudged Interior Mica Slip Exterior | 99 | 1.65 |
| Polished Interior with Mica Slip | 31 | 0.52 |
| Tewa Buff Undifferentiated | 13 | 0.22 |
| Tewa Unpolished Black | 9 | 0.15 |
| Tewa Polished Black | 9 | 0.15 |
| Buff Utility Unpolished | 8 | 0.13 |
| Unpolished Micaceous Slip | 7 | 0.12 |
| Tewa Polished Red | 7 | 0.12 |
| Tewa Polished Gray | 2 | 0.03 |
| Puname Polychrome Santa Ana Sand | 2 | 0.03 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 1 | 0.02 |
| **Mica tuff and sand** | **186** | **3.10** |
| Tewa Polished Red | 31 | 0.52 |
| Smudged Interior Mica Slip Exterior | 31 | 0.52 |
| Polished Interior with Mica Slip | 25 | 0.42 |
| Tewa Buff Undifferentiated | 19 | 0.32 |
| Black-on-cream Undifferentiated | 17 | 0.28 |
| Tewa Polished Black | 16 | 0.27 |
| Tewa Polychrome Painted Undifferentiated (Two Slips) | 15 | 0.25 |
| Buff Utility Unpolished | 7 | 0.12 |
| Historic White\Cream Slipped Unpainted | 7 | 0.12 |
| Tewa Unpolished Black | 5 | 0.08 |
| Historic Unpainted Red and Cream Slipped | 4 | 0.07 |
| Powhoge Polychrome | 3 | 0.05 |
| Tewa Polished Gray | 3 | 0.05 |
| Red-on-tan Unpainted | 3 | 0.05 |
| **Highly micaceous (residual) paste** | **55** | **0.92** |
| Highly Micaceous Paste | 51 | 0.85 |
| Unpolished Micaceous Slip | 4 | 0.07 |

Table B.3.  Continued.

| Temper<br>Type | Count | Percent |
|---|---|---|
| **Large tuff fragments** | **48** | **0.80** |
| Tewa Polished Red | 10 | 0.17 |
| Tewa Buff Undifferentiated | 8 | 0.13 |
| Buff Utility Unpolished | 6 | 0.10 |
| Historic Unpainted Red and Cream Slipped | 5 | 0.08 |
| Tewa Polished Black | 5 | 0.08 |
| Historic White\Cream Slipped Unpainted | 4 | 0.07 |
| Tewa Polychroe Painted Undifferentiated (Two Slips) | 3 | 0.05 |
| Tewa Polished Gray | 3 | 0.05 |
| Black-on-cream Undifferentiated | 3 | 0.05 |
| Unpolished Micaceous Slip | 1 | 0.02 |
| **Sand and mica** | **20** | **0.33** |
| Smudged Interior Mica Slip Exterior | 8 | 0.13 |
| Polished Interior with Mica Slip | 4 | 0.07 |
| Tewa Polished Black | 2 | 0.03 |
| Tewa Polished Red | 2 | 0.03 |
| Historic White\Cream Slipped Unpainted | 2 | 0.03 |
| Unpolished Micaceous Slip | 1 | 0.02 |
| Buff Utility Unpolished | 1 | 0.02 |
| **Fine sandstone** | **2** | **0.03** |
| Tewa Buff Undifferentiated | 2 | 0.03 |
| **Gray crystalline basalt** | **2** | **0.03** |
| Puname Polychrome Zia Basalt | 2 | 0.03 |
| **Basalt and sand** | **1** | **0.02** |
| Puname Polychrome Zia Basalt | 1 | 0.02 |
| **Indeterminate** | **1** | **0.02** |
| Unpolished Micaceous Slip | 1 | 0.02 |
| **Total** | **6007** | **100.00** |

Table B.4. LA 4968 Descriptive type and Temper.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Acoma/Zuni Polychrome Indeterminate** | **22** | **0.04** |
| sherd | 14 | 0.03 |
| sherd and sand | 7 | 0.01 |
| sand | 1 | 0.00 |
| **Buff Undifferentiated** | **6693** | **13.64** |
| fine tuff or ash | 2647 | 5.39 |
| tuff, mica, and sand | 994 | 2.03 |
| fine tuff and sand | 987 | 2.01 |
| tuff and mica | 791 | 1.61 |
| granite with abundant mica | 479 | 0.98 |
| granite without abundant mica | 356 | 0.73 |
| large tuff fragments | 190 | 0.39 |
| sand | 159 | 0.32 |
| sand and mica | 49 | 0.10 |
| highly micaceous (residual) paste | 11 | 0.02 |
| dark sand | 8 | 0.02 |
| indeterminate | 6 | 0.01 |
| granite w/ abundant mica | 5 | 0.01 |
| granite w/o abundant mica | 5 | 0.01 |
| mica, tuff, and sand | 4 | 0.01 |
| shale | 1 | 0.00 |
| gray crystalline basalt | 1 | 0.00 |
| **Fine-grained Micaceous** | **14** | **0.03** |
| highly micaceous residual | 6 | 0.01 |
| granite w/ abundant mica | 5 | 0.01 |
| sand and mica | 3 | 0.01 |
| **Highly Micaceous Paste** | **1639** | **3.34** |
| highly micaceous (residual) paste | 1581 | 3.22 |
| highly micaceous residual | 58 | 0.12 |
| **Historic Plain Neckbanded** | **4** | **0.01** |
| fine tuff and sand | 4 | 0.01 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Historic Polychrome** | **9619** | **19.60** |
| fine tuff or ash | 4013 | 8.18 |
| tuff, mica, and sand | 2327 | 4.74 |
| tuff and mica | 1700 | 3.46 |
| fine tuff and sand | 1140 | 2.32 |
| large tuff fragments | 247 | 0.50 |
| granite without abundant mica | 53 | 0.11 |
| sand and mica | 42 | 0.09 |
| granite with abundant mica | 40 | 0.08 |
| sand | 15 | 0.03 |
| granite and sand w/o abundant mica | 6 | 0.01 |
| mica, tuff, and sand | 6 | 0.01 |
| indeterminate | 5 | 0.01 |
| gray crystalline basalt | 5 | 0.01 |
| granite w/o abundant mica | 3 | 0.01 |
| highly micaceous (residual) paste | 3 | 0.01 |
| shale | 3 | 0.01 |
| dark matrix sandstone | 3 | 0.01 |
| granite w/ abundant mica | 3 | 0.01 |
| sherd | 2 | 0.00 |
| mixed sand and tuff | 1 | 0.00 |
| granite and tuff | 1 | 0.00 |
| basalt and sand | 1 | 0.00 |
| **Historic Tewa Black-on-red** | **13** | **0.03** |
| fine tuff and sand | 6 | 0.01 |
| tuff and mica | 3 | 0.01 |
| tuff, mica, and sand | 2 | 0.00 |
| fine tuff or ash | 2 | 0.00 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| Historic White\Cream Slip Unpainted | 1381 | 2.81 |
| fine tuff or ash | 552 | 1.12 |
| tuff, mica, and sand | 327 | 0.67 |
| tuff and mica | 257 | 0.52 |
| fine tuff and sand | 174 | 0.35 |
| large tuff fragments | 52 | 0.11 |
| sand and mica | 8 | 0.02 |
| granite with abundant mica | 5 | 0.01 |
| sand | 4 | 0.01 |
| granite without abundant mica | 2 | 0.00 |
| Incised Utility Unpolished | 2 | 0.00 |
| tuff, mica, and sand | 1 | 0.00 |
| indeterminate | 1 | 0.00 |
| Indeterminate | 3 | 0.01 |
| indeterminate | 3 | 0.01 |
| Indeterminate Utility Ware | 6 | 0.01 |
| granite without abundant mica | 2 | 0.00 |
| tuff, mica, and sand | 2 | 0.00 |
| sand and mica | 2 | 0.00 |
| mud Ware | 2 | 0.00 |
| tuff and mica | 1 | 0.00 |
| self tempered | 1 | 0.00 |
| Ogapoge Polychrome | 56 | 0.11 |
| fine tuff or ash | 18 | 0.04 |
| large tuff fragments | 14 | 0.03 |
| tuff, mica, and sand | 12 | 0.02 |
| tuff and mica | 9 | 0.02 |
| fine tuff and sand | 3 | 0.01 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Plain Utility** | **124** | **0.25** |
| fine tuff or ash | 36 | 0.07 |
| sand | 20 | 0.04 |
| sand and mica | 13 | 0.03 |
| large tuff fragments | 9 | 0.02 |
| fine tuff and sand | 8 | 0.02 |
| granite w/ abundant mica | 8 | 0.02 |
| indeterminate | 8 | 0.02 |
| granite w/o abundant mica | 7 | 0.01 |
| granite and sand w/o abundant mica | 5 | 0.01 |
| tuff and mica | 4 | 0.01 |
| mica, tuff, and sand | 2 | 0.00 |
| granite and sand w/ abundant mica | 2 | 0.00 |
| sand and basalt | 2 | 0.00 |
| **Pojoaque Polychrome** | **2** | **0.00** |
| fine tuff or ash | 2 | 0.00 |
| **Polished Black** | **7702** | **15.69** |
| fine tuff or ash | 4055 | 8.26 |
| tuff, mica, and sand | 1122 | 2.29 |
| tuff and mica | 949 | 1.93 |
| fine tuff and sand | 702 | 1.43 |
| granite with abundant mica | 383 | 0.78 |
| large tuff fragments | 266 | 0.54 |
| granite without abundant mica | 78 | 0.16 |
| sand | 57 | 0.12 |
| basalt and sand | 44 | 0.09 |
| sand and mica | 39 | 0.08 |
| granite w/o abundant mica | 2 | 0.00 |
| indeterminate | 1 | 0.00 |
| mica, tuff, and sand | 1 | 0.00 |
| granite w/ abundant mica | 1 | 0.00 |
| none | 1 | 0.00 |
| gray crystalline basalt | 1 | 0.00 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Polished Gray** | **2584** | **5.26** |
| fine tuff or ash | 1244 | 2.53 |
| tuff, mica, and sand | 406 | 0.83 |
| tuff and mica | 377 | 0.77 |
| fine tuff and sand | 251 | 0.51 |
| granite with abundant mica | 123 | 0.25 |
| large tuff fragments | 104 | 0.21 |
| granite without abundant mica | 26 | 0.05 |
| sand | 19 | 0.04 |
| sand and mica | 18 | 0.04 |
| indeterminate | 5 | 0.01 |
| granite w/ abundant mica | 4 | 0.01 |
| mica, tuff, and sand | 3 | 0.01 |
| shale | 2 | 0.00 |
| sand and basalt | 2 | 0.00 |
| **Polished Interior/Mica Slip Exterior** | **4238** | **8.64** |
| granite with abundant mica | 1839 | 3.75 |
| fine tuff and sand | 1101 | 2.24 |
| tuff, mica, and sand | 537 | 1.09 |
| granite without abundant mica | 317 | 0.65 |
| sand | 188 | 0.38 |
| sand and mica | 89 | 0.18 |
| fine tuff or ash | 74 | 0.15 |
| tuff and mica | 62 | 0.13 |
| large tuff fragments | 7 | 0.01 |
| granite w/o abundant mica | 6 | 0.01 |
| mica, tuff, and sand | 5 | 0.01 |
| Highly micaceous (residual) paste | 5 | 0.01 |
| Vitrified | 4 | 0.01 |
| granite w/ abundant mica | 2 | 0.00 |
| large tuff fragments and sand | 1 | 0.00 |
| shale | 1 | 0.00 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Polished Red** | **1823** | **3.71** |
| fine tuff or ash | 909 | 1.85 |
| tuff, mica, and sand | 288 | 0.59 |
| tuff and mica | 239 | 0.49 |
| fine tuff and sand | 190 | 0.39 |
| large tuff fragments | 105 | 0.21 |
| basalt and sand | 36 | 0.07 |
| granite with abundant mica | 17 | 0.03 |
| sand and mica | 13 | 0.03 |
| highly micaceous (residual) paste | 13 | 0.03 |
| sand | 6 | 0.01 |
| highly micaceous residual | 2 | 0.00 |
| granite and tuff | 1 | 0.00 |
| gray crystalline basalt | 1 | 0.00 |
| none | 1 | 0.00 |
| indeterminate | 1 | 0.00 |
| sherd | 1 | 0.00 |
| **Powhoge Polychrome** | **1025** | **2.09** |
| fine tuff or ash | 515 | 1.05 |
| tuff, mica, and sand | 215 | 0.44 |
| tuff and mica | 146 | 0.30 |
| fine tuff and sand | 115 | 0.23 |
| large tuff fragments | 15 | 0.03 |
| granite with abundant mica | 8 | 0.02 |
| sand and mica | 6 | 0.01 |
| sand | 3 | 0.01 |
| granite without abundant mica | 1 | 0.00 |
| gray crystalline basalt | 1 | 0.00 |
| **Puname Polychrome Indeterminate** | **5** | **0.01** |
| dark sand | 3 | 0.01 |
| gray crystalline basalt | 2 | 0.00 |
| **Puname Polychrome Santa Ana Sand** | **48** | **0.10** |
| sand | 47 | 0.10 |
| sand and mica | 1 | 0.00 |
| **Puname Polychrome Tuff Temper** | **1** | **0.00** |
| fine tuff or ash | 1 | 0.00 |
| **Puname Polychrome Undifferentiated** | **1** | **0.00** |
| sand | 1 | 0.00 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Puname Polychrome Zia Basalt** | **8** | **0.02** |
| gray crystalline basalt | 7 | 0.01 |
| dark sand | 1 | 0.00 |
| **Red-on-tan** | **419** | **0.85** |
| fine tuff or ash | 177 | 0.36 |
| tuff, mica, and sand | 120 | 0.24 |
| tuff and mica | 52 | 0.11 |
| fine tuff and sand | 42 | 0.09 |
| large tuff fragments | 12 | 0.02 |
| granite with abundant mica | 10 | 0.02 |
| sand | 4 | 0.01 |
| sand and mica | 2 | 0.00 |
| **Smudged Exterior/Buff Interior** | **98** | **0.20** |
| tuff, mica, and sand | 39 | 0.08 |
| granite with abundant mica | 19 | 0.04 |
| tuff and mica | 17 | 0.03 |
| fine tuff or ash | 17 | 0.03 |
| fine tuff and sand | 5 | 0.01 |
| granite w/o abundant mica | 1 | 0.00 |
| **Smudged Interior/Buff Exterior** | **233** | **0.47** |
| tuff, mica, and sand | 78 | 0.16 |
| granite with abundant mica | 56 | 0.11 |
| tuff and mica | 20 | 0.04 |
| fine tuff or ash | 18 | 0.04 |
| fine tuff and sand | 13 | 0.03 |
| sand and mica | 12 | 0.02 |
| granite w/ abundant mica | 11 | 0.02 |
| sand | 8 | 0.02 |
| granite w/o abundant mica | 5 | 0.01 |
| highly micaceous (residual) paste | 3 | 0.01 |
| gray crystalline basalt | 3 | 0.01 |
| granite without abundant mica | 3 | 0.01 |
| dark sand | 2 | 0.00 |
| indeterminate | 1 | 0.00 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Smudged Interior/Mica Slip Exterior** | **8946** | **18.23** |
| granite with abundant mica | 4586 | 9.34 |
| fine tuff and sand | 1418 | 2.89 |
| tuff, mica, and sand | 883 | 1.80 |
| granite without abundant mica | 873 | 1.78 |
| sand | 570 | 1.16 |
| sand and mica | 252 | 0.51 |
| fine tuff or ash | 149 | 0.30 |
| tuff and mica | 89 | 0.18 |
| granite w/o abundant mica | 37 | 0.08 |
| granite and sand w/o abundant mica | 21 | 0.04 |
| granite and sand w/ abundant mica | 15 | 0.03 |
| large tuff fragments | 14 | 0.03 |
| granite w/ abundant mica | 9 | 0.02 |
| Vitrified | 7 | 0.01 |
| mica, tuff, and sand | 6 | 0.01 |
| highly micaceous (residual) paste | 5 | 0.01 |
| indeterminate | 4 | 0.01 |
| shale | 3 | 0.01 |
| large tuff fragments and sand | 3 | 0.01 |
| sherd and sand | 1 | 0.00 |
| granite and tuff | 1 | 0.00 |
| **Tewa Polychrome (type)** | **5** | **0.01** |
| tuff and mica | 2 | 0.00 |
| fine tuff or ash | 2 | 0.00 |
| fine tuff and sand | 1 | 0.00 |
| **Tewa Unpolished Black** | **342** | **0.70** |
| fine tuff or ash | 118 | 0.24 |
| granite with abundant mica | 92 | 0.19 |
| tuff, mica, and sand | 47 | 0.10 |
| tuff and mica | 25 | 0.05 |
| fine tuff and sand | 24 | 0.05 |
| sand and mica | 13 | 0.03 |
| granite without abundant mica | 11 | 0.02 |
| sand | 8 | 0.02 |
| large tuff fragments | 4 | 0.01 |

Table B.4. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Unpolished Buff** | **1426** | **2.91** |
| fine tuff or ash | 392 | 0.80 |
| granite with abundant mica | 262 | 0.53 |
| tuff, mica, and sand | 257 | 0.52 |
| fine tuff and sand | 221 | 0.45 |
| tuff and mica | 116 | 0.24 |
| sand | 77 | 0.16 |
| granite without abundant mica | 51 | 0.10 |
| large tuff fragments | 19 | 0.04 |
| vitrified | 11 | 0.02 |
| sand and mica | 10 | 0.02 |
| mica, tuff, and sand | 4 | 0.01 |
| highly micaceous (residual) paste | 3 | 0.01 |
| granite w/o abundant mica | 1 | 0.00 |
| granite w/ abundant mica | 1 | 0.00 |
| dark matrix sandstone | 1 | 0.00 |
| **Unpolished Micaceous Slip** | **591** | **1.20** |
| granite with abundant mica | 171 | 0.35 |
| granite without abundant mica | 142 | 0.29 |
| sand | 72 | 0.15 |
| highly micaceous (residual) paste | 55 | 0.11 |
| fine tuff or ash | 34 | 0.07 |
| fine tuff and sand | 33 | 0.07 |
| sand and mica | 29 | 0.06 |
| tuff, mica, and sand | 26 | 0.05 |
| granite w/o abundant mica | 9 | 0.02 |
| granite and sand w/o abundant mica | 6 | 0.01 |
| tuff and mica | 6 | 0.01 |
| large tuff fragments | 3 | 0.01 |
| mica, tuff, and sand | 2 | 0.00 |
| granite and sand w/ abundant mica | 1 | 0.00 |
| granite w/ abundant mica | 1 | 0.00 |
| indeterminate | 1 | 0.00 |
| **Wide Neckbanded Wiped** | **4** | **0.01** |
| fine tuff and sand | 3 | 0.01 |
| granite without abundant mica | 1 | 0.00 |
| **Total** | **49079** | **100.00** |

Table B.5. LA 4968 Temper by Descriptive type.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **fine tuff or ash** | **14975** | **30.51** |
| Buff Undifferentiated | 2647 | 5.39 |
| Historic Polychrome | 4013 | 8.18 |
| Historic Tewa Black-on-red | 2 | 0.00 |
| Historic White\Cream Slip Unpainted | 552 | 1.12 |
| Ogapoge Polychrome | 18 | 0.04 |
| Plain Utility | 36 | 0.07 |
| Pojoaque Polychrome | 2 | 0.00 |
| Polished Black | 4055 | 8.26 |
| Polished Gray | 1244 | 2.53 |
| Polished Interior/Mica Slip Exterior | 74 | 0.15 |
| Polished Red | 909 | 1.85 |
| Powhoge Polychrome | 515 | 1.05 |
| Puname Polychrome Tuff Temper | 1 | 0.00 |
| Red-on-tan | 177 | 0.36 |
| Smudged Exterior/Buff Interior | 17 | 0.03 |
| Smudged Interior/Buff Exterior | 18 | 0.04 |
| Smudged Interior/Mica Slip Exterior | 149 | 0.30 |
| Tewa Polychrome (type) | 2 | 0.00 |
| Tewa Unpolished Black | 118 | 0.24 |
| Unpolished Buff | 392 | 0.80 |
| Unpolished Micaceous Slip | 34 | 0.07 |
| **Granite with abundant mica** | **8090** | **16.48** |
| Buff Undifferentiated | 479 | 0.98 |
| Historic Polychrome | 40 | 0.08 |
| Historic White\Cream Slip Unpainted | 5 | 0.01 |
| Polished Black | 383 | 0.78 |
| Polished Gray | 123 | 0.25 |
| Polished Interior/Mica Slip Exterior | 1839 | 3.75 |
| Polished Red | 17 | 0.03 |
| Powhoge Polychrome | 8 | 0.02 |
| Red-on-tan | 10 | 0.02 |
| Smudged Exterior/Buff Interior | 19 | 0.04 |
| Smudged Interior/Buff Exterior | 56 | 0.11 |
| Smudged Interior/Mica Slip Exterior | 4586 | 9.34 |
| Tewa Unpolished Black | 92 | 0.19 |
| Unpolished Buff | 262 | 0.53 |
| Unpolished Micaceous Slip | 171 | 0.35 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Tuff, mica, and sand** | **7683** | **15.65** |
| Buff Undifferentiated | 994 | 2.03 |
| Historic Polychrome | 2327 | 4.74 |
| Historic Tewa Black-on-red | 2 | 0.00 |
| Historic White\Cream Slip Unpainted | 327 | 0.67 |
| Incised Utility Unpolished | 1 | 0.00 |
| Indeterminate Utility Ware | 2 | 0.00 |
| Ogapoge Polychrome | 12 | 0.02 |
| Polished Black | 1122 | 2.29 |
| Polished Gray | 406 | 0.83 |
| Polished Interior/Mica Slip Exterior | 537 | 1.09 |
| Polished Red | 288 | 0.59 |
| Powhoge Polychrome | 215 | 0.44 |
| Red-on-tan | 120 | 0.24 |
| Smudged Exterior/Buff Interior | 39 | 0.08 |
| Smudged Interior/Buff Exterior | 78 | 0.16 |
| Smudged Interior/Mica Slip Exterior | 883 | 1.80 |
| Tewa Unpolished Black | 47 | 0.10 |
| Unpolished Buff | 257 | 0.52 |
| Unpolished Micaceous Slip | 26 | 0.05 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Fine tuff and sand** | **6441** | **13.12** |
| Buff Undifferentiated | 987 | 2.01 |
| Historic Plain Neckbanded | 4 | 0.01 |
| Historic Polychrome | 1140 | 2.32 |
| Historic Tewa Black-on-red | 6 | 0.01 |
| Historic White\Cream Slip Unpainted | 174 | 0.35 |
| Ogapoge Polychrome | 3 | 0.01 |
| Plain Utility | 8 | 0.02 |
| Polished Black | 702 | 1.43 |
| Polished Gray | 251 | 0.51 |
| Polished Interior/Mica Slip Exterior | 1101 | 2.24 |
| Polished Red | 190 | 0.39 |
| Powhoge Polychrome | 115 | 0.23 |
| Red-on-tan | 42 | 0.09 |
| Smudged Exterior/Buff Interior | 5 | 0.01 |
| Smudged Interior/Buff Exterior | 13 | 0.03 |
| Smudged Interior/Mica Slip Exterior | 1418 | 2.89 |
| Tewa Polychrome (type) | 1 | 0.00 |
| Tewa Unpolished Black | 24 | 0.05 |
| Unpolished Buff | 221 | 0.45 |
| Unpolished Micaceous Slip | 33 | 0.07 |
| Wide Neckbanded Wiped | 3 | 0.01 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Tuff and mica** | **4865** | **9.91** |
| Buff Undifferentiated | 791 | 1.61 |
| Historic Polychrome | 1700 | 3.46 |
| Historic Tewa Black-on-red | 3 | 0.01 |
| Historic White\Cream Slip Unpainted | 257 | 0.52 |
| Mud Ware | 1 | 0.00 |
| Ogapoge Polychrome | 9 | 0.02 |
| Plain Utility | 4 | 0.01 |
| Polished Black | 949 | 1.93 |
| Polished Gray | 377 | 0.77 |
| Polished Interior/Mica Slip Exterior | 62 | 0.13 |
| Polished Red | 239 | 0.49 |
| Powhoge Polychrome | 146 | 0.30 |
| Red-on-tan | 52 | 0.11 |
| Smudged Exterior/Buff Interior | 17 | 0.03 |
| Smudged Interior/Buff Exterior | 20 | 0.04 |
| Smudged Interior/Mica Slip Exterior | 89 | 0.18 |
| Tewa Polychrome (type) | 2 | 0.00 |
| Tewa Unpolished Black | 25 | 0.05 |
| Unpolished Buff | 116 | 0.24 |
| Unpolished Micaceous Slip | 6 | 0.01 |
| **Granite without abundant mica** | **1916** | **3.90** |
| Buff Undifferentiated | 356 | 0.73 |
| Historic Polychrome | 53 | 0.11 |
| Historic White\Cream Slip Unpainted | 2 | 0.00 |
| Indeterminate Utility Ware | 2 | 0.00 |
| Polished Black | 78 | 0.16 |
| Polished Gray | 26 | 0.05 |
| Polished Interior/Mica Slip Exterior | 317 | 0.65 |
| Powhoge Polychrome | 1 | 0.00 |
| Smudged Interior/Buff Exterior | 3 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 873 | 1.78 |
| Tewa Unpolished Black | 11 | 0.02 |
| Unpolished Buff | 51 | 0.10 |
| Unpolished Micaceous Slip | 142 | 0.29 |
| Wide Neckbanded Wiped | 1 | 0.00 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Highly micaceous (residual) paste** | **1679** | **3.42** |
| Buff Undifferentiated | 11 | 0.02 |
| Highly Micaceous Paste | 1581 | 3.22 |
| Historic Polychrome | 3 | 0.01 |
| Polished Interior/Mica Slip Exterior | 5 | 0.01 |
| Polished Red | 13 | 0.03 |
| Smudged Interior/Buff Exterior | 3 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 5 | 0.01 |
| Unpolished Buff | 3 | 0.01 |
| Unpolished Micaceous Slip | 55 | 0.11 |
| **Sand** | **1259** | **2.57** |
| Acoma/Zuni Polychrome Indeterminate | 1 | 0.00 |
| Buff Undifferentiated | 159 | 0.32 |
| Historic Polychrome | 15 | 0.03 |
| Historic White\Cream Slip Unpainted | 4 | 0.01 |
| Plain Utility | 20 | 0.04 |
| Polished Black | 57 | 0.12 |
| Polished Gray | 19 | 0.04 |
| Polished Interior/Mica Slip Exterior | 188 | 0.38 |
| Polished Red | 6 | 0.01 |
| Powhoge Polychrome | 3 | 0.01 |
| Puname Polychrome Santa Ana Sand | 47 | 0.10 |
| Puname Polychrome Undifferentiated | 1 | 0.00 |
| Red-on-tan | 4 | 0.01 |
| Smudged Interior/Buff Exterior | 8 | 0.02 |
| Smudged Interior/Mica Slip Exterior | 570 | 1.16 |
| Tewa Unpolished Black | 8 | 0.02 |
| Unpolished Buff | 77 | 0.16 |
| Unpolished Micaceous Slip | 72 | 0.15 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Large tuff fragments** | **1061** | **2.16** |
| Buff Undifferentiated | 190 | 0.39 |
| Historic Polychrome | 247 | 0.50 |
| Historic White\Cream Slip Unpainted | 52 | 0.11 |
| Ogapoge Polychrome | 14 | 0.03 |
| Plain Utility | 9 | 0.02 |
| Polished Black | 266 | 0.54 |
| Polished Gray | 104 | 0.21 |
| Polished Interior/Mica Slip Exterior | 7 | 0.01 |
| Polished Red | 105 | 0.21 |
| Powhoge Polychrome | 15 | 0.03 |
| Red-on-tan | 12 | 0.02 |
| Smudged Interior/Mica Slip Exterior | 14 | 0.03 |
| Tewa Unpolished Black | 4 | 0.01 |
| Unpolished Buff | 19 | 0.04 |
| Unpolished Micaceous Slip | 3 | 0.01 |
| **Sand and mica** | **601** | **1.22** |
| Buff Undifferentiated | 49 | 0.10 |
| Fine-grained Micaceous | 3 | 0.01 |
| Historic Polychrome | 42 | 0.09 |
| Historic White\Cream Slip Unpainted | 8 | 0.02 |
| Indeterminate Utility Ware | 2 | 0.00 |
| Plain Utility | 13 | 0.03 |
| Polished Black | 39 | 0.08 |
| Polished Gray | 18 | 0.04 |
| Polished Interior/Mica Slip Exterior | 89 | 0.18 |
| Polished Red | 13 | 0.03 |
| Powhoge Polychrome | 6 | 0.01 |
| Puname Polychrome Santa Ana Sand | 1 | 0.00 |
| Red-on-tan | 2 | 0.00 |
| Smudged Interior/Buff Exterior | 12 | 0.02 |
| Smudged Interior/Mica Slip Exterior | 252 | 0.51 |
| Tewa Unpolished Black | 13 | 0.03 |
| Unpolished Buff | 10 | 0.02 |
| Unpolished Micaceous Slip | 29 | 0.06 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Basalt and sand** | **81** | **0.17** |
| Historic Polychrome | 1 | 0.00 |
| Polished Black | 44 | 0.09 |
| Polished Red | 36 | 0.07 |
| granite w/o abundant mica | 76 | 0.15 |
| Buff Undifferentiated | 5 | 0.01 |
| Historic Polychrome | 3 | 0.01 |
| Plain Utility | 7 | 0.01 |
| Polished Black | 2 | 0.00 |
| Polished Interior/Mica Slip Exterior | 6 | 0.01 |
| Smudged Exterior/Buff Interior | 1 | 0.00 |
| Smudged Interior/Buff Exterior | 5 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 37 | 0.08 |
| Unpolished Buff | 1 | 0.00 |
| Unpolished Micaceous Slip | 9 | 0.02 |
| **Highly micaceous residual** | **66** | **0.13** |
| Fine-grained Micaceous | 6 | 0.01 |
| Highly Micaceous Paste | 58 | 0.12 |
| Polished Red | 2 | 0.00 |
| **Granite w/ abundant mica** | **50** | **0.10** |
| Buff Undifferentiated | 5 | 0.01 |
| Fine-grained Micaceous | 5 | 0.01 |
| Historic Polychrome | 3 | 0.01 |
| Plain Utility | 8 | 0.02 |
| Polished Black | 1 | 0.00 |
| Polished Gray | 4 | 0.01 |
| Polished Interior/Mica Slip Exterior | 2 | 0.00 |
| Smudged Interior/Buff Exterior | 11 | 0.02 |
| Smudged Interior/Mica Slip Exterior | 9 | 0.02 |
| Unpolished Buff | 1 | 0.00 |
| Unpolished Micaceous Slip | 1 | 0.00 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Granite and sand w/o abundant mica** | **38** | **0.08** |
| Historic Polychrome | 6 | 0.01 |
| Plain Utility | 5 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 21 | 0.04 |
| Unpolished Micaceous Slip | 6 | 0.01 |
| **Indeterminate** | **36** | **0.07** |
| Buff Undifferentiated | 6 | 0.01 |
| Historic Polychrome | 5 | 0.01 |
| Incised Utility Unpolished | 1 | 0.00 |
| Indeterminate | 3 | 0.01 |
| Plain Utility | 8 | 0.02 |
| Polished Black | 1 | 0.00 |
| Polished Gray | 5 | 0.01 |
| Polished Red | 1 | 0.00 |
| Smudged Interior/Buff Exterior | 1 | 0.00 |
| Smudged Interior/Mica Slip Exterior | 4 | 0.01 |
| Unpolished Micaceous Slip | 1 | 0.00 |
| **Mica, tuff, and sand** | **33** | **0.07** |
| Buff Undifferentiated | 4 | 0.01 |
| Historic Polychrome | 6 | 0.01 |
| Plain Utility | 2 | 0.00 |
| Polished Black | 1 | 0.00 |
| Polished Gray | 3 | 0.01 |
| Polished Interior/Mica Slip Exterior | 5 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 6 | 0.01 |
| Unpolished Buff | 4 | 0.01 |
| Unpolished Micaceous Slip | 2 | 0.00 |
| **Vitrified** | **22** | **0.04** |
| Polished Interior/Mica Slip Exterior | 4 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 7 | 0.01 |
| Unpolished Buff | 11 | 0.02 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Gray crystalline basalt** | **21** | **0.04** |
| Buff Undifferentiated | 1 | 0.00 |
| Historic Polychrome | 5 | 0.01 |
| Polished Black | 1 | 0.00 |
| Polished Red | 1 | 0.00 |
| Powhoge Polychrome | 1 | 0.00 |
| Puname Polychrome Indeterminate | 2 | 0.00 |
| Puname Polychrome Zia Basalt | 7 | 0.01 |
| Smudged Interior/Buff Exterior | 3 | 0.01 |
| **Granite and sand w/ abundant mica** | **18** | **0.04** |
| Plain Utility | 2 | 0.00 |
| Smudged Interior/Mica Slip Exterior | 15 | 0.03 |
| Unpolished Micaceous Slip | 1 | 0.00 |
| **Sherd** | **17** | **0.03** |
| Acoma/Zuni Polychrome Indeterminate | 14 | 0.03 |
| Historic Polychrome | 2 | 0.00 |
| Polished Red | 1 | 0.00 |
| **Dark sand** | **14** | **0.03** |
| Buff Undifferentiated | 8 | 0.02 |
| Puname Polychrome Indeterminate | 3 | 0.01 |
| Puname Polychrome Zia Basalt | 1 | 0.00 |
| Smudged Interior/Buff Exterior | 2 | 0.00 |
| **Shale** | **10** | **0.02** |
| Buff Undifferentiated | 1 | 0.00 |
| Historic Polychrome | 3 | 0.01 |
| Polished Gray | 2 | 0.00 |
| Polished Interior/Mica Slip Exterior | 1 | 0.00 |
| Smudged Interior/Mica Slip Exterior | 3 | 0.01 |
| **Sherd and sand** | **8** | **0.02** |
| Acoma/Zuni Polychrome Indeterminate | 7 | 0.01 |
| Smudged Interior/Mica Slip Exterior | 1 | 0.00 |
| **Dark matrix sandstone** | **4** | **0.01** |
| Historic Polychrome | 3 | 0.01 |
| Unpolished Buff | 1 | 0.00 |
| **Large tuff fragments and sand** | **4** | **0.01** |
| Polished Interior/Mica Slip Exterior | 1 | 0.00 |
| Smudged Interior/Mica Slip Exterior | 3 | 0.01 |

Table B.5. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Sand and basalt** | **4** | **0.01** |
| Plain Utility | 2 | 0.00 |
| Polished Gray | 2 | 0.00 |
| **Granite and tuff** | **3** | **0.01** |
| Historic Polychrome | 1 | 0.00 |
| Polished Red | 1 | 0.00 |
| Smudged Interior/Mica Slip Exterior | 1 | 0.00 |
| **None** | **2** | **0.00** |
| Polished Black | 1 | 0.00 |
| Polished Red | 1 | 0.00 |
| **Self-tempered** | **1** | **0.00** |
| Mud Ware | 1 | 0.00 |
| **Mixed sand and tuff** | **1** | **0.00** |
| Historic Polychrome | 1 | 0.00 |
| **Total** | **49079** | **100.00** |

Table B.6. LA 8671 Descriptive type and Temper.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Buff Undifferentiated** | **28** | **3.80** |
| fine tuff and sand | 5 | 0.68 |
| granite w/o abundant mica | 5 | 0.68 |
| fine tuff or ash | 5 | 0.68 |
| sand | 3 | 0.41 |
| mixed sand | 2 | 0.27 |
| crushed rock | 2 | 0.27 |
| granite w/ abundant mica | 1 | 0.14 |
| large tuff fragments | 1 | 0.14 |
| basalt and tuff | 1 | 0.14 |
| granite and tuff | 1 | 0.14 |
| basalt | 1 | 0.14 |
| granite and basalt | 1 | 0.14 |
| **Historic Polychrome** | **102** | **13.86** |
| sand | 22 | 2.99 |
| granite w/o abundant mica | 12 | 1.63 |
| ash and sand | 12 | 1.63 |
| sand and basalt | 10 | 1.36 |
| fine tuff or ash | 7 | 0.95 |
| mixed sand | 6 | 0.82 |
| ash | 6 | 0.82 |
| granite and basalt | 5 | 0.68 |
| granite and tuff | 5 | 0.68 |
| Sherd | 4 | 0.54 |
| fine tuff and sand | 3 | 0.41 |
| basalt | 2 | 0.27 |
| granite w/ abundant mica | 1 | 0.14 |
| granite and sand w/o abundant mica | 1 | 0.14 |
| crushed rock | 1 | 0.14 |
| mica, tuff, and sand | 1 | 0.14 |
| sand and mica | 1 | 0.14 |
| dark matrix sandstone | 1 | 0.14 |
| indeterminate | 1 | 0.14 |
| none | 1 | 0.14 |

Table B.6. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Plain Utility** | **241** | **32.74** |
| sand | 65 | 8.83 |
| granite w/o abundant mica | 30 | 4.08 |
| fine tuff or ash | 22 | 2.99 |
| large tuff fragments | 20 | 2.72 |
| fine tuff and sand | 20 | 2.72 |
| sand and mica | 11 | 1.49 |
| ash and sand | 10 | 1.36 |
| sand and basalt | 9 | 1.22 |
| mica, tuff, and sand | 8 | 1.09 |
| mixed sand | 6 | 0.82 |
| granite and sand w/o abundant mica | 5 | 0.68 |
| indeterminate | 5 | 0.68 |
| crushed rock | 5 | 0.68 |
| ash | 5 | 0.68 |
| granite and tuff | 5 | 0.68 |
| Sherd | 4 | 0.54 |
| sand and fiber | 3 | 0.41 |
| granite and basalt | 3 | 0.41 |
| basalt | 2 | 0.27 |
| basalt and tuff | 2 | 0.27 |
| granite w/ abundant mica | 1 | 0.14 |

Table B.6. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Polished Black** | **160** | **21.74** |
| fine tuff or ash | 42 | 5.71 |
| sand | 26 | 3.53 |
| large tuff fragments | 23 | 3.13 |
| granite w/o abundant mica | 14 | 1.90 |
| ash | 14 | 1.90 |
| fine tuff and sand | 7 | 0.95 |
| granite and tuff | 7 | 0.95 |
| ash and sand | 6 | 0.82 |
| indeterminate | 6 | 0.82 |
| tuff and mica | 3 | 0.41 |
| mixed sand | 3 | 0.41 |
| granite and basalt | 2 | 0.27 |
| sand and basalt | 2 | 0.27 |
| sand and fiber | 1 | 0.14 |
| basalt | 1 | 0.14 |
| granite and sand w/o abundant mica | 1 | 0.14 |
| none | 1 | 0.14 |
| granite w/ abundant mica | 1 | 0.14 |
| **Polished Gray** | **83** | **11.28** |
| fine tuff or ash | 28 | 3.80 |
| large tuff fragments | 13 | 1.77 |
| granite w/o abundant mica | 6 | 0.82 |
| fine tuff and sand | 6 | 0.82 |
| sand | 5 | 0.68 |
| ash and sand | 5 | 0.68 |
| ash | 4 | 0.54 |
| crushed rock | 3 | 0.41 |
| tuff and mica | 3 | 0.41 |
| mixed sand | 3 | 0.41 |
| granite and tuff | 3 | 0.41 |
| basalt and tuff | 1 | 0.14 |
| Sherd | 1 | 0.14 |
| basalt | 1 | 0.14 |
| indeterminate | 1 | 0.14 |
| **Polished Interior/Mica Slip Exterior** | **1** | **0.14** |
| granite and tuff | 1 | 0.14 |

Table B.6. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Polished Red** | **22** | **2.99** |
| sand | 6 | 0.82 |
| mixed sand | 4 | 0.54 |
| fine tuff or ash | 3 | 0.41 |
| granite and tuff | 3 | 0.41 |
| Sherd | 2 | 0.27 |
| ash and sand | 1 | 0.14 |
| granite and sand w/o abundant mica | 1 | 0.14 |
| indeterminate | 1 | 0.14 |
| basalt | 1 | 0.14 |
| Red-on-tan | 6 | 0.82 |
| sand | 3 | 0.41 |
| mixed sand | 1 | 0.14 |
| ash and sand | 1 | 0.14 |
| granite and sand w/o abundant mica | 1 | 0.14 |
| **Santo Domingo** | **1** | **0.14** |
| fine tuff or ash | 1 | 0.14 |
| **Smudged Exterior/Buff Interior** | **21** | **2.85** |
| granite w/o abundant mica | 6 | 0.82 |
| sand | 2 | 0.27 |
| ash and sand | 2 | 0.27 |
| basalt | 2 | 0.27 |
| sand and basalt | 2 | 0.27 |
| fine tuff or ash | 2 | 0.27 |
| granite and tuff | 2 | 0.27 |
| mixed sand | 1 | 0.14 |
| large tuff fragments | 1 | 0.14 |
| fine tuff and sand | 1 | 0.14 |
| **Smudged Interior/Buff Exterior** | **9** | **1.22** |
| granite w/o abundant mica | 5 | 0.68 |
| basalt and tuff | 1 | 0.14 |
| granite and tuff | 1 | 0.14 |
| fine tuff and sand | 1 | 0.14 |
| fine tuff or ash | 1 | 0.14 |
| **Smudged Interior/Mica Slip Exterior** | **4** | **0.54** |
| granite w/o abundant mica | 2 | 0.27 |
| basalt and tuff | 1 | 0.14 |
| fine tuff or ash | 1 | 0.14 |

Table B.6. Continued.

| Descriptive type<br>Temper | Count | Percent |
|---|---|---|
| **Unpolished Buff** | **46** | **6.25** |
| sand | 15 | 2.04 |
| mixed sand | 6 | 0.82 |
| ash and sand | 6 | 0.82 |
| fine tuff and sand | 5 | 0.68 |
| large tuff fragments | 4 | 0.54 |
| basalt and tuff | 2 | 0.27 |
| granite w/o abundant mica | 2 | 0.27 |
| granite and tuff | 2 | 0.27 |
| sand and fiber | 1 | 0.14 |
| sand and basalt | 1 | 0.14 |
| granite and sand w/o abundant mica | 1 | 0.14 |
| basalt | 1 | 0.14 |
| **Unpolished Mica Slip** | **12** | **1.63** |
| tuff and mica | 7 | 0.95 |
| granite w/o abundant mica | 2 | 0.27 |
| fine tuff and sand | 1 | 0.14 |
| granite and tuff | 1 | 0.14 |
| sand | 1 | 0.14 |
| **Total** | **736** | **100.00** |

Table B.7.  LA 8671 Temper and Descriptive type.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Sand** | **148** | **20.11** |
| Buff Undifferentiated | 3 | 0.41 |
| Historic Polychrome | 22 | 2.99 |
| Plain Utility | 65 | 8.83 |
| Polished Black | 26 | 3.53 |
| Polished Gray | 5 | 0.68 |
| Polished Red | 6 | 0.82 |
| Red-on-tan | 3 | 0.41 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Unpolished Buff | 15 | 2.04 |
| Unpolished Mica Slip | 1 | 0.14 |
| **Fine tuff or ash** | **112** | **15.22** |
| Buff Undifferentiated | 5 | 0.68 |
| Historic Polychrome | 7 | 0.95 |
| Plain Utility | 22 | 2.99 |
| Polished Black | 42 | 5.71 |
| Polished Gray | 28 | 3.80 |
| Polished Red | 3 | 0.41 |
| Santo Domingo | 1 | 0.14 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Smudged Interior/Buff Exterior | 1 | 0.14 |
| Smudged Interior/Mica Slip Exterior | 1 | 0.14 |
| **Granite w/o abundant mica** | **84** | **11.41** |
| Buff Undifferentiated | 5 | 0.68 |
| Historic Polychrome | 12 | 1.63 |
| Plain Utility | 30 | 4.08 |
| Polished Black | 14 | 1.90 |
| Polished Gray | 6 | 0.82 |
| Smudged Exterior/Buff Interior | 6 | 0.82 |
| Smudged Interior/Buff Exterior | 5 | 0.68 |
| Smudged Interior/Mica Slip Exterior | 2 | 0.27 |
| Unpolished Buff | 2 | 0.27 |
| Unpolished Mica Slip | 2 | 0.27 |
| **Large tuff fragments** | **62** | **8.42** |
| Buff Undifferentiated | 1 | 0.14 |
| Plain Utility | 20 | 2.72 |
| Polished Black | 23 | 3.13 |
| Polished Gray | 13 | 1.77 |
| Smudged Exterior/Buff Interior | 1 | 0.14 |
| Unpolished Buff | 4 | 0.54 |

Table B.7. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Fine tuff and sand** | **49** | **6.66** |
| Buff Undifferentiated | 5 | 0.68 |
| Historic Polychrome | 3 | 0.41 |
| Plain Utility | 20 | 2.72 |
| Polished Black | 7 | 0.95 |
| Polished Gray | 6 | 0.82 |
| Smudged Exterior/Buff Interior | 1 | 0.14 |
| Smudged Interior/Buff Exterior | 1 | 0.14 |
| Unpolished Buff | 5 | 0.68 |
| Unpolished Mica Slip | 1 | 0.14 |
| **Ash and sand** | **43** | **5.84** |
| Historic Polychrome | 12 | 1.63 |
| Plain Utility | 10 | 1.36 |
| Polished Black | 6 | 0.82 |
| Polished Gray | 5 | 0.68 |
| Polished Red | 1 | 0.14 |
| Red-on-tan | 1 | 0.14 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Unpolished Buff | 6 | 0.82 |
| **Mixed sand** | **32** | **4.35** |
| Buff Undifferentiated | 2 | 0.27 |
| Historic Polychrome | 6 | 0.82 |
| Plain Utility | 6 | 0.82 |
| Polished Black | 3 | 0.41 |
| Polished Gray | 3 | 0.41 |
| Polished Red | 4 | 0.54 |
| Red-on-tan | 1 | 0.14 |
| Smudged Exterior/Buff Interior | 1 | 0.14 |
| Unpolished Buff | 6 | 0.82 |

Table B.7. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Granite and tuff** | **31** | **4.21** |
| Buff Undifferentiated | 1 | 0.14 |
| Historic Polychrome | 5 | 0.68 |
| Plain Utility | 5 | 0.68 |
| Polished Black | 7 | 0.95 |
| Polished Gray | 3 | 0.41 |
| Polished Interior/Mica Slip Exterior | 1 | 0.14 |
| Polished Red | 3 | 0.41 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Smudged Interior/Buff Exterior | 1 | 0.14 |
| Unpolished Buff | 2 | 0.27 |
| Unpolished Mica Slip | 1 | 0.14 |
| **Ash** | **29** | **3.94** |
| Historic Polychrome | 6 | 0.82 |
| Plain Utility | 5 | 0.68 |
| Polished Black | 14 | 1.90 |
| Polished Gray | 4 | 0.54 |
| **Sand and basalt** | **24** | **3.26** |
| Historic Polychrome | 10 | 1.36 |
| Plain Utility | 9 | 1.22 |
| Polished Black | 2 | 0.27 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Unpolished Buff | 1 | 0.14 |
| **Indeterminate** | **14** | **1.90** |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 5 | 0.68 |
| Polished Black | 6 | 0.82 |
| Polished Gray | 1 | 0.14 |
| Polished Red | 1 | 0.14 |
| **Tuff and mica** | **13** | **1.77** |
| Polished Black | 3 | 0.41 |
| Polished Gray | 3 | 0.41 |
| Unpolished Mica Slip | 7 | 0.95 |
| **Sand and mica** | **12** | **1.63** |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 11 | 1.49 |

Table B.7. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Granite and basalt** | **11** | **1.49** |
| Buff Undifferentiated | 1 | 0.14 |
| Historic Polychrome | 5 | 0.68 |
| Plain Utility | 3 | 0.41 |
| Polished Black | 2 | 0.27 |
| **Basalt** | **11** | **1.49** |
| Buff Undifferentiated | 1 | 0.14 |
| Historic Polychrome | 2 | 0.27 |
| Plain Utility | 2 | 0.27 |
| Polished Black | 1 | 0.14 |
| Polished Gray | 1 | 0.14 |
| Polished Red | 1 | 0.14 |
| Smudged Exterior/Buff Interior | 2 | 0.27 |
| Unpolished Buff | 1 | 0.14 |
| **Sherd** | **11** | **1.49** |
| Historic Polychrome | 4 | 0.54 |
| Plain Utility | 4 | 0.54 |
| Polished Gray | 1 | 0.14 |
| Polished Red | 2 | 0.27 |
| **Crushed rock** | **11** | **1.49** |
| Buff Undifferentiated | 2 | 0.27 |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 5 | 0.68 |
| Polished Gray | 3 | 0.41 |
| **Granite and sand w/o abundant mica** | **10** | **1.36** |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 5 | 0.68 |
| Polished Black | 1 | 0.14 |
| Polished Red | 1 | 0.14 |
| Red-on-tan | 1 | 0.14 |
| Unpolished Buff | 1 | 0.14 |
| **Mica, tuff, and sand** | **9** | **1.22** |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 8 | 1.09 |

Table B.7. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Basalt and tuff** | **8** | **1.09** |
| Buff Undifferentiated | 1 | 0.14 |
| Plain Utility | 2 | 0.27 |
| Polished Gray | 1 | 0.14 |
| Smudged Interior/Buff Exterior | 1 | 0.14 |
| Smudged Interior/Mica Slip Exterior | 1 | 0.14 |
| Unpolished Buff | 2 | 0.27 |
| **Sand and fiber** | **5** | **0.68** |
| Plain Utility | 3 | 0.41 |
| Polished Black | 1 | 0.14 |
| Unpolished Buff | 1 | 0.14 |
| **Granite w/ abundant mica** | **4** | **0.54** |
| Buff Undifferentiated | 1 | 0.14 |
| Historic Polychrome | 1 | 0.14 |
| Plain Utility | 1 | 0.14 |
| Polished Black | 1 | 0.14 |
| **None** | **2** | **0.27** |
| Historic Polychrome | 1 | 0.14 |
| Polished Black | 1 | 0.14 |
| **Dark matrix sandstone** | **1** | **0.14** |
| Historic Polychrome | 1 | 0.14 |
| Total | 736 | 100.00 |

Table B.8. Barela-Reynolds Descriptive type by Temper.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Buff Undifferentiated** | **67** | **10.17** |
| mixed sand | 19 | 2.88 |
| sand | 18 | 2.73 |
| granite and sand w/o abundant mica | 11 | 1.67 |
| fine tuff and sand | 6 | 0.91 |
| sand and sherd | 4 | 0.61 |
| sand and basalt | 3 | 0.46 |
| indeterminate | 3 | 0.46 |
| granite and tuff | 1 | 0.15 |
| ash and sand | 1 | 0.15 |
| sand and mica | 1 | 0.15 |
| **Historic Polychrome** | **4** | **0.61** |
| sand | 2 | 0.30 |
| mixed sand | 2 | 0.30 |
| indeterminate | 1 | 0.15 |
| indeterminate | 1 | 0.15 |
| **Plain Utility** | **216** | **32.78** |
| sand | 86 | 13.05 |
| mixed sand | 46 | 6.98 |
| fine tuff and sand | 22 | 3.34 |
| granite and sand w/o abundant mica | 17 | 2.58 |
| indeterminate | 14 | 2.12 |
| mixed sand and tuff | 8 | 1.21 |
| sand and basalt | 6 | 0.91 |
| sand and sherd | 4 | 0.61 |
| granite w/o abundant mica | 4 | 0.61 |
| sand and mica | 2 | 0.30 |
| ash and sand | 2 | 0.30 |
| basalt and tuff | 2 | 0.30 |
| fine tuff or ash | 1 | 0.15 |
| sherd | 1 | 0.15 |
| granite and tuff | 1 | 0.15 |

Table B.8. Continued.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| **Polished Black** | **38** | **5.77** |
| sand | 18 | 2.73 |
| mixed sand | 9 | 1.37 |
| fine tuff and sand | 4 | 0.61 |
| indeterminate | 2 | 0.30 |
| ash | 1 | 0.15 |
| basalt | 1 | 0.15 |
| mixed sand and tuff | 1 | 0.15 |
| fine tuff or ash | 1 | 0.15 |
| granite and sand w/o abundant mica | 1 | 0.15 |
| **Polished Gray** | **24** | **3.64** |
| sand | 12 | 1.82 |
| fine tuff and sand | 3 | 0.46 |
| mixed sand | 2 | 0.30 |
| sand and basalt | 1 | 0.15 |
| indeterminate | 1 | 0.15 |
| basalt and tuff | 1 | 0.15 |
| mixed sand and tuff | 1 | 0.15 |
| fine tuff or ash | 1 | 0.15 |
| basalt | 1 | 0.15 |
| granite and sand w/o abundant mica | 1 | 0.15 |
| **Polished Interior with Mica Slip** | **1** | **0.15** |
| mixed sand | 1 | 0.15 |
| **Polished Red** | **3** | **0.46** |
| fine tuff and sand | 1 | 0.15 |
| none | 1 | 0.15 |
| mixed sand | 1 | 0.15 |
| **Red-on-tan** | **37** | **5.61** |
| sand | 13 | 1.97 |
| mixed sand | 8 | 1.21 |
| sand and basalt | 4 | 0.61 |
| large tuff fragments | 3 | 0.46 |
| ash and sand | 2 | 0.30 |
| granite w/ abundant mica | 2 | 0.30 |
| fine tuff and sand | 2 | 0.30 |
| crushed rock | 1 | 0.15 |
| sand and sherd | 1 | 0.15 |
| sand and mica | 1 | 0.15 |

Table B.8. Continued.

| Descriptive type<br>temper | Count | Percent |
|---|---|---|
| Smudged Exterior/Buff Interior | 79 | 11.99 |
| sand | 24 | 3.64 |
| mixed sand | 19 | 2.88 |
| fine tuff and sand | 12 | 1.82 |
| sand and basalt | 6 | 0.91 |
| granite and sand w/o abundant mica | 5 | 0.76 |
| ash and sand | 3 | 0.46 |
| mixed sand and tuff | 3 | 0.46 |
| fine tuff or ash | 2 | 0.30 |
| granite w/o abundant mica | 2 | 0.30 |
| granite and tuff | 1 | 0.15 |
| sherd | 1 | 0.15 |
| sand and sherd | 1 | 0.15 |
| Smudged Interior/Buff Exterior | 36 | 5.46 |
| mixed sand | 12 | 1.82 |
| sand | 10 | 1.52 |
| fine tuff and sand | 5 | 0.76 |
| granite and sand w/o abundant mica | 4 | 0.61 |
| granite w/o abundant mica | 2 | 0.30 |
| mixed sand and tuff | 1 | 0.15 |
| ash and sand | 1 | 0.15 |
| granite and tuff | 1 | 0.15 |
| Unpolished Buff | 147 | 22.31 |
| mixed sand | 52 | 7.89 |
| sand | 51 | 7.74 |
| fine tuff and sand | 12 | 1.82 |
| ash and sand | 11 | 1.67 |
| sand and basalt | 6 | 0.91 |
| granite and sand w/o abundant mica | 6 | 0.91 |
| indeterminate | 3 | 0.46 |
| mixed sand and tuff | 3 | 0.46 |
| sand and sherd | 1 | 0.15 |
| sherd | 1 | 0.15 |
| granite w/o abundant mica | 1 | 0.15 |
| Unpolished Mica Slip | 6 | 0.91 |
| mixed sand | 3 | 0.46 |
| sand | 1 | 0.15 |
| fine tuff and sand | 1 | 0.15 |
| granite and sand w/o abundant mica | 1 | 0.15 |
| Total | 659 | 100.00 |

Table B.9. Barela-Reynolds Temper by Descriptive type.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Sand** | **235** | **35.66** |
| Plain Utility | 86 | 13.05 |
| Unpolished Buff | 51 | 7.74 |
| Smudged Exterior/Buff Interior | 24 | 3.64 |
| Buff Undifferentiated | 18 | 2.73 |
| Polished Black | 18 | 2.73 |
| Red-on-tan | 13 | 1.97 |
| Polished Gray | 12 | 1.82 |
| Smudged Interior/Buff Exterior | 10 | 1.52 |
| Historic Polychrome | 2 | 0.30 |
| Unpolished Mica Slip | 1 | 0.15 |
| **Mixed sand** | **174** | **26.40** |
| Unpolished Buff | 52 | 7.89 |
| Plain Utility | 46 | 6.98 |
| Smudged Exterior/Buff Interior | 19 | 2.88 |
| Buff Undifferentiated | 19 | 2.88 |
| Smudged Interior/Buff Exterior | 12 | 1.82 |
| Polished Black | 9 | 1.37 |
| Red-on-tan | 8 | 1.21 |
| Unpolished Mica Slip | 3 | 0.46 |
| Polished Gray | 2 | 0.30 |
| Historic Polychrome | 2 | 0.30 |
| Polished Red | 1 | 0.15 |
| Polished Interior with Mica Slip | 1 | 0.15 |
| **Fine tuff and sand** | **68** | **10.32** |
| Plain Utility | 22 | 3.34 |
| Smudged Exterior/Buff Interior | 12 | 1.82 |
| Unpolished Buff | 12 | 1.82 |
| Buff Undifferentiated | 6 | 0.91 |
| Smudged Interior/Buff Exterior | 5 | 0.76 |
| Polished Black | 4 | 0.61 |
| Polished Gray | 3 | 0.46 |
| Red-on-tan | 2 | 0.30 |
| Unpolished Mica Slip | 1 | 0.15 |
| Polished Red | 1 | 0.15 |

Table B.9. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Granite and sand w/o abundant mica** | **46** | **6.98** |
| Plain Utility | 17 | 2.58 |
| Buff Undifferentiated | 11 | 1.67 |
| Unpolished Buff | 6 | 0.91 |
| Smudged Exterior/Buff Interior | 5 | 0.76 |
| Smudged Interior/Buff Exterior | 4 | 0.61 |
| Unpolished Mica Slip | 1 | 0.15 |
| Polished Black | 1 | 0.15 |
| Polished Gray | 1 | 0.15 |
| **Sand and basalt** | **26** | **3.95** |
| Smudged Exterior/Buff Interior | 6 | 0.91 |
| Unpolished Buff | 6 | 0.91 |
| Plain Utility | 6 | 0.91 |
| Red-on-tan | 4 | 0.61 |
| Buff Undifferentiated | 3 | 0.46 |
| Polished Gray | 1 | 0.15 |
| **Indeterminate** | **24** | **3.64** |
| Plain Utility | 14 | 2.12 |
| Buff Undifferentiated | 3 | 0.46 |
| Unpolished Buff | 3 | 0.46 |
| Polished Black | 2 | 0.30 |
| Indeterminate | 1 | 0.15 |
| Polished Gray | 1 | 0.15 |
| **Ash and sand** | **20** | **3.03** |
| Unpolished Buff | 11 | 1.67 |
| Smudged Exterior/Buff Interior | 3 | 0.46 |
| Plain Utility | 2 | 0.30 |
| Red-on-tan | 2 | 0.30 |
| Buff Undifferentiated | 1 | 0.15 |
| Smudged Interior/Buff Exterior | 1 | 0.15 |
| **Mixed sand and tuff** | **17** | **2.58** |
| Plain Utility | 8 | 1.21 |
| Smudged Exterior/Buff Interior | 3 | 0.46 |
| Unpolished Buff | 3 | 0.46 |
| Smudged Interior/Buff Exterior | 1 | 0.15 |
| Polished Black | 1 | 0.15 |
| Polished Gray | 1 | 0.15 |

Table B.9. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Sand and sherd** | **11** | **1.67** |
| Buff Undifferentiated | 4 | 0.61 |
| Plain Utility | 4 | 0.61 |
| Smudged Exterior/Buff Interior | 1 | 0.15 |
| Unpolished Buff | 1 | 0.15 |
| Red-on-tan | 1 | 0.15 |
| **Granite w/o abundant mica** | **9** | **1.37** |
| Plain Utility | 4 | 0.61 |
| Smudged Interior/Buff Exterior | 2 | 0.30 |
| Smudged Exterior/Buff Interior | 2 | 0.30 |
| Unpolished Buff | 1 | 0.15 |
| **Fine tuff or ash** | **5** | **0.76** |
| Smudged Exterior/Buff Interior | 2 | 0.30 |
| Polished Gray | 1 | 0.15 |
| Plain Utility | 1 | 0.15 |
| Polished Black | 1 | 0.15 |
| **Granite and tuff** | **4** | **0.61** |
| Smudged Interior/Buff Exterior | 1 | 0.15 |
| Smudged Exterior/Buff Interior | 1 | 0.15 |
| Buff Undifferentiated | 1 | 0.15 |
| Plain Utility | 1 | 0.15 |
| **Sand and mica** | **4** | **0.61** |
| Plain Utility | 2 | 0.30 |
| Red-on-tan | 1 | 0.15 |
| Buff Undifferentiated | 1 | 0.15 |
| **Basalt and tuff** | **3** | **0.46** |
| Plain Utility | 2 | 0.30 |
| Polished Gray | 1 | 0.15 |
| **Large tuff fragments** | **3** | **0.46** |
| Red-on-tan | 3 | 0.46 |
| **Sherd** | **3** | **0.46** |
| Plain Utility | 1 | 0.15 |
| Unpolished Buff | 1 | 0.15 |
| Smudged Exterior/Buff Interior | 1 | 0.15 |
| **Basalt** | **2** | **0.30** |
| Polished Gray | 1 | 0.15 |
| Polished Black | 1 | 0.15 |
| **Granite w/ abundant mica** | **2** | **0.30** |
| Red-on-tan | 2 | 0.30 |

Table B.9. Continued.

| Temper<br>Descriptive type | Count | Percent |
|---|---|---|
| **Crushed rock** | **1** | **0.15** |
| Red-on-tan | 1 | 0.15 |
| **Ash** | **1** | **0.15** |
| Polished Black | 1 | 0.15 |
| **None** | **1** | **0.15** |
| Polished Red | 1 | 0.15 |
| **Total** | **659** | **100.00** |

# Appendix C

# R Code for Cluster Analysis

```
#INSTALL AND LOAD PACKAGES
library(cluster)  #daisy
library(fpc)   #clusters and displays
library(ade4)   #quasieuclid, dudi.pco
library(klaR)   #kmodes
library(ggplot2)    #plots
library(NbClust)
library(FactoMineR)
library(factoextra)               #Gap_stat,     fviznbclust,
get_clust_tendency


#READ CSV TABLE AND MAKE VARIABLES FACTORS
read.csv("8671_EH_initialanalysis_Jan4_2022.csv")-
>LA8671.initial
str(LA8671.initial)   #check the data table structure

LA8671.initial$Temper<-factor(LA8671.initial$Temper)
LA8671.initial$ExtTreat<-factor(LA8671.initial$ExtTreat)
LA8671.initial$ExtFire<-factor(LA8671.initial$ExtFire)
LA8671.initial$ExtText<-factor(LA8671.initial$ExtText)
LA8671.initial$IntTreat<-factor(LA8671.initial$IntTreat)
LA8671.initial$IntFire<-factor(LA8671.initial$IntFire)
LA8671.initial$IntText<-factor(LA8671.initial$IntText)


#PULL OUT VARIABLES NOT USED IN CLUSTER ANALYSIS AND SAVE AS
OBJECTS FOR RE-ATTACHMENT LATER, THEN REMOVE FROM ANALYSIS
OBJECT
LA8671.Sample <- as.matrix(LA8671.initial$Sample)
LA8671.Hware <- as.matrix(LA8671.initial$Hware)
LA8671.Type <- as.matrix(LA8671.initial$Type)
LA8671.Form <- as.matrix(LA8671.initial$Form)
LA8671.Part <- as.matrix(LA8671.initial$Part)
LA8671.Formation <- as.matrix(LA8671.initial$Formation)
LA8671.FS <- as.matrix(LA8671.initial$FS)

LA8671.initial$Hware <- NULL
LA8671.initial$Type <- NULL
LA8671.initial$ï..Site<-NULL
LA8671.initial$Sample <- NULL
LA8671.initial$FS <- NULL
LA8671.initial$Form <- NULL
LA8671.initial$Part <- NULL
LA8671.initial$Formation <- NULL
```

```
# PEEPLES CODE FOR DISTANCE MATRIX  There will be warning about the presence of zero distance(s), which means that many sherds are identical and have a distance measure of zero
LA8671.gow <- as.matrix(daisy(LA8671.initial, metric="gower", stand=T))
LA8671.gow.1 <- quasieuclid(as.dist(LA8671.gow))


# CONDUCT PRINCIPAL COORDINATES ANALYSIS (PCoA) ON GOWER MATRIX AND DISPLAY SCATTERPLOTS OF FIRST 3 PRINCIPAL AXES - OUTPUT RESULTS TO CSV FILE
LA8671.gow.out <- dudi.pco(LA8671.gow.1, scann=F, nf=3)
LA8671.gow.plot <- LA8671.gow.out$l1  #these are the coordinate results of the PCoA
m <- as.matrix(cbind(LA8671.Sample, LA8671.FS, LA8671.Hware, LA8671.Type, LA8671.Form, LA8671.Part, LA8671.Formation, LA8671.initial, LA8671.gow.plot))
write.table(m, file="LA8671_CodeTest_3_25.csv", sep=",")
LA8671.pco.plot <- read.table(file="LA8671_CodeTest_3_25.csv", sep=",", header=T)
pairs(LA8671.gow.out$l1, main = "LA 8671 Principal Coordinates Analysis, first three principal axes", cex=0.8, pch = 16, col='blue')


#ASSESSING CLUSTERABILITY This function computes the Hopkins statistic. Above 0.5 needed. The closer to 1 the better.
get_clust_tendency(LA8671.gow.plot, n=nrow(LA8671.gow.plot)-1)
```

```
# ASSESSING CLUSTER SOLUTIONS
fviz_nbclust(LA8671.gow.plot,    pam,    method="silhouette",
k.max=20)   #produces a plot of silhouette width for solutions
of 20 clusters, with optimal solution marked.

fviz_nbclust(LA8671.gow.plot, pam, method="wss", k.max=20)    #
WSS plot of solutions of 20 clusters.

gap_stat<-clusGap(LA8671.gow.plot,     FUN=pam,     nstart=25,
K.max=15, B=250)    # this will plot the elbow of the dataset
plus 250 randomized sets, and give a plot with the recommended
cluster solution.
#WARNING: IT TAKES OVER AN HOUR TO RUN

# Run k-modes 20 times with different cluster solutions to
collect the within cluster simple matching distance data. The
sum of this for each solution can be charted in Excel and look
for an elbow.
kmodes(LA8671.initial, 5)


#RUN K-MODES WITH RECOMMENDED CLUSTER SOLUTION
LA8671.mode<-kmodes(LA8671.initial, 7)


#PULL OUT CLUSTER ASSIGNMENTS AND ATTACH TO A CSV FILE WITH PCoA
COORDINATES
cluster.out<-LA8671.mode$cluster

kmode<-as.matrix(cbind(LA8671.pco.plot, cluster.out))

write.table(kmode, file="LA8671_CodeTest_kmodes.csv", sep=",")


#RUN K-MEDOIDS WITH RECOMMENDED CLUSTER SOLUTION, APPEND TO
KMODES RESULTS, EXPORT TO CSV FILE
LA8671.pam.6<-pam(LA8671.gow.plot, 6)
pam.cluster.out<-LA8671.pam.6$clustering
all.results<-as.matrix(cbind(kmode, pam.cluster.out))
write.table(all.results,
file="LA8671_CodeTest_allresults.csv", sep=",")
```

```
# PLOT FIRST TWO PRINCIPAL COORDINATES WITH PAM CLUSTER ASSIGNMENTS.

#STEP 1: OPEN LA8671_CodeTest_allresults.csv IN EXCEL, MANUALLY LABEL COLUMN WITH PAM CLUSTERS PamClusters. SAVE AND CLOSE.

read.csv("LA8671_CodeTest_allresults.csv")->LA8671.all
Clusters<-LA8671.all$PamClusters
base<-ggplot(LA8671.all, aes(RS1, RS2, color=factor(Clusters))) + geom_point(size=2) + scale_color_brewer(palette="Set1")
base2<-base + labs(title=" ", x="RS1", y="RS2", col="Technological Clusters")
base3<-base2 + theme(panel.background=element_rect(fill="white"), panel.grid.major=element_line(color="grey69", size=.5), panel.border = element_rect(color="black", fill=NA, size=1),legend.key=element_rect(fill="white"))
LA8671final<-base3+theme(legend.title=element_text(size=12), legend.text=element_text(size=12))

LA8671final
```

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