SOURCING CLAYS AND STYLES: INTERACTION NETWORKS AT THE ELK RIDGE SITE, SOUTHWESTERN NEW MEXICO

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Abstract

Studying interaction in the precontact American Southwest has been tedious as various cultures had differing socio-economic structures resulting in various models used by archaeologists. The Mimbres Mogollon, who inhabited southwestern New Mexico from AD 200-1150, were a middle-range society meaning they lacked overarching rules and regulations from a governing body. This allowed for individuals, families, and communities to form and maintain their own interaction networks at the site level and makes applying a pre-established model of interaction difficult. This research focused on the Elk Ridge site, a large Classic period (AD 850/900-1150) Mimbres pueblo, to determine local and non-local interaction networks maintained by the site residents.

Using Instrumental Neutron Activation Analysis (INAA) and ceramic style analyses on partial and whole vessels recovered from Elk Ridge, the production and distribution of local versus non-local ceramics styles was investigated. The archaeological context of these vessels was also incorporated to distinguish between the movement of goods and relocation of people. This study shows that Elk Ridge was an active participant in a local exchange network as a ceramic production center and had networks with non-local Upland Mogollon communities. These Upland Mogollon connections developed over time allowing for non-locals to move into the site and maintain their own cultural practices and styles.

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For Todd,

The ritual is complete.

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Chapter 1 – Introduction

Interaction between precontact groups was complex and is often debated amongst archaeologists. Should research focus on high-visibility or low visibility traits; was it over short or long distances; was movement of people driven by violence or the environment; and how much or how little culture was exchanged (Anthony 1990; Clark et al 2013; Rouse 1986)? In essence, there is no one universal model to address interaction and defining how interaction should appear in the archaeological record varies based on environment and social-economic factors. A single culture may also have multiple modes of interaction taking place at any given time. These modes can be difficult to define when investigating a culture or society that is middle-range. Middle-range societies can be defined as sharing an overarching culture, but they lack a single governing body and law system which allows for each individual, family group, or community to function independently in aspects of daily life such as maintaining ties to other groups and controlling levels of interaction (Stone 2005, 2015). Investigating interaction, and other elements of daily life, can be challenging as no cultural universal theories can be applied. Broad patterns may be apparent, but we may not be able to pick up on nuances. This research proposes that interaction within a middle-range society can be investigated by focusing on how a single site interacts with surrounding communities. By using a material culture dataset this is shared amongst the communities and highly visible (i.e., ceramics), various attributes from that data can be used to trace the movement of goods and people.

The Mimbres were a distinct precontact group from the larger Mogollon culture that primarily occupied the Mimbres and Gila River Valleys in southwestern New Mexico from AD 200-1150. During the Pithouse period (AD 200-1000) the Mimbres lived in semi-subterranean pithouses with 20-100 pithouses per site. This period saw the beginning of ceramic production

and agriculture. The Classic period (AD 1000-1150) saw the shift to living in above ground adobe and cobble pueblos that ranged from small field houses of a few rooms to 200+ room large sites (Anyon et al 1981; Creel and Anyon 2003; Diehl 1996). Although defined as a middle-range society based on archaeological data, the various communities within the Mimbres culture have been primarily viewed as a single cultural group when discussing various aspects of daily life. Although research has indicated craft specialization at certain sites, broader topics such as agriculture, organization, and interaction have been assumed to be equal across the Mimbres culture through time. However, by comparing and contrasting large scale excavations, researchers now know the number and sizes of roomblocks varied, the ability to produce ceramics was partially environmentally determined, and different crops/resources were available based on a site's location within the Mimbres Valley. To better address interaction in the archaeological record of the Mimbres, this research focused on a single site to examine how interaction can be modelled on both the local and non-local level.

The Elk Ridge site is a Mimbres Classic pueblo (AD 850/900-1150) with an estimated 200 rooms and is considered to be the northernmost large habitation site in the Mimbres Valley proper. Recent excavations by the University of Nevada, Las Vegas uncovered 20 rooms (including habitation and storage), a ramada, and a midden (Roth and Creel 2023). Previous research on the southern portion of the site yielded four roomblocks, a large Three Circle phase great kiva, a Classic period kiva, and the first evidence that the site was a ceramic production center (Laumbach 2006). During excavation, a significant amount of Upland Mogollon style plain and corrugated ceramics were noticeable across many of the pueblo rooms. Due to the location of the site, the site being a ceramic production locale, and having a lot of non-local ceramics, Elk Ridge became an excellent candidate for a case study on local and non-local interaction at a

single Mimbres site. For this research, interaction refers to the movement of people and/or objects. Non-local is being used to refer to the people and cultural material of the Upland Mogollon. Although they are part of the larger Mogollon culture along with the Mimbres, the Upland occupied an area to the north of the Mimbres and had distinct cultural markers further discussed in Chapter 2.

Ceramic analyses were the focus of this research as ceramics represent the most visible aspect of the Mimbres culture today (Anyon and LeBlanc 1984; Brody 2004; Shafer 2003). The different ceramic wares and types of the Mogollon culture have shown that the Mogollon subcultures developed distinct styles over time making cultural affiliation possible (Rinaldo and Bluhm 1956; Shafer and Brewington 1995). The presence of non-local types has long been interpreted as trade between the Mogollon branches and representing the movement of goods (Anyon and LeBlanc 1984; Gilman and LeBlanc 2017; Shafer 2003). However, this research is interested in deciphering between the movement of goods and people. Instrumental Neutron Activation Analysis (INAA) has been a key method since the early 1990s for its ability to read chemical signatures of clays (Creel 2022; Creel and Speakman 2018; Gilman et al 1994). This has led to the formation of known production locales, primarily in the Mimbres Valley, and an understanding of pottery movement. Vessels with non-local styles can also be tested. If they were made from non-local clay, then trade is a reasonable assumption. However, if non-local styles were made with local clay sources, it can be insinuated that a non-local potter may be living at the site. The context of the vessel can be used to find additional evidence that non-local individuals or families moved into the site. Did the architecture and burial practices resemble non-local patterns? Ceramic technology, building techniques, and ritual practices are cultural aspects that can be engrained in an individual since childhood and represent identity. Therefore,

the combination of ceramic analyses with contextual information provides the data necessary to address the research questions of interaction at a local and non-local level.

Research Questions

Because interaction can be investigated at multiple levels, two questions were used to explore how the inhabitants of the Elk Ridge site interacted with local and non-local individuals/communities. The questions also focused on modelling interaction at a single site to be able to get as detailed as possible without incorporating universals.

1. How was Elk Ridge incorporated into the Mimbres Valley interaction network? What is the ratio of locally made vessels to imports and how does this compare to other Mimbres sites?

This question is focused on interaction at the local level or within the Mimbres Valley proper. Due to previous INAA research at other sites (see Creel 2022 for synthesis), Mimbres archaeologists have a decent understanding of pottery movement through the valley and have been able to classify sites as production centers or sites that are reliant on these producers. Ratios of import and export have formed a general pattern based on a site's role in the network. Elk Ridge has been established as a ceramic production center through INAA analyses- testing of adobe and unfired vessels from Elk Ridge have tied at least one clay source to the site, and 353 vessels from that source have been found at other Mogollon sites (Creel 2022; Creel and Ferguson 2021).

Utilizing INAA to trace production centers of the vessels recovered at the Elk Ridge site is crucial to understanding this question. If import/export numbers are like previous results at other sites, it can be assumed that Elk Ridge was part of the larger network of ceramic trade and the roles of the larger pueblos that produced pottery was generally the same across the Mimbres Valley. Ratios that are different need to be further addressed for their implications concerning

Elk Ridge's role in the Mimbres Valley. Due to Elk Ridge being the most northern pueblo in the valley, did this affect how they interacted with southern sites? Was a different ceramic trade network functioning at either end of the valley? For this research, 94 vessels representing all wares (plain, red, decorated, and corrugated) from the Elk Ridge site were submitted for INAA.

2. What was the nature of interaction with the Upland Mogollon? Does archaeological data show the movement of objects and/or people?

When it comes to movement between the branches of the Mogollon, no model of interaction has been established. This is mainly due to the nature of the Mimbres being a middle range society with each site probably involved in their own independent interaction networks. Even though there may be multiple models for the entire Mimbres, this question is more focused on the visibility and type of interaction between Elk Ridge and the Upland Mogollon. INAA is also crucial to answering this question as the chemical signature of Upland Mogollon sources are also known, though not as established as those in the Mimbres Valley (Ferguson and Creel 2021). Vessels being imported from/exported to the Upland region would prove the movement of goods between these groups. In addition to INAA, key decorative attributes and technology on the pottery from the Upland Mogollon were utilized in hands-on analysis to begin to understand whether people were also moving and perhaps relocating. As Classic period pottery styles are the most visible difference between the two branches, they provided an excellent means to begin to understand other forms of interaction. Neuzil (2008) warns that the sole presence of ceramics or certain styles are not enough to reveal the movement of people versus the movement of goods. Therefore, INAA and the context of the vessels (deposition, room architecture, other artifacts present) was used in conjunction with the ceramics styles to better evaluate the movement of goods and/or people.

Significance

Four points of significance were used throughout this research to answer the research questions. The first area of significance involves ceramic wares and types. Most studies involving INAA have focused solely on the decorated wares, a trend that spans most ceramic studies of the Mimbres people. However, because the decorated pottery only represents a portion of the ceramic assemblage, the results only provide a portion of the story. Therefore, all sampleable vessels regardless of ware and type were considered for this research. Would the results be similar or would adding the other wares change overall patterns of movement of vessels? Although the focus of this research is interaction, investigating all the wares can also answer questions relating to manufacturing locales/specialization regarding certain ceramic types, preferences, and tying the movement of pottery to specific events or practices.

Next, this research is focused on understanding interaction from the point of view of a single site. As discussed at the beginning of this research, the Mimbres were a middle range society- they had no overarching societal rules or government- meaning each site was in control of forming their own internal standards and relationships. Therefore, when discussing large concepts such as interaction, a single site needs to be the focus as small nuances can be lost at the site level when looking for overarching patterns across the culture. Large scale excavation reports on Mimbres pueblos (Anyon and LeBlanc 1984; Gilman and LeBlanc 2017; Shafer 2003) all show how each site was different in visible ways such as architecture and roomblock organization. Going forward, research on the Mimbres should consider that the sites are not carbon copies of each other, and although they shared an overarching identity, the micro-culture of each site needs to be considered.

Third, this research did not exclusively use one model of interaction. Singular models tend to focus on the key takeaways, looking for the universals shared across sites, cultures, and/or regions. Archaeological concepts of design and technological style and communities of practice, along with cultural anthropological studies of transnationals and their belongings were all consulted. This allowed for various data sets of material culture to be studied and for relationships between of the data to be explored. The data was then used to discuss interaction with local and non-local groups as it pertains to the Elk Ridge site. By focusing on a single site, not trying to fit the data to a single preconceived model, allowed for small details to be considered.

The final area of significance is the inclusion of ceramic vessels looted from the site in the 1980s. This was the first time these vessels underwent analyses and have been included in academic research. Designs on looted ceramics have previously been incorporated into analyses of pottery, although there has been a general movement away from doing so in recent years. The reason being that these artifacts cannot be verified and including those from private collections can promote further looting. The other side to this problem is the disinterest in these collections after the original collector passes away. The Grant County Archaeological Society has been contacted on multiple occasions to take in collections with the other option being the artifacts will be taken to a local landfill (Markel, personal communication). Although taking on the care of a looted collection can be a burden, the alternative of these artifacts being thrown away and lost forever is a far worse outcome. With INAA, researchers can still source where looted ceramics were made, adding to information regarding manufacturing despite the lack of detailed contextual information. Designs can also be analyzed for validity and used in broader research on geometric and figural images.

Summary

The modes and visibility of interaction and how to study these aspects vary drastically across the Southwest (Anthony 1990; Cameron 1995). Environment, community size, and social-economic factors all play a role in how groups interact, leading to various models of interaction, none of which can be universally applied across past cultures. The Mimbres Mogollon were a middle-range society lacking an overarching governing body, which suggests that each site may have had its own model for interaction with local and non-local communities. To investigate how one site interacted with other Mimbres sites and the Upland Mogollon, chemical and stylistic analysis was conducted on whole and partial vessels recovered from the Classic pueblo Elk Ridge. The analyses focused on all ceramic wares and utilized vessels from all contexts. Results of these analyses were there placed in their wider site context with other data sets that could support the presence of non-local individuals.

Chapter 2 – Background on the Mimbres and Upland Mogollon and Their Ceramics

The general geographic extent of the Mogollon culture in the American Southwest was the Little Colorado River in the north, the Verde in the west, the Pecos River in the east, and an extension south into modern-day Mexico (Reid 2006). Haury (1936) used the sites of Harris and Mogollon Village to differentiate Mogollon from the surrounding Hohokam and Ancestral Puebloan cultures. The larger Mogollon cultural group is further divided into several branches (Mimbres, Upland/Reserve, Jornada, Eastern Mimbres, San Simon, Chihuahuan) of which the Upland, Mimbres, and Jornada branches are the most studied and best understood due to the amount of archaeological work that has occurred in these branches compared to the others. These groups are all considered to be Mogollon based on the shared traits of pithouse living and the presence of brownwares; however, all developed local differences (Shafer 2003). This research focuses on the Mimbres and Upland Mogollon (Figure 2.1).

Mimbres Mogollon

The Mimbres were primarily located along the Mimbres River and Gila River valleys; however, large sites have been found south of the Mogollon Plateau and into Chihuahua, Mexico. In general, the habitation zone of the Mimbres provided permanent water and long growing seasons (Shafer 2003). The cultural sequence of the Mimbres is broken down into three periods based on changes in architecture and material culture (Table 2.1). In general, more is known about the Classic period. Pithouse villages and structures were often heavily disturbed by the Mimbres people as pueblos were built directly over earlier structures limiting archaeological sampling of early structures (Shafer 2003). However, enough data has been recovered from early structures to show the general trajectory of the culture and the changes it underwent.

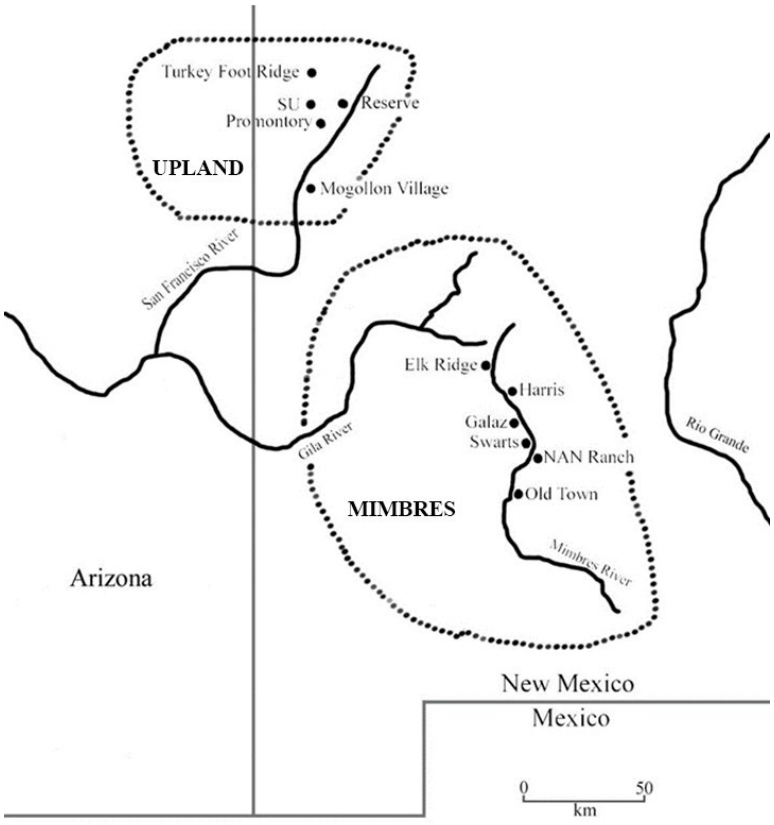


Figure 2.1 Location of Mimbres and Upland Mogollon branches.

The Early Pithouse period has been documented at a few sites, thus this is the least understood period. In general, the period saw circular to oval pithouses located on isolated knolls with early communal structures at the sites of McAnally and Winn Canyon (Anyon et al 1981; Anyon and LeBlanc 1980; Reid 2006). Pottery was limited and was primarily Alma Plain. In some instances, fugitive red washes and red slipped ceramics with no polish have been recovered (Anyon et al 1981).

The subsequent Late Pithouse period saw sites move from isolated knolls to the first river terrace above the floodplain. Throughout this period villages became larger as populations grew and the dependence on agriculture increased to supplement hunting/gathering activities that remained important (Anyon and LeBlanc 1980). The Late Pithouse period is divided into three

Table 2.1 Mimbres chronology and material culture (Anyon et al 1981; Creel and Anyon 2003; Diehl 1996).

Period	Dates	Ceramics	Architecture
Early Pithouse	AD 200-550	Plain brownwares, fugitive redware, unpolished redwares	Circular/oval pithouses, sites located on isolated knolls
Late Pithouse			
Georgetown	AD 550-650	San Franciso redware	Circular and D-shaped pithouses, sites moved to the first river terrace
San Francisco	AD 650-750/800	Mogollon Red-on-Brown	Pithouses become rectangular with rounded corners
Three Circle	AD 750/800-1000	Three Circle Red-on-White, Style I and Style II Black-on-White	Rectangular and square pithouses
Classic	AD 1000-1150	Mimbres Classic/Style III Black-on-White	Shift to cobble masonry pueblos

phases with the first being the Georgetown phase (AD 550-650). Pithouses from this phase remained circular; however, D-shaped structures were also present (Anyon et al 1981). Communal structures remained round but were becoming larger than households and adobe lobing was common (Anyon and LeBlanc 1980). San Francisco red pottery was introduced as a red-slipped brownware and is the hallmark type for this phase (Anyon and Leblanc 1980, Anyon et al 1981). Corrugated or textured wares also started to be made during this phase and evidence points to some early identity markings through coil width and distinct patterns (Romero 2014). During the San Francisco phase (AD 650-750) pithouses became rectangular with rounded corners (Anyon et al 1981). Communal structures continued to grow in size to serve growing populations. These structures remained round, and adobe lobing became stylized (Anyon and LeBlanc 1980). Mogollon red-on-brown serves as the diagnostic pottery type for this phase and represented the first decorated ware amongst the Mimbres (Anyon et al 1981).

The Three Circle phase (AD 750-1000) is the best understood of the phases as most of the pithouse structures recovered date to this phase. Pithouses were rectangular or square in shape and Three Circle red-on-white ceramics marked the beginning of a white-slip tradition. This ceramic style quickly developed into Style I black-on-white and the beginning of the black-on-white tradition (Anyon et al 1981). The number of burials continues to increase with the burials under household floors becoming more common. Although there were no universals demarcating status of individuals, evidence of achieved, and possibly ascribed, status was present in burials by the Three Circle (Anyon and LeBlanc 1984; Shafer 1985; Spreen 1983). The best example comes from NAN Ranch in which a female was buried with numerous finished vessels, pigment, unfired vessels and worked sherds used in pottery manufacturing indicating others recognized this individual's skill even in death (Shafer 1985). Excavations at the NAN Ranch yielded minimal evidence of pithouse clustering insinuating the presence of extended families, but data was marred by intrusive pueblo building (Shafer 2003). Clear evidence of clustering was gathered from the Harris site, a Late Pithouse period village with no subsequent pueblo built on top (Roth 2019; Roth and Baustian 2015). Pithouses were grouped in clusters based on proximity, shared extramural areas, and shared household characteristics such as vessels plastered in the floor. Each cluster also had one superimposed household often with a wealthy child burial. These households and shared characteristics have been inferred as lineage ties with the superimposed household representing the original land holding family. Wealthy adult burials were recovered from the plaza and extramural areas. One kiva also included 10 adult burials possibly representing an important family that may have controlled rituals (Roth and Baustian 2015).

During the Three Circle phase kivas became rectangular and were variable in size (Anyon and LeBlanc 1980). Wall construction varied including the presence of masonry, entrances were oriented east or southeast, and floor grooves and sipapus could be present. Retirement of the structures was planned and coordinated and included the removal of the centerpost, toppling the walls, and intensive burning. Dedicatory items were also present and variable including pipes, stone bowls, projectile points, quartz crystals, palettes, and shell and stone jewelry (Creel and Anyon 2003). The kivas and plazas at sites were most likely intimately linked as gathering spaces for communal events (Roth and Romero 2022). Plazas also became the areas of cremations and cremation burials. Projectile points and shell artifacts tended to be more common in cremation burials. The determining factor(s) of whether an individual was cremated or buried below the floor has yet to be discovered (Creel and Shafer 2015).

A Transitional Phase (AD 900-1010) existed as the Mimbres Valley inhabitants switched from pithouse to pueblo living (Sedig et al 2018). The phase has not been well studied, although recent excavations are beginning to yield more information on this period. Shafer's (1995, 2003) work at NAN Ranch showed that this period was definable in the Mimbres Valley as he noted various architectural mechanisms of change. This variation was also noted at Woodrow Ruin and the Harris site and is defined by the presence of shallow pithouses with thin adobe walls and Style II black-on-white ceramics (Sedig et al 2018).

The Classic period (AD 1000-1130) saw the shift from pithouses to above ground masonry pueblos and represented a period of major organizational change (Gilman et al 2018). Although wall construction techniques using adobe and river boulders and cobbles varied, visible building sequences support the idea of pithouse period single and lineage households aggregating into multihousehold units (Shafer 2003). The number of roomblocks per site varied. The

Mattocks site had numerous roomblocks while the Swarts site had two large roomblocks with some architectural differences between the two (Cosgrove and Cosgrove 2011; Gilman and LeBlanc 2017). Kivas and other communal areas also underwent architectural changes. Large non-habitation rooms and unwalled plazas were still present and indicated communal use, while walled plazas and larger rooms incorporated into roomblocks insinuated additional ritual space with limited access (Anyon and LeBlanc 1980).

Agricultural dependence continued to increase as the population may have doubled or tripled during the Classic period (Shafer 2003). The middle Mimbres Valley would have had a long agricultural growing season to support a boom in population. However, wild food collection was still practiced as well as a reliance on rabbits. Larger game may have become scarcer due to resource depletion (Cannon 2000). Material culture, specifically pottery, undergoes extensive changes during this period. The production of redware slows to almost a complete stop, while the black-on-white tradition reaches its peak and includes complex geometric designs along with naturalistic images (Gilman and LeBlanc 2017; Shafer 2003). Smudged vessels and sherds were rare and have been interpreted as trade with the Upland Mogollon (Anyon and LeBlanc 1984; Gilman and LeBlanc 2017; Shafer 2003).

Evidence for elites or vertical social differentiation, particularly in burials, is minimal with minimal data related to acquired status, such as the bead making cache recovered from Burial 904 at the Swarts Ruin (Cosgrove and Cosgrove 2011; Gilman 1990; Shafer 2003). The most common grave good was pottery, but the presence of such was common across ages. Differences between sites related to individual wealthy burials or clusters of wealthy burials may have also been due to site economics (Gilman 1990). Although pottery was common, there

appeared to be no set standard or minimum for grave inclusions. For example, at the Mattocks site, 21% of the burials had no goods (Gilman and LeBlanc 2017).

The period after the Classic has often been referred to as a depopulation of the Mimbres Valley. Early studies viewed this period as mysterious; however, recent research has shown that various forms of restructuring took place, with new pottery styles and variable architecture technology representing various groups living together (Nelson 1999). During the Terminal Classic (ca. AD 1130) sites in the middle and lower valley saw continued occupation but with much lower populations while the northern valley was depopulated. Foreign pottery wares such as El Paso Polychrome and Chupadero black-on-white became more prevalent. The Post-Classic (AD 1150-1200s) saw the depopulation of the remaining large pueblos in the valley with a rise in smaller hamlets both within the valley and to the east. The Black Mountain phase (AD 1200-1300) in the southern Mimbres Valley saw adobe pueblos that were often plaza-oriented that overlaid or were adjacent to Mimbres/Terminal Classic sites (Hegmon et al 1999).

Upland Mogollon

The Upland Mogollon inhabited areas of western New Mexico and eastern Arizona, north of the Mimbres (Diehl 1996). The Upland branch, which includes the Reserve branch as defined by Wheat (1955), had access to the same suite of resources as the Mimbres but do not appear to have had the same degree of agricultural dependence. The Upland Mogollon would have experienced greater risk with agriculture specifically timing the season between spring and autumn frosts (Peterson 1988). The temporal sequence of the Upland (Table 2.2) roughly follows the Mimbres trajectory, although the Upland may have some cultural lag (Diehl and LeBlanc 2001). Regional differences have also resulted in some discrepancies in naming conventions and breakdown of time periods (Stone 2002). The majority of Upland excavations took place prior to

the 1960s and were subject to strategies that did not yield a lot of detail. This resulted in chronological periods that are not as well understood as the Mimbres, especially for pithouse occupations.

Table 2.2 Upland Mogollon chronology and material culture (Bluhm 1957; Diehl 1997; Martin and Rinaldo 1950a, 1950b; Martin et al 1949; Martin et al 1957).

Period	Dates	Ceramics	Architecture
Pine Lawn	AD 250-500	Plain and red wares; the practice of smudging begins	Circular pithouses
Georgetown	AD 500-700	Plain and red wares	Circular pithouses
San Francisco	AD 700-900	Mogollon Red-on-Brown	Square or rectangular pithouses
Three Circle	AD 900-1000	Three Circle Red-on-White, Black-on-White (probably Style I)	Pithouses that were usually rectangular in shape
Reserve	AD 1000-1100	Reserve Black-on-White, increased corrugated styles	Small, above ground masonry pueblos in L-shaped blocks
Tularosa	AD 1100-1250	Tularosa Black-on White and Pattern Corrugated and White Mountain redwares	Masonry pueblos become larger

Like the Mimbres, pithouses shift to a rectangular shape during the San Francisco phase. However, the presence of round pithouses persists through the Three Circle phase. Ceramic wares and styles present in the Mimbres were also present among the Upland; however, this phase witnessed the rise of smudged varieties of plain and corrugated ware and the beginning of the long-standing smudged tradition (Martin and Rinaldo 1950b). The Three Circle phase (AD 900-1000) of the Upland Mogollon is short-lived compared to the Mimbres counterpart. Pithouses were usually rectangular, had east or southeast facing entrances, and were sometimes burned when retired (Martin et al 1949; Martin and Rinaldo 1950b). Some of these structures

include wall niches and evidence pointing to the presence of benches has been found. In fact, wall niches appeared to have been utilized instead of floor pits, which have been uncommon in excavations across pithouse period for the Upland (Martin and Rinaldo 1950b). Crude masonry walls also began to appear, perhaps representing a transitional phase. Ceramics begin to drastically change as textured wares reached a new height in popularity in the Reserve phase with Alma variants and the introduction of fillet rim corrugated patterns, San Francisco Red ceased to be made, and Reserve Black-on-White (derived from more northern pottery traditions) began to replace the indigenous Mimbres styles (Bluhm 1957; Martin et al 1949; Martin and Rinaldo 1950b). Evidence of northern Cibola (northwest New Mexico) tradewares was present through the appearance of Puerco and Red Mesa Black-on-White (Martin and Rinaldo 1950b; Stone 2002).

The Reserve phase (AD 1000-1100) saw the shift to above ground masonry pueblos, ranging from 3 to 40 rooms (Stone 2002). The roomblocks were small, generally in a L-shape, and the masonry was described as crude with large, unshaped boulders (Martin and Rinaldo 1950a). Due to the crude construction, this period may reflect the pithouse to pueblo transitional stage in the Upland Mogollon (Martin et al 1949). Household interiors included rectangular hearths and rows of mealing bins built into the floor. Burials were present in household rooms, several of which were located on the floor instead of beneath it (Martin and Rinaldo 1950a; Martin et al 1957). Communal structure architecture shared similar characteristics with the Mimbres and were round to oval; however, floor grooves and intramural pits were more common in the Upland branch (Gilman and Stone 2013; Stone 2002). These structures could have been semi-subterranean pithouses or incorporated into the roomblock (Stone 2002). New corrugated and decorated types began to emerge, and different elements and motifs used in black-on-white

style made Reserve decorated ware notably different from the Mimbres style, along with a lack of human and animal representations that gained increasing popularity among the Mimbres during this time (Martin and Rinaldo 1950a; Rinaldo and Bluhm 1956).

The Tularosa phase (AD 1100-1250) was a time of large-scale aggregation as sites grew in size to include hundreds of rooms and decreased in number, possibly to handle a growing population (Martin et al 1956; Stone 2002). Architecture became more formalized as exterior walls had shaped rocks and laminate slabs in even courses while interior walls remained cobble adobe. The interiors featured mealing bins and rectangular hearths and showed the mixture of Mimbres and Ancestral Puebloan traditions (Martin et al 1956). Communal structures were usually square or rectangular semi-subterranean structures with hearths and ventilator shafts. However, overall size, shape, and architectural features were highly variable (Stone 2002). The Upland Mogollon inhabited an area that was climatically marginal for agriculture insinuating a continued reliance on large and small game and foraging (including yucca, walnut, cactus, seepweed, and saltbrush). Despite the environment, evidence has been found for the growing of corn and squash (Martin et al 1956).

Overall pottery trends show a decrease in plainware, a continued increase in smudging, and indented coils replacing plain, clapboard styles (Martin et al 1956). Early ceramic styles, including Three Circle Neck Corrugated, are still present along with rare occurrences of red slipped indented pieces that have never been formally categorized (Martin et al 1954). Tradewares could represent upwards of 10% of the total assemblage and included Mimbres Classic black-on-white styles (Martin et al 1956). Burials were all subfloor and predominately south facing. Shell jewelry and mat covers have been noted as inclusions with multiple small jars

and smudged bowls being the most common grave goods. Decorated bowls were extremely rare as grave goods (Martin et al 1956).

Ceramic Typology

The previous two sections highlight that early ceramics in the Upland and Mimbres Mogollon regions were similar, save for the presence/absence of smudging. As the branches moved into pueblos, the ceramic traditions became distinct. This section provides an overview of the numerous Mimbres and Upland ceramic types utilized by each group, focusing on the types most seen in Classic Mimbres period contexts and encountered during this research. Attention is given to nuances in the styles as well as which branch any given style may or may not belong to (Hays-Gilpin 1998; Martin and Rinaldo 1950b; Rinaldo and Bluhm 1956; Shafer and Brewington 1995).

1. *Alma Plain/Mimbres Plain*- The plain brownwares for the Mimbres Valley are classified under different names depending on the context in which they were found; however, there is no other definable difference between the two. Plainware was the first pottery type amongst the Mimbres and was present throughout their occupation of the area.

2. *Reserve Plain (Smudged)*- A general category for all plain brownware ceramics amongst the Upland. If smudging is present, it can be visibly distinguished from Mimbres plainwares.

3. *San Francisco*- Brownware pottery that had a red, burnished slip on one or both surfaces. Popular during the Pithouse period, this type saw drastically decreased numbers during the Classic period. Found in both Mimbres and Upland contexts.

4. *Three Circle Neck Corrugated*- A corrugated type that exhibits plain clapboard coils on the neck or upper third of the vessel. The bottom coil is often tooled. Often referred to as Mimbres Partially Corrugated if recovered from Classic Period contexts. Present among both the Mimbres and Upland.

5. *Mimbres Partially/Fully Corrugated*- An outgrowth of Three Circle Neck Corrugated in which clapboard coils cover a significant portion or all the vessel body. Bottom coil(s) of a partial corrugation may be tooled. Coils are usually not flattened or burnished. The most common corrugated style at Classic Mimbres sites.

6. *Reserve Corrugated (Smudged)*- Most likely on outgrowth of Three Circle Neck Corrugated featuring finer coils. If smudging is present, there is a higher chance that coils were smoothed and burnished which helps distinguish it from Mimbres Corrugated. A Tularosa variant includes indenting of the top coils (Rinaldo and Bluhm 1956). Although this style can appear similar to its Mimbres counterpart, the presence of smudging and coil manipulations secure it as an Upland style.

7. *Reserve Indented (Smudged)*- All coils have been manipulated in an even pattern which causes slight flattening of the coils. Coils are often burnished on the smudged variety. This ceramic style is a hallmark of the Upland Mogollon (Rinaldo and Bluhm 1956).

8. *Reserve Punched (Smudged)*- A variant of Three Circle Neck Corrugated and an outgrowth of Alma Punched (Rinaldo and Bluhm 1956). Patterns of punching include diagonal lines, diamonds, chevrons, and square spirals. This is the most uncommon corrugated type during the Classic Period with only a few whole vessel specimens known. It cannot be assigned to the Upland or Mimbres unless smudging is also present.

9. *Reserve Incised* (Smudged)- A variant of Three Circle Neck Corrugated and an outgrowth of Alma Incised (Martin and Rinaldo 1950b; Rinaldo and Bluhm 1956). An uncommon type that is found in both Mimbres and Upland sites. Because of its rarity, it cannot be conclusively used to identify either branch unless the smudging is present. Incision patterns include straight lines, diagonal and intersecting lines, nestled triangles, and stepped elements.

10. *Tularosa Patterned Corrugated (Smudged)*- An Upland pottery style featuring clapboard coils embellished with tooling in chevron, diamond, or square spiral patterns. The Reserve variant features alternating rows of plain and indented coils.

11. *Reserve/Tularosa Black-on-White*- These whiteware styles are being considered together as the difference between the two is often subjective if context is unknown. Both are derived from Cibola pottery styles. Figurative images are not present. The most common designs are opposed solid and hachured elements in the form of either scrolls or steps that have 90-degree angles (Hays-Gilpin 1998; Martin and Bluhm 1956). Vessels that showcase this style are assigned to the Upland Mogollon.

12. *Style II Black-on-White*- A white-slipped brownware Mimbres style in which geometric designs are becoming increasingly more complex. This style is present in both pithouse and pueblo contexts. The first naturalistic images appear in this style. Further subdivided into Early and Late.

13. *Style II/III Black-on-White*- A white-slipped brownware Mimbres transitional style in which the complexity of geometric and figurative designs continued to increase.

14. *Style III Black-on-White*- This white-slipped brownware style represents the height of Mimbres pottery production and includes a wealth of differing images unparalleled in other precontact southwest groups. Includes a polychrome variant. It is further subdivided into Early, Middle, and Late based on rim design treatments:

    - Early: Multiple thin border lines at the rim, designs attached to one thin line near the rim, or designs that extend all the way to the rim.
    - Middle: One or more thick border lines present near the rim and/or near the base of the bowl.
    - Late: One thick and sloppy border line near the rim or simple geometric shapes that extend down from the rim.

The Elk Ridge Site

The Elk Ridge Site is a large Classic period (AD 1000-1130) Mimbres pueblo of roughly 200 rooms with a Late Pithouse period component located at the northern end of the Mimbres River Valley. The site sits on the north side of the Mimbres River next to a natural spring and below the large pithouse village of Three Circle. The site is currently divided into two portions based on land ownership. Prior to flooding and subsequent erosion beginning in the Spring of 1989, the Elk Ridge Site was only thought to consist of an artifact scatter and a few rock alignments. Looting by the landowner Robert Croteau of the southern portion of the site was conducted between the Spring and Summer of 1989 prior to the passing of the New Mexico State burial law which prohibits the excavation of unmarked human burials regardless of land ownership (Nightengale 1991). Using heavy equipment, the landowner excavated roughly 12 feet below the surface to hit intact rooms. Local stories indicate individuals were lined up along

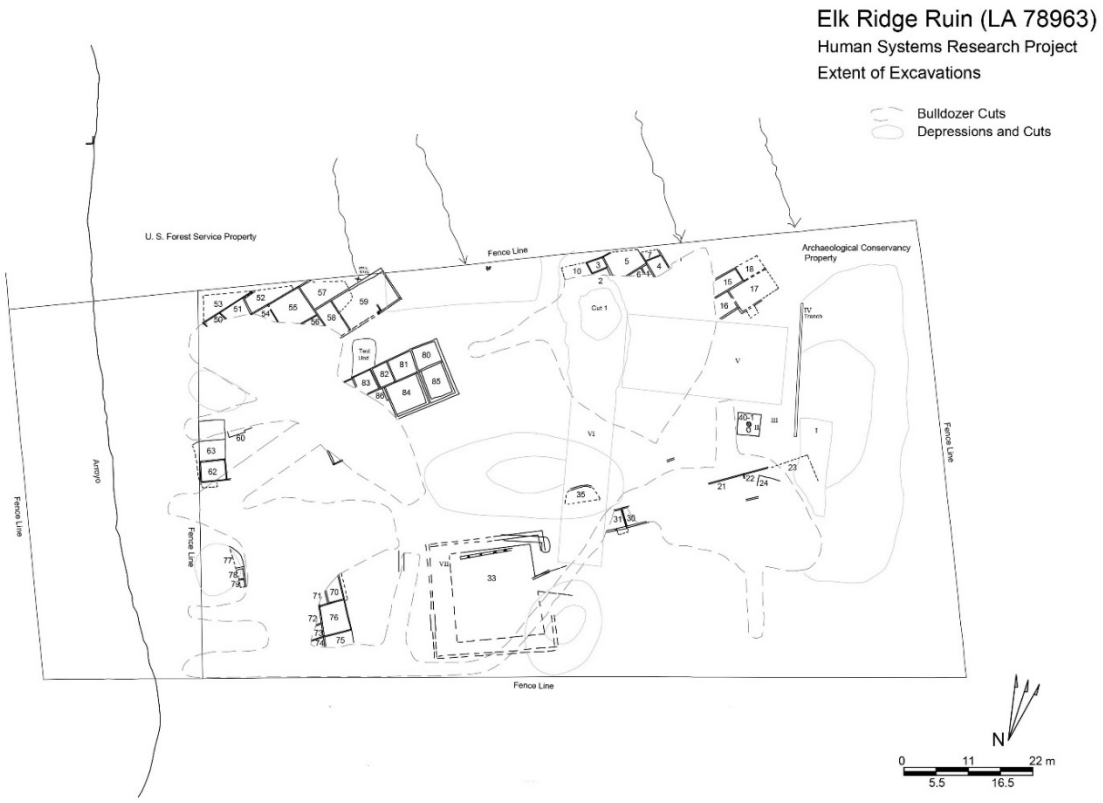


Figure 2.2 Southern excavation of Elk Ridge by Human Systems Research Inc including areas disturbed by Croteau looting. Digitized by Ashley Lauzon.

the fence line to bid on whole vessels as they were discovered while the associated human remains were tossed into backdirt piles (Laumbach 2006). In December 2018, artifacts that had been kept by the original landowner were given to the Grant County Archaeological Society by his son Joe Croteau. This collection, now housed at the Western New Mexico University Museum as the Croteau Collection, included several whole and partial vessels, 31 of which were included in this research, stone tools, and jewelry. Although the exact context of these vessels was not documented, site level accuracy is enough to discuss broader patterns of interaction at the Elk Ridge site. Additionally, personal observations of the hundreds of returned ceramic sherds provided some information about occupation on the south side. The presence of Mogollon

red-on-brown and Three Circle red-on-white ceramics indicate that the landowner did encounter several pithouse structures.

The subsequent landowner of the southern portion, Billy Russell, along with Human Systems Research, Inc. conducted formal excavations to salvage any information and artifacts left behind (Figure 2.2). These excavations uncovered four Late Pithouse period pithouses, roughly 40 pueblo rooms, an outline of a rectangular rock lined Three Circle Phase kiva, a Classic Mimbres kiva, numerous burials, and evidence of domesticated turkey (Laumbach 2006). Decorated vessel samples collected from this project were sent for Instrumental Neutron Activation Analysis which indicated that Elk Ridge was a ceramic production center.

In the Summer of 1990 Archaeological Research, Inc., in conjunction with the Gila National Forest, performed test excavations on the northern portion of the site to assess the damage of the arroyo on both sides of the arroyo bank and to test for archaeological remains below the arroyo bed. Units in the arroyo bed and along the east bank revealed an infant burial, portions of a flagstone floor, and wall segments (Nightengale 1991). These wall segments correspond to rooms later excavated by UNLV.

UNLV excavations began in 2015 (Figure 2.3) under the direction of Barbara Roth and Darrell Creel. Field schools were conducted the following three years ending in 2018. All seasons focused on the east bank of the arroyo cut to expose rooms and features that faced the greatest threat of erosion. Trash contexts were excavated with shovels and pickaxes and a sample of the soil was screened through ¼" screens. Room fill, roof fall/wall fall, and extramural areas were excavated using trowels in 10 cm arbitrary levels, and all soil was screened through ¼" screens. Floor fill, floors, burials, and feature contexts were carefully excavated with a variety of hand tools and screened through ⅛" screens. This strategy allowed for the collection of an

extensive amount of material along with samples for flotation analyses, radiocarbon dating, dendrochronology, and archaeomagnetic dating.

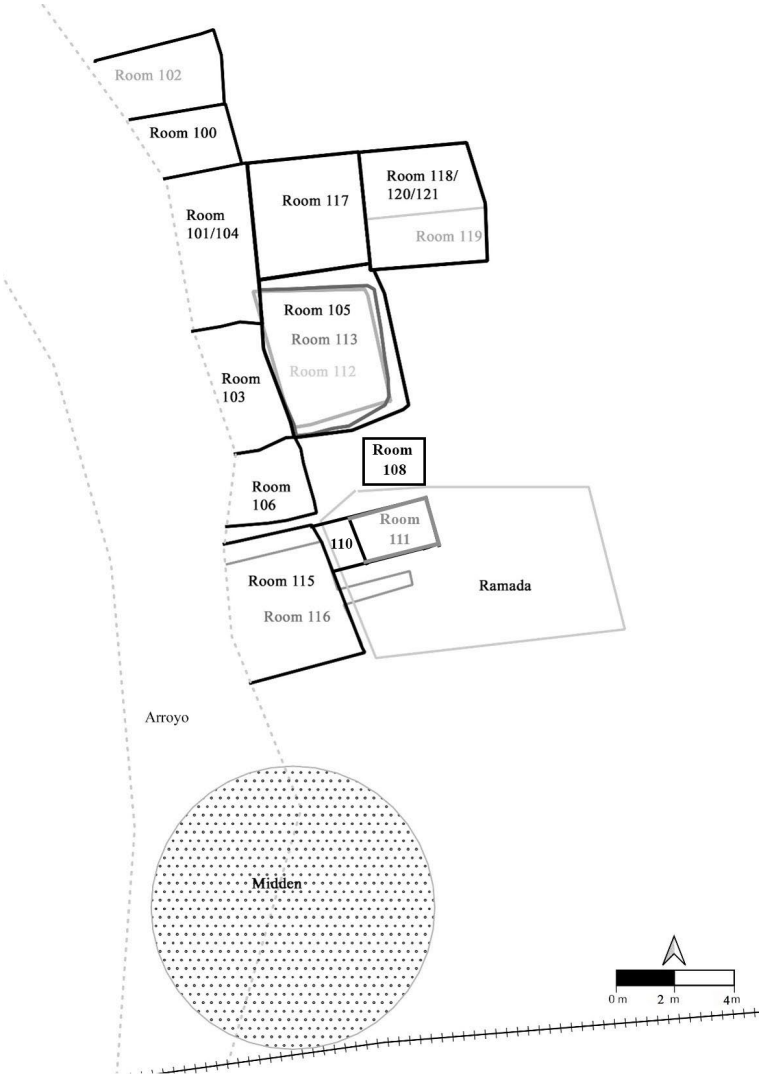


Figure 2.3 UNLV excavations on the northern portion of Elk Ridge.

The UNLV excavations focused on one roomblock and found 19 rooms including habitation and storage areas, a transitional pithouse, a ramada, and a turkey pen (Table 2.3). Evidence of corporate groups and remodeling was extensive, with at least four major building phases determined through wall construction and various dating methods. The first phase of

Table 2.3 Summary room data from the UNLV excavations.

Feature	Architecture/Building Phase	Function	Burials
Room 100	Masonry Pueblo; Phase 4	Storage	0
Room 101, above Room 104	Masonry Pueblo; Phase 4	Habitation	14
Room 102	Masonry Pueblo; Phase 4	Storage	0
Room 103	Masonry Pueblo; Phase 4	Habitation	4
Room 104	Adobe Pueblo; Phase 2	Habitation	1
Room 105, above Room 113	Masonry Pueblo; Phase 4	Habitation	4
Room 106	Masonry Pueblo; Phase 4	Storage	0
Room 107	N/A	Extramural Surface/Community	0
Room 108	N/A	Extramural Surface/Community	0
Room 109/Ramada	N/A	Extramural Surface/Community	0
Room 110, portion of Room 111	Masonry Pueblo; Phase 4	Turkey Pen	0
Room 111	Masonry Pueblo; Phase 2	Storage	0
Room 112	Adobe Pueblo; Phase 2	Habitation	11
Room 113, above Room 112	Adobe Pueblo; Phase 3	Habitation	2
Room 115, above Room 116	Adobe Pueblo; Phase 2	Habitation	0
Room 116	Pithouse; Phase 1	Habitation	0
Room 117	Masonry Pueblo; Phase 4	Habitation	11
Room 118, above Room 120	Masonry Pueblo; Phase 4	Habitation	0
Room 119, later section of Room 118	Masonry Pueblo; Phase 4	Storage	1
Room 120, above Room 121	Masonry Pueblo; Phase 4	Habitation	1
Room 121	Masonry Pueblo; Phase 4	Habitation	0
Midden	N/A; Phase 1-4	Trash Area	0

building was represented by a late Three Circle phase pithouse that yielded a radiocarbon date of AD 862-994 (1 sigma) (Roth and Creel 2023). Room 116 featured typical architecture for the phase including a slab-lined hearth, large central post and support posts in corners and along the walls, and an east-facing entry (Creel et al 2022). Phase 2 saw the switch to an above ground adobe pueblo (beginning around AD 950/1000) and the building of habitation Rooms 104, 112, and 115 and storage Room 111 with cobble-adobe walls and a slab-lined floor. These habitation rooms were not as well preserved due to the addition and remodeling of later rooms. Room 115 was built directly on top of Room 116, sharing the footprint of the south and east walls. Room 111 was associated with Room 115 as the entry to Room 111 was located along the east wall of Room 115 (Creel et al 2022). Subfloor inhumations were first encountered in Phase 2 in Rooms 104 and 112. Phase 3 was primarily a remodeling of Room 112 into Room 113 and formalization of associated extramural space Rooms 107/108. However, Room 113 did have cobble-adobe walls. Room 104 and 115 were still also being used during this phase.

Phase 4 architecture saw extensive building and expansion of the roomblock with cobble-adobe masonry (AD 1000-1130). Rooms 101, 103, 105, and 117 were all habitation rooms. Room 101 was built on top of Room 104, and Room 105 was built on top of Room 113. Rooms 120 and 121 were cleaned out prior to the building of Room 118 and thus had less preservation. The cobble-adobe masonry primarily consisted of river cobbles and broken manos and metates with a top course of shaped slabs all set in adobe. The north walls of connected Rooms 101, 117, and 118/120/121 were noted as consisting of more formal shaped stones in even courses indicating a different architectural technology. Rooms 100 and 102 were storage rooms that were most likely originally a larger habitation room, but all excavated material was associated with the remodeling as storage rooms. Room 106 was also a storage room with cobble reinforced floors

(Roth and Creel 2023). Rooms 118, 120, and 121 represent a series of superimposed habitation rooms. During this phase, the ramada (Room 109) was built over Rooms 111 and 115, with portions of Room 111 remodeled into turkey pen Room 110 (Creel et al 2022, Roth and Creel 2023). Numerous turkey burials were encountered in the ramada with one found in Room 110. The midden, or trash area at the south end of the roomblock, is primarily assigned to this phase; however, there was evidence it was used throughout the use of the site in some capacity.

Caches of ceramic vessels were encountered in neighboring Rooms 101 and 117 indicative of ritual retirement. Room 101 had at least two caches- one in the northeast corner of the room that included at least eight miniature plain, corrugated, and decorated bowls and jars. At least one cache was in the center of the room that also included numerous plain, corrugated, and decorated bowls and jars. However, the erosion/disturbance caused by the arroyo displaced the vessels. Room 117 had three caches- two on the floor and one subfloor. The two on the floor were along the south wall and in the center of the room and included plain and decorated jars and bowls, with portions of the largest jar split between the piles. The third Room 117 cache included a plain bowl, a decorated bowl, and a corrugated jar beneath the floor along the north wall. Whole and partial vessels, as well as ceramic sherds, yielded a large amount of Upland plain and corrugated styles that did not fit the standard pattern seen at other large Mimbres Valley sites.

Summary

Although the Mimbres and Upland are both considered branches of the larger Mogollon culture, early ceramic differences, and different trajectories during the pithouse to pueblo transition set them apart. While the ceramic differences have tended to be investigated through the decorated wares, distinctions were also apparent in the corrugated wares. The value of decorated wares to research has dominated most Mimbres ceramic research as long as Mimbres

sites have been excavated. Non-decorated wares are now being investigated more closely for their contribution to understanding larger scale social implications. The Mimbres site of Elk Ridge sits at the unique location of the north end of the Mimbres Valley proper and thus provides a new dataset to investigate local and non-local relationships.

Chapter 3 – Previous Research on Interaction in the American Southwest

Interaction can be defined as the movement of ideas, objects, and/or people. The extent and mechanics of these movements differ between culture groups and can change over time limiting the formulation of a single, universal model of interaction. Even within a specific cultural group, one model may not be sufficient (Stone 2015). Non-local individuals can fully assimilate, create a hybrid or a mixing of cultures, or retain their own cultural identity (Eckert 2019; Rouse 1986). The result may also depend on if they traveled alone, with their household, or a larger clan (Eckert 2007). When assessing past and current research about interaction in the Southwest, a wide range of perspectives and data sets have been used. As more research is conducted, simple theories of the past are being reevaluated and more details are being exposed.

General Southwest

Southwest interaction studies were first focused on migration in which a single household or small group of families moved with the result being replacement or colonization (Cameron 1995; Clark et al 2013). In the 1990s, research shifted from focusing on the causes of migration/depopulation and began to broaden, asking questions related to population size, distance, ethnicity, prior interaction, and size of the moving population. Archaeological interest grew in investigating differing ethnicities and how this affected interaction between groups (Cameron 1995). One key factor that may have determined the target location of moving groups was the familiarity between the migrant group and the target population. Cameron (1995) hypothesized that familiarity/interaction between groups was what allowed the large 13th century migration from Mesa Verde to the Rio Grande.

A similar relationship may have also served as the basis for the 13th century Kayenta migration from northeast to southeast Arizona. Woodson (1999) argued the Safford area in Arizona possibly served as a migration corridor which may have previously acted as a communication/trade corridor, creating a relationship between the areas. The resulting presence of the Kayenta and Tusayan in southeast Arizona could be seen in the archaeological record through architectural attributes including the building of D-shaped kivas (Woodson 1999). Site layouts of contiguous roomblocks with distinct entrance areas, smaller room sizes, and horizontal coursed masonry were additional architectural attributes that appeared in the migrant communities (Neuzil 2008). Ceramic styles and technologies also shifted, distinguishing the migrant communities/occupants from local groups. Maverick Mountain Polychrome and Maverick Mountain Black-on-red were representative of locally made varieties of the Kayenta and Tusayan ceramic wares (Woodson 1999). Neuzil (2008) was also able to distinguish these new communities on less noticeable attributes such as through the technological styles of corrugated or textured wares in regard to coil width, indentation width, and coil obliteration.

The presence of non-local artifacts from various cultures has been key for discussing interaction and the movement of goods. Hull et al (2014) investigated the turquoise trade involving Chaco Canyon which uncovered various strategies that differed across sites with connections to the Rio Grande Rift, the Virgin Puebloan in Nevada, and the Mojave region in California. The Hohokam have long been studied regarding their interaction networks. Although these networks are still not fully understood, they are visible through the presence of imports and exports. Intrusive items at Hohokam sites include shell from the Gulf of California and pyrite mirror, copper bells, and intrusive ceramics from Mesoamerica (Crown 1990). Mesoamerican ideas or beliefs such as ballcourts and platform mounds were also present at Hohokam sites. For

exports, worked shell jewelry has been found in the Mogollon and Ancestral Puebloan areas and Hohokam ceramics have been found in California, Nevada, New Mexico, and Sonora (Crown 1990).

Other studies of Southwest interaction have used assemblages to create models in order to discuss how inter- or intra-site communities interacted. Social Network Analysis is a multi-disciplinary approach that treats sites as nodes within a larger framework where interaction is modeled based on node location or density (Mills 2017; Peeples 2018). The location of the node will influence its behavior and future. Peeples and Haas (2013) discuss a brokerage role for nodes that link two other nodes that otherwise would not be in contact with each other. The amount and type of information and resources that travel through the broker node determines the ability of the broker to persist through time. Centrality of a node is also important and can be linked to social standing. At various points during a migration process, the centrality of migrant nodes can change. The centrality of these groups increased over generations as they found ways to increase their social capital (Mills et al 2013, 2015). These networks are produced using historical, spatial, and material cultural data, and have the capability to handle large data sets (Mills 2017). For example, material culture is often tabulated as present versus absent in which weighted values produce a likelihood of interactions (Postburn & Gerding 2014; Peeples and Roberts 2013). However, small nuances, the interplay of different artifact types, and the actual means of interaction can be overlooked, and results can yield the structure of data rather than the structure of communities and individual relationships (Larson 2013).

Mogollon and Other Groups

Various artifact classes have been used to discuss the networks that the Mogollon branches had with other groups, primarily those to the west and south. The presence of

Glycymeris and *Olivella* shell jewelry has also been used to tie the Mogollon to the Pacific Coast and Gulf of California. This connection was probably with the Hohokam who were heavily involved in the shell trade. Evidence from Mogollon sites indicated that shell jewelry was most likely made into a final product somewhere else as debris from manufacture is absent (Shafer 2003). Mogollon individuals most likely traded with Hohokam people in the Papagueria region in Arizona as debris from manufacturing shell jewelry was evident at most sites in that area (McGuire and Howard 1987).

Copper bells have been minimally investigated is regards to interaction between the Mogollon and Mesoamerican groups (Hegmon 2002). The number of copper artifacts has increased in recent years; however, sourcing of these items has not yet been completed so the link between the two areas using copper is still not known. Also to consider are the local copper sources, particularly in the Mimbres, that would indicate copper bells were produced locally. Faunal remains, specifically of birds, have also been used to show interaction between the Mogollon and Mesoamerica. Remains of scarlet macaws, military macaws, and thick-billed parrots have been used to connect the Mimbres with Mesoamerican groups, as some or all the birds would have been traded from their natural habitats including the Gulf of Mexico (Creel and McKusick 1994; Gilam et al 2014; Plog et al 2022).

Ceramic styles and decorated imagery have been the most widely used of the artifact classes to discuss interaction between the Mogollon and other groups. Jett and Moyle (1986) utilized depictions of fish on Mimbres decorated bowls to insinuate communication with western Mexican groups and possible travel to the Gulf of California. The authors claim rocky reef, benthic, and pelagic species including snapper, grunt, chub, angelfish, razorfish, guitarfish, grunion, and needlefish were depicted to a level of detail that would have required seeing the fish

in person (Jett and Moyle 1986). However, the research did not account for modern day Mimbres forgeries and the expansive catalog of Mimbres designs. Numerous Mimbres bowls showcase fantastic images including chimeras indicating they could have produced images that closely resemble something they have never actually seen. The Mimbres could have also based designs off secondhand accounts from other groups, such as the Hohokam, that they had contact with. The connection between the Mimbres and Hohokam has also been investigated through Hohokam-like designs on Mimbres pottery including horned toads, water birds, and triangles with scrolls (Hegmon and Nelson 2007). The authors attributed this to Hohokam influence during the Pithouse period when the Mimbres first started painting their pottery.

Interaction between the Mimbres and Mesoamerica has also been heavily investigated through decorated imagery on Mimbres ceramics. Images of birds assumed to be macaws or parrots potentially being transported in burden baskets have been found backing up claims of transport (Gilman et al 2014). Hegmon and Nelson (2007) also posited that various motifs, including masks and Tlaloc/goggle-eyed figures, could also be assigned to Mesoamerican influence. Images claimed to be representative of the Maya Hero Twins saga found in the Popol Vuh have also been reported in depictions featuring two individuals, fantastical images, and images of fish (Gilman et al 2014). The knowledge of these stories would indicate travel and/or communication between the Mimbres and Mesoamerican groups. However, these studies overlook Native American mythology that also features twins and might better account for images depicting a male/female pair.

Connections between the Mogollon and northern groups have often been inferred through the presence of Cibola whiteware ceramic sherds and vessels including Puerco, Red Mesa, and Kiatuthlanna styles. Reserve and Tularosa Black-on-white also fall into this category when

investigating Mimbres sites (Anyon and LeBlanc 1984; Shafer 2003). However, interpretations of how and why these styles were present have been brief.

The most in-depth analysis of interaction between the Mogollon and a different culture group has been undertaken by Stone (2003, 2015) who investigated the results of the Kayenta moving into the Upland Mogollon region. Evaluating the sites of Silver Creek, Grasshopper, and Point of Pines, Stone noted three different models of interaction based on levels of aggregation and population which affected how and if the migrant group was integrated into the local community. At Silver Creek new ceramic technologies appeared, but no other differences in material culture or architecture were observed. Differences in ceramics, architecture, and burials were noted at Grasshopper, and hybrid ceramics were also created through a blend of design and technological styles. Although sodalities were present based on grave goods, all members of the community appeared to have equal access to resources. Point of Pines was the largest of the three sites with a large population and higher level of aggregation. The Kayenta migrants had a distinct enclave with their own architecture style, food supply, and continuing their foreign ceramic tradition showing little to no evidence of integration (Stone 2003). Stone's research was key for showcasing how interaction between the same two cultural groups had vastly different outcomes, the importance of context and the use of various data sets, and how a single, universal model would not have sufficed.

Interaction Between the Mogollon Branches

Ceramic style and technology have both been used while discussing interaction within Mimbres site communities and between Mogollon groups. Hegmon et al (2000) used complex Reserve corrugated types and technological differences to discuss the presence of Upland Mogollon individuals or groups at Eastern Mimbres sites. Relying on technological styles, the

authors were able to identify vessels made by Upland potters with local clays versus local potters attempting to make copies. Without directly learning how to make the Reserve types, the Mimbres versions were more crudely made with thicker vessel walls and thicker coils (Hegmon et al 2000). This research showed how various Mogollon groups living in one area or at one site could be identified and how culture was or was not being shared. Mimbres and Upland Mogollon interaction has also been investigated through the presence of Reserve Smudged pottery. Stone (2018) investigated the long-standing tradition of highly burnished black smudging on Reserve bowls as being a hallmark of Upland Mogollon identity for over 900 years. Sherds and vessels that contain smudging have been limited at Mimbres sites. For example, at the NAN Ranch site, non-local ceramics represented 1% of the ceramic assemblage and of that 23% were typed as smudged ceramics. Only two smudged vessels were recovered from the site (Shafer 2003). Due to the low amounts of the sherds and vessels, their presence has always been interpreted as trade items from the Upland Mogollon area (Gilman and LeBlanc 2018).

Interaction between Mimbres sites was originally focused on the distribution of specific images. Gruber (2007) categorized symmetry and spiral treatments of early decorated pottery between Mimbres sub-regions. Results showed a general similarity overall and the closer the sub-groups were geographically, the more similar they were. This homogeneity of geometric styles across the Mimbres Valley continued into the Classic period (Task 2016). Thus, visual analysis of geometric patterns to discuss difference and interaction within the Mimbres has not been successful. Powell-Marti and James (2006) attempted a similar analysis using figural images to decipher interaction networks and kin or clan-based membership. Insects, birds, and rabbits were some of the most common elements of figural images; however, rate of appearance bore no weight on distribution patterns. Overall, the authors could find no correspondence

between room block or site and distinct figurative images. Hegmon et al (2018) also looked at the contextual distribution of Mimbres animal imagery to investigate if different figures and their potential meaning in specific contexts. However, the authors only found homogenous distributions.

The most fruitful method of analyzing ceramic exchange, and interaction in general, in the Mimbres Valley has been through Instrumental Neutron Activation Analysis (INAA). Visually looking at temper had proved nearly impossible given that potters throughout the valley were using the same homogenous sand from the Mimbres River. INAA allows for the investigation of chemical trace elements of the clay which are distinct at each site (Gilman et al 1994). Due to this distinction, vessels can be assigned to a manufacturing locale which may or may not be the same site in which they were excavated. Numerous studies have utilized INAA on Mimbres ceramics (see Creel and Speakman 2018; Dahlin et al 2007; Echenique 2013; Gottshall et al 2002; James et al 1995; Speakman 2013) which have been recently synthesized and interpreted by Creel (2022). Beginning with Style I (AD 750-900), the earliest black-on-white style for the Mimbres, production took place throughout most of the cultural area with most vessels staying local (Creel 2022). Style II (AD 880-1020) ceramics become a bit more widespread with ceramics made in the Gila drainage more represented in the Mimbres Valley, particularly in the lower valley. A pattern of movement with the Mimbres Valley becomes more apparent during this style in which sites in the northern section and southern section tended to have vessels from their section with few from the other section. In addition, production locales also appeared/developed in southeastern Arizona and the Jornada region. Style III (AD 1010-1130) represents the height of Mimbres pottery production and has yielded the most samples. In general, higher frequencies of vessels from a production source relate to the distance of a site to

the production center, with drop-off happening the farther away the site is. More vessels moved from the Mimbres Valley to the Gila drainage in contrast to movement in the other direction. Sites in the southern half of the Mimbres Valley also produced significantly less pottery during this period which has been interpreted as environmentally driven due to less/restricted wood resources for kiln firing (Creel 2022).

Summary

For the most part, interaction studies in the precontact Southwest have used ceramics, as pottery assemblages are the most visible artifact class with a plethora of data being left behind. The inclusion of models can either help or hinder deciphering interaction networks. Models and overarching trends create a broad understanding of how a culture dealt with interaction. With more rigid cultures, the models may even have applicability at the site level. However, with the Mimbres, and larger Mogollon, broader patterns distract from smaller regional and site level details. With the addition of INAA as an analytical tool, Mimbres interaction, particularly within the Mimbres culture, has become much clearer in recent decades.

Chapter 4 – Theoretical Perspective

Many archaeological studies have been and continue to be focused on material culture and style. What is present at sites and what do these items say about the people that made and used them? Do these items follow a larger cultural pattern of style, or do they reflect a family or individual? As discussed in Chapter 3, the means of studying style of the Mimbres Mogollon have focused on finding patterns in geometric and figurative images (Powell-Marti and James 2006; Task 2016). What gets lost with this method are the mechanisms behind how objects came to be and why the presence of these items is important. Recent trends in cultural anthropology, including transmigrants and *stuff (*Coe 2011; Glick-Schiller et al 1995; Stephen 2007; Miller 2008, 2010) can be studied in conjunction with archaeological technological and design styles to gain a better understanding of the importance of manufacture and keeping of specific items as a reflection of one's own or one's family identity.

This chapter starts by introducing the archaeological concepts of learning frameworks, resultant styles, and their visibility in the archaeological record. These concepts are important in understanding how style was visible in past societies; however, the reasoning and decision making behind why something is made and kept often gets lost when the group being studied has not left behind a written record. Cultural anthropology offers theories and examples from living populations that can be used to understand why something was done and the result of the action/decision in the material world. This is often more complicated when discussing a non-local population as they are negotiating their styles and identity within a new social environment. Therefore, the presence and movements of transmigrants and how they maintain contact with their parent populations is discussed. Lastly, the idea of *stuff* is presented and how the presence of items serves as a representation of an individual's worldview.

Style

Studying identity is primarily done through stylistic analysis. Style, following Wobst (1977) and Weissner (1983) for the context of this research, is defined as visible formal variability amongst the material culture in which one or more artifact classes are involved in information dissemination, including personal and social identities. Following Wiessner (1983), style can be broken down into two categories- emblemic and assertive. Emblemic style corresponds to group identity or affiliation and assumes the presence of groups or boundaries that have their own norms, values, and property. Attributes should be uniform with a level of clarity to be understood by a wide range of outsiders (Weissner 1983). A modern-day example of this would be a flag representing a country or organization, as most outsiders would immediately be able to assume an identity or membership based on a simple and unique pattern. When discussing precontact groups, one would look for an attribute(s) that are considered unique to a culture, occur in large densities, would not be easily copied, and are highly visible/distinguishable when found in unusual contexts. Assertive style is more reflective of the individual and a message they wish to convey about themselves. However, assertive style can become emblemic and both can be present on the same artifact (Weissner 1983). The difference may even be context driven. In larger numbers when a population is present, the attribute in question could be serving an emblemic purpose. However, if the individual is alone in a foreign population, the attribute would also be representative of an assertive style. This also follows the notion that multiple types of style can be co-occurring (Hegmon 1992).

To understand what information may be present in respective styles, it is crucial to understand how the information is formed and generationally reinforced. This is especially important as styles can be reflective of social structures and hierarchies including the process of

learning (Hegmon 1992). When an object is being created, the creator follows a set of manufacturing steps that make up the technological style known as the *chaînes opértoire* (Stark et al. 1998). These sets of tendencies represent an individuals' *habitus.* How an individual is taught to act or create is embedded within their cultural, social, and environmental settings and the mechanisms for how one is to maintain these behaviors and perceptions over time is also found within these frameworks (Bourdieu 1977; Rusack et al. 2011). Although technological style can be changed or introduced through motor habit variation/levels of talent, most mechanisms of creation and transmission focus on learning- generational, peer-to-peer, or sharing of knowledge between social or cultural groups (Plog 1980; Stark et al 2008). This learning organizational framework includes factors that influence one's decision to continue the tradition or deviate and the boundaries that are produced when the style is continued over time (Stark et al 2008). The frameworks are best investigated through communities of practice.

Communities of Practice

Communities of practice can be defined as a network in which technological style is passed down through generations or amongst peers within a community. Those within the community share a history of learning in which portions of their identity were formed through their participation within the group (Lyons and Clark 2012; Minar and Crown 2001; Neuzil 2008). For this research, the communities of practice involve the potters at the Elk Ridge site and those from non-local communities who may have introduced non-local styles and/or identities. Examples of technological styles that could be encountered include smudging of pottery, distinct decorated styles, and architecture. Multiple communities of practice may be present at one site as various technologies could be passed down/shared. These multiple communities of practice can also overlap, cross-cutting material culture, becoming a constellation of practice (Eckert 2012).

For example, multiple cultural backgrounds may be co-living at a site producing their respective pottery, or a non-local potter may produce styles they were exposed to during their youth and, in addition, may adapt and learn local styles. This can also become or co-exist with communities of identity in which social networks share a group identity, which can be nested, overlap, and contradict each other (Eckert 2012). Communities of identity can also be visible through shared practice including ritual and burial customs. Contradictory communities of identities may be the result of challenging social structures after a migration or other movement of people (Minar and Crown 2001). When investigating the presence of multiple cultures at one site, each group's communities of practice and technological styles should be visible through material culture that is representative of its respective group. The location of items related to the styles and the inferred use of items can be used to discuss how these groups negotiated their social identities.

Stone's (2018) discussion of the production of smudged vessels among the Upland Mogollon is an excellent example of a technological style clearly passed on for generations through a community of practice. Though found minimally at most Mimbres sites, large quantities need to be present if they represent a non-local population. Does the presence of these vessels co-occur with other communities of practice or communities of identity related to the Upland (i.e., the presence of Reserve black-on-white pottery) or is there contradiction (i.e., the decorated pottery all falls in line with Mimbres Classic styles)? Therefore, understanding the wider constellation of practice is necessary to interpret levels and intensity of interaction.

From an archaeological perspective, studying style has been difficult as there is no unified approach, although most studies agree that style involves decision making and represents a way of doing something (Hegmon 1992). For a style-based message to be effective it generally needs to be simple and repetitive, while considering the target audience (Hegmon 1992, 1995). If

the target audience is already too familiar with the message, the point can be lost; however, if the target audience is too unfamiliar, the message may not be deciphered (Wobst 1977). While Wobst argued this distance from the social relationship perspective, Hegmon (1995) has also argued physical distance and the type of artifact plays into the receipt of the message. Decorated jars would be more visible to others while decorated bowls require proximity and may be monitored by the creator/owner. Wobst's distance argument can also be disputed through Miller's concept of *stuff*. Items may not be for the general public and may remain in the household as a reminder or subtle hint of one's worldview. Furthermore, for effective signaling, Wiessner (1983) stated that the stylistic attributes likely to carry a message are those that are not functional in nature. With the complexity of Mogollon ceramics, one could argue that functional attributes can carry a secondary level of identity messaging. Corrugated/textured ceramics have been shown to limit boil-overs; however, many of these clapboard styles have additional decoration that is not correlated to food preparation (Pierce 1999, 2005). What Sackett (1977) would describe as the adjunct form; utilitarian artifacts can have non-utilitarian/societal functions when placed in their cultural context. This non-functional attribute argument also assumes that identity cannot be hidden in technology, which has been disputed (Hegmon 1992; Lechtman 1977). Technological style is not necessarily a conscious choice and represents wider attitudes of materials utilized, events, and the final product- in other words it is situated within a cultural framework (Gosselain 1992; Lechtman 1977).

In comparing the different branches of the Mogollon, it can be difficult to determine whether these branches represent different ethnicities, different cultures, or both. What can be stated is that there were distinctions/boundaries in their physical location and material culture. Boundaries are present and remain intact despite the movement of people and goods across them.

However, these boundaries do not have to be physically present or based on territory as there are many ways individuals and groups can signal their relationships to other individuals and groups (Barth 1969; Meskell 2002). Instead, members of each group can find a way to signal their membership or exclusion (Barth 1969) With the lack of a written language, studying group and/or individual identity is primarily relegated to determining which material culture objects best show boundary/identity maintenance and how this information is passed on generationally and understood by outsiders.

Transmigrants/Transnationals

The reasoning behind the movement of an individual, family, or population can be related to opportunity, environmental factors, violence, and much more (Anthony 1990; Cameron 1995). The level of communication or connectivity between those who moved and the parent population can also vary. Early theoretical models of movement were focused on push/pull factors (e.g., left an area due to drought and moved to an area with plentiful natural resources) and general distributions of groups across a landscape (Kearney 1995). Individuals were believed to only be capable of having a single identity that could not be changed (Rouse 1995). In actuality not only people, but things, values, and information all flow through systems of movement which often have multiple paths and destinations, and result in the construction of multiple, multi-local identities (Kearney 1995; Rouse 1995).

Transmigrants or transnationals are individuals who have crossed a border, whether it be physical or related to ethnicity/culture or class. A transmigrant does not lose their connection to their home, and successfully lives in both worlds (Coe 2011; Stephen 2007). In cultural anthropology, transmigrants are often individuals who have left their home country for work and may periodically return home for multiple reasons. This may include multiple generations of one

family creating a network of knowledge, experience, and social ties in more than one place (Stephen 2007; Pellow 2011). Over time, individuals may travel farther and stay away longer, emphasizing the importance of developing and maintaining social ties (Pellow 2011). This network allows individuals to reflect on who they are and what is important information to convey about their identity (Stephen 2007). This de-emphasizes geography and places the focus on identity, collectivity/community, and the benefits of membership across boundaries (Levitt 2001). In fact, for transmigrants, daily life depends on these multiple and continuous networks to maintain private and public identities (Glick-Schiller et al 1995). Transmigrants must negotiate these identities, which entails determining what is important to nurture the identity and which values, actions, or items are necessary to publicly showcase these various identities. These aspects are inherent in cultures and, to be successfully used, are recognized by others as being key markers.

With a discussion on transmigrants comes the need to address ethnicity and ethnic groups. This research follows the understanding of ethnicity utilized by Roosens (1989) and Salamone (1982) as individuals or a group that bears a culture or a combination/collection of cultural traits, statuses, and personas. Ethnicity itself is also defined through a cultural lens and membership within an ethnicity can be based on gender, kinship, sodality, politics, geography, etc. (Stone 2003). Roosens stated, "for the vindication of the ethnic group, it is sufficient that a social border be drawn between itself and similar groups by means of a few cultural emblems and values that make it different in its own eyes and the eyes of others" (1989:12). These traits, values, or physical items become inherent to the ethnicity and are understood by other groups. Each individual can also have any number of social identities which can be observed and understood via the presence of markers or symbols to transmit the necessary information in a

given situation (Salamone 1982). This can be in the form of clothing, jewelry, furniture, etc. The association of these objects with an ethnicity as well as the ethnicity itself are a form of *habitus*- a set of tendencies that inform an individual how to act based on surrounding social factors- that would be heavily resistant to change unless severe social pressure to change was present (Bourdieu 1977; Rusack et al. 2011; Stone 2003).

All these aspects (knowledge, symbols, tangible items) flow through transmigrant networks, which can result in multiple ethnicities living together or in proximity. With archaeology, intangible elements like personas and values, cannot be studied. Therefore, there is a reliance on what has been physically left behind that serves as a reflection on one's ethnicity and what served as an important boundary marker to maintain identity as a transmigrant. Cultural studies on the home and items within the home have been used in recent migration and movement studies to show how individuals maintain their social boundaries in new settings.

Stuff

Cultural anthropologist Daniel Miller began his career in archaeology but grew frustrated with the need for theory to be heavily ingrained into material culture instead of letting the material culture provide the base for discussion. As Miller moved into cultural studies, he began to refer to these items as *stuff* and analyze the items from a neutral perspective (i.e., approaching analysis without a specific theory guiding research) (Miller 2010). Households, and *stuff* within those households, allow an individual to negotiate and represent their identity (ethnicity) and customs. This *stuff* and what it means can be ascribed by an individual or larger ethnic group. The *stuff* reflects on public and/or private personas, represents belonging, and holds memories.

Miller (2008) studied the homogeneity of living rooms in Trinidadian households noting the specific colors always present, along with a wealth of knickknacks, and certain

photos/paintings. He compared this to the households of Trinidad immigrants in London. These living rooms were set up in what would be considered a traditional, off-limits London parlor. The facets of identity were still present but hidden from those who may not approve (Miller 2008). Physical markers of identity do not have to be visible or front and center. Remaining on the periphery, these items can still influence behavior and how an individual sees themselves in the world. These objects also do not exist in isolation and should be considered in their context with all the other items (Miller 2010). Miller's (2008) study also investigated the houses of those Trinidadians who had returned home and how they negotiated their cultural identity with items and/or preferences from living abroad. One is not necessarily forced to choose to completely belong to one identity. Those who have lived in other areas can adopt habits and preferences from the new area and incorporate these aspects into their own worldview. New and old objects can exist separately or can merge creating hybrid identities.

The act of moving forces an individual to choose what has meaning from either a sentimental or economic standpoint. The value of the objects is their association with an individual, culture, etc. (Marcoux 2001). To an outsider, these items may even be considered trivial on a larger scale (Miller 2010). Being placed on the periphery, the *stuff* may not be recognized as something that can on its own or in a larger context be considered important enough to warrant being taken in a move. At one level these objects serve as memory holders relating to an individual or experience. However, these objects can also serve as ethnic boundary markers if they represent a traditional item, ritual or practice, or geographic area.

Archaeologically, these items are considered a part of the material culture. Foreign, non-local, or unusual objects stand out and can be investigated as to why they are present and what their presence means. Are a few of the objects present indicating trade? Are multiple present in

visible contexts indicating an acceptance of outside practices? Are these objects present only inside households for family members to have a tie to their home without being publicly noticed? Or is a hybrid situation present? Mimbres and Upland pottery become distinct during pueblo living and provide the most useful avenue for answering these questions from an archaeological standpoint. It is not just reliance on the presence versus absence of these objects. Their daily use and visibility are key to understanding what these objects represent and how they reflect their owners.

Summary

As individuals move throughout the landscape, whether or not distinct border/boundaries are crossed, numerous decisions need to be made. What items are being transported with the individual/group and why, how will communication with the parent population be maintained, and how will identity be negotiated in a new place? When investigating archaeological contexts, the *stuff* left behind can be used to answer these questions. Do these items reflect a technological style related to the parent population? What do the items indicate about different social identities? Individuals may be unwilling or unable to change their learned ways particularly if certain methods are inherent on a subconscious level. Individuals may need to organize their living space to create distinct private/public areas. By determining the key elements of technological style/identity of the Mimbres and Upland Mogollon, the presence of local and non-local items can be used to discuss how the groups interacted with each other, whether that is briefly through trade events or daily through living in the same place.

Chapter 5 – Methodology

The methodology utilized in this research was twofold. The first method utilized visual style analysis. A large component of this was determining the types of pottery present among the Upland and Mimbres Mogollon. As discussed in the background chapter, as these two groups shifted from pithouses to pueblos, their respective ceramics became more distinct. Therefore, analysis focused on identifying clear examples of the styles, hybrid styles, and potential copies. The second component relied on the chemical clay sourcing method of Instrumental Neutron Activation Analysis to determine the manufacturing locales of the vessels recovered from the Elk Ridge site. Results, discussed in the following chapter, of these methods were synthesized to understand the movement of pottery and its implications for understanding local and non-local interaction.

Stylistic Analysis

A stylistic analysis of the plainware, corrugated and decorated vessels was done to gain further insight into the presence of non-local design elements and motifs. A total of 105 vessels were included in the stylistic analysis (Table 5.1). This consisted of all the vessels submitted for INAA as well as others from the UNLV excavation and Croteau collection that were not sampled for INAA due to availability, size, and stage of reconstruction. An attribute list (Table 5.2) listing key traits for each of the pottery wares was created and each vessel was analyzed under the appropriate category. The traits were chosen from consultation with various ceramic resource guides pertaining to Upland and Mimbres pottery and distinct differences between the two (Hays-Gilpin 1998; Martin and Rinaldo 1950b; Rinaldo and Bluhm 1956). Stylistic analysis was also done prior to the receipt of the INAA data so that manufacturing locale information would

Table 5.1 Vessels used in stylistic analysis by context.

Ware	Household	Burial	Extramural	South Side	Total
Plainware	6	8	2	8	24
Corrugated	3	15	3	13	34
Decorated	21	14	3	9	47
Total	30	37	8	30	105

Table 5.2 List of attributes analyzed by ceramic ware.

Plainware	Corrugated	Decorated
Smudging present/absent	Smudging present/absent	Presence of figurative
Smudging burnished	Smudging burnished	Cloud terrace
Smudging color	Smudging color	Opposed scroll
	Coils flattened	Opposed steps
	Coils burnished	Other Cibola design
	Coils manipulated	

not bias the results. Although each ceramic ware has numerous attributes, the following were the key characteristics for differentiating between Mimbres and Upland:

Corrugated Types: As discussed in the Background chapter, several corrugated types gain popularity in the Reserve area during the Classic Period while remaining relatively absent at Mimbres sites, specifically Reserve Indented and Tularosa Patterned corrugated types. Although noted in small quantities at Mimbres sites and easily explained as tradewares, a higher percentage of these types may indicate local manufacture. Vessels examined under this category were tabulated with the presence/absence of total coil manipulation (indenting is present on all coils) and presence/absence of changes in coil manipulation (indenting or another manipulation is present in specific horizontal sections).

Smudging: The presence or absence of smudging was one of the most important attributes for plainware and corrugated vessels. As discussed earlier, smudging was a hallmark of Upland

identity and represented the first clear ceramic difference between the two Mogollon branches under investigation here. For the trait analysis, it was first noted if smudging was present or absent. In smudging was present, two additional attributes were considered. First, the smudging was analyzed for color and determined if the smudging was black or not. Smudging that was not black was further investigated to determine if the failure to achieve a black color may be indicative of a Mimbres copycat not understanding the manufacturing technique. The second additional attribute was if the smudging was burnished (had a luster finish) or not. If burnishing was not present, it was further determined to be based on the finishing technique having not been employed versus worn off over time from use.

Burnished/Flattened Coils: As mentioned earlier, the presence of burnished and flattened coils increases in popularity on Reserve corrugated types over time, especially on smudged varieties. Mimbres attempts to recreate smudged wares may have missed this characteristic. Taken in concert with smudging, this trait lends more evidence to vessels made by an Upland individual. This trait was recorded when encountered as present or absent. The extent of the burnishing and flattening was also recorded to ensure these manipulations were constant and intentional versus potter error.

Cloud Terrace: The presence of this design, when the steps are at a 90° angle, has been linked to both Upland and Jornada Mogollon styles (Figure 5.1). When encountered, the element was recorded as being present and extra analysis was done to discuss the element within the larger design including angle of the steps and if the element was isolated or part of a larger design. This element has been noted on other Mimbres bowls, so extra caution was needed if the element was encountered to determine if it had identity ramifications.

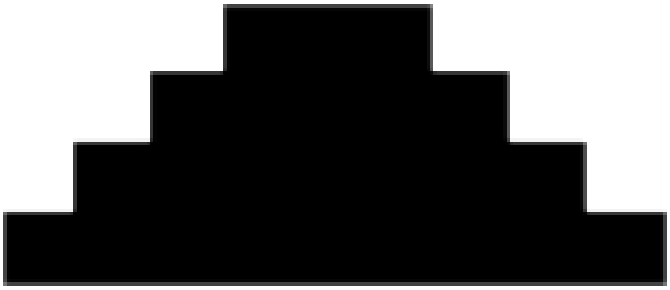


Figure 5.1 Example of a cloud terrace design.

Opposed Designs: Opposed scrolls and primarily 90° angle steps of solid and hatched (or dotted) contrasting elements was the most common design of Upland black-on-white pottery. Mimbres pottery has often exhibited similar designs at an angle and never in scrolls (Figure 5.2). The opposed design on Upland pottery served as the main design and would cover most of the painted surface whereas Mimbres versions were incorporated into larger patterns. The presence of the Upland design is rare on Mimbres pottery and has not even been recorded at every site. Therefore, when analyzing each vessel, the presence/absence of opposed elements was noted, the motif in which the opposed elements formed (steps versus scroll), and if the opposed design was the main image or if it was incorporated into a larger design.

Other Cibola Designs: As whitewares from the Cibola area have been noted at other Mimbres sites, their presence was to be expected at Elk Ridge. When the painted images did not conclusively fit either Mimbres or Upland styles, reference guides (Hays-Gilpin and 1998; Martin and Rinaldo 1950b; Rinaldo and Bluhm 1956) were used to attempt to find the closest typology if possible.

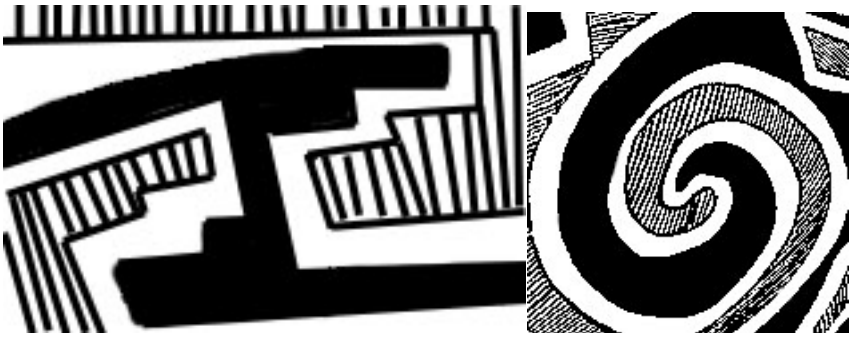


Figure 5.2 Opposed scroll and step motifs common on Upland decorated pottery.

Instrumental Neutron Activation Analysis

The primary goal of ceramic compositional analyses is to configure elemental signatures of clay sources and assigning those clay source groups to sites and/or communities (Glascock 1992). INAA is the preferred method for compositional analysis due to its sensitivity and precision regarding trace elements, its requirement of only 0.2 grams of the interior clay body, ability to measure over 30 elements simultaneously, and insensitivity to major tempering bodies (Bishop et al 1982; Glascock 1992).

Table 5.3 Vessels sampled for INAA separated by context.

Ware	Household	Burial	Extramural	South Side	Total
Redware	-	1	-	1	**2**
Plainware	4	6	3	1	**14**
Corrugated	15	3	3	11	**32**
Decorated	21	14	3	8	**46**
Total	**40**	**24**	**9**	**21**	**94**

The 94 samples submitted for analyses (Table 5.3) were collected by Darrell Creel, Ashley Lauzon, and Danielle Romero over the course of five years. Vessels sampled include all ware types and were from a range of contexts. A handheld dremel with a tungsten-carbide drill burr was used to scrape off the surface of the vessel as well as collect the sample. The surface of

the vessel was removed first to remove any paint/slip, remove contamination from the vessel's use, and remove contamination due to soil leeching (Glascock 1992). The burr was sterilized after the removal of the outer surface, and after each sample collection using ethyl alcohol and being allowed to dry after each cleaning. Between .3-.5 grams of the vessel's interior body was then collected, placed in glass vials, and labelled with a sample number. Samples were submitted to the Missouri University Research Reactor (MURR) for analysis. The samples were subjected to a barrage of neutrons which transforms parts of nuclei into unstable radioactive isotopes (Glascock 1992). These isotopes are allowed to decay which emits gamma rays distinct to specific elements. Measuring these gamma rays allows researchers to measure the quantities of the various elements present in each sample. INAA picks up on the main elements and oxides present which are found in most clays as well as various trace elements (less than 1,000 ppm) which are the focus of determining differences between sources (Glascock 1992).

Assigning the results to a compositional group is based on the probability that the measured concentrations could be from that group. Various multivariate analyses are thus utilized to assess group membership. The first step involved transforming the data from correlated variables into uncorrelated variables via principal component analysis (PCA). A new set of reference axes is created in which the variance of a combination of variables can be analyzed. PCA can be used to either search for patterns or assess compatibility of hypothetical groups based on other criteria (Speakman 2013; Creel and Ferguson 2021). A strength of PCA is the ability to apply the R- and Q-mode technique in which biplots of variables (the elements) and objects (individual samples) are created (Baxter 1992; Neff 1992, 1994; Baxter and Buck 2000). This allows the analyst to observe how specific elements, specifically the first two principal components/elements, contribute to each source group and each group’s distinct shape.

The second step requires evaluating if a source group can be distinguished from another group. This is done by calculating the Mahalanobis distance or conformity of a sample to a source group defined by (Bieber Jr. et al 1976):

$$D^2_{y,X} = [y - \overline{X}]^t I_x [y - \overline{X}]$$

Where $D^2_{y,X}$ is the Mahalanobis distance between sample y and source group X, $\overline{X}$ is the mean concentrations of an element in source group X, and I_x represents the elements inverse of the variance-covariance matrix for the source group. By considering the variance and covariance, probabilities of group membership can be determined as they would be for standard deviation units. The probabilities are based on Hotelling's T^2 probability distribution method (Bieber Jr. et al 1982; Creel and Ferguson 2021). A total of 21 elements (scandium, titanium, chromium, MN iron, zinc, rubidium, zirconium, antimony, cesium, lanthanum, cerium, neodymium, samarium, europium, dysprosium, ytterbium, hafnium, tantalum, thorium, and uranium) are used as variables and the best group is determined based on the highest membership probability greater than 0.001%. MURR uses Gauss software to run the calculations and cross-validates by removing the sample from its presumed group before calculating the probability (Creel 2022; Creel and Ferguson 2021). For small samples and group sizes, this allows for low membership probability and those samples to be flagged as those that will possibly be reassigned as more samples are obtained and source groups are refined. It should also be noted that for certain samples, the presence of specific diagnostic individual elements can outweigh the probability of membership calculated by the Mahalanobis distance. Group assignments made at MURR consider the results of all statistical tests (Creel 2022).

The location of the source group is usually first assigned via the criterion of abundance. In the case of INAA, that would be noticeable through most vessels recovered from a site

belonging to one group, and that group then being assigned to the site, as it would be assumed that site produced most of its own pottery (Bishop et al 1982). However, many sources, including Elk Ridge, have been verified through the testing of local clay deposits, wall adobe, and unfired vessels made by children. Clays are residues of weathering and hydrothermal activity which mean their chemical properties are dependent on their parent material (Bishop et al 1982). Although elements can be replaced over time, many trace elements are fixed within the crystal structure. As the minerals are weathered or broken down over time, these trace elements will just be found in smaller fractions. Therefore, even in regions where the geology is similar, different clay deposits can still be chemically discerned (Bishop et al 1982). Speakman (2013) discusses in detail the chemical make-up of the source groups for the Mimbres area and how they have been distinguished from each other. However, since Speakman's overview, some source groups have been refined as more samples have been analyzed (see Table 5.4 for a selection of current source group associations as defined by Creel 2022 and Creel and Ferguson 2021, and Figure 5.3 for site and area locations).

Although the science behind INAA is solid, some consideration must be given to the results in relation to source groups. Samples can also be returned as unassigned, meaning they resulted in the creation of a new source group, or the source group to which the sample belongs has only been ascribed to a general area. The results of the INAA testing for this research included the introduction of source SCib2c. This group was the result of reworking the South and SCib2 source groups to better account for these sources becoming more defined. SCib2c, at present, does not have a conclusive area of manufacture; however, the upper Largo Creek area, Cerro Pomo area, or Reserve area are all considered to be possibilities (Creel and Ferguson

2021). Resulting discussion of such samples needs to recognize that further samples can change the source area.

Figure 5.3 Locations of INAA source groups.

Table 5.4 Source group association data (based on Creel 2022; Creel and Ferguson 2021).

Source Group	Site/Area	Total Samples
Mimbres-01A	Elk Ridge/Three Circle, Mimbres Forks	267
Mimbres-01B	Possibly Eby, Lower Mimbres	97
Mimbres-02A	Swarts, Middle Mimbres	433
Mimbres-02C	Possibly Eby, Lower Mimbres	37
Mimbres-03	West Fork, Gila Forks	117
Mimbres-04A	Possibly Cottonwood, Upper Mimbres	449
Mimbres-04B	Mattocks, Middle Mimbres	157
Mimbres-04C	Galaz, Upper-Middle Mimbres	215
Mimbres-05B	TJ Ruin, Gila Forks	145
Mimbres-08	Upper Mimbres	164
Mimbres-09	Lake Roberts area, Middle Sapillo	82
Mimbres-10	Power Site, Burro Mountains	151
Mimbres-11	Possibly Perrault, Middle Mimbres	140
Mimbres-13	Power Site, Burro Mountains	6
Mimbres-14	Possibly Swarts, Middle Mimbres	2
Mimbres-24A	Wind Mountain, Burro Mountains	56
Mimbres-41	NAN Ranch, Middle Mimbres	75
Mimbres-42	Middle-Lower Mimbres	28
Mimbres-43	Treasure Hill, Arenas Valley	5
Mimbres-44	Possible Cameron Creek, Arenas Valley	32
Mimbres-46	Possibly Old Town, Lower Mimbres	4
Mimbres-47	Upper Mimbres	38
Mimbres-49A1	Upper Mimbres	106
Mimbres-49A2	Elk Ridge/Three Circle, Upper Mimbres	353
Mimbres-49B	Upper Mimbres or Upper Sapillo	5
SCib2c	Upper Largo Creek, Cerro Pomo, or Reserve area	Unknown

Context Considerations

To evaluate the movement of goods versus the movement of people, detailed contexts of vessels under investigation are crucial. What other evidence, if any, from the associated context or feature indicates that a non-local individual or family was present? The Croteau vessels lacked detailed context information and thus could only represent the southern portion of the site and add data regarding overall site patterns- percentages of styles, presence/absence of smudging, coil manipulation, etc. For the vessels recovered during the UNLV excavations, detailed information is known about the various features/rooms (Table 5.5) including room function, room remodeling, burials present and bioarchaeological data, ceramic sherd data, and room building and use dates. Therefore, the UNLV vessels can be placed in a wider context to determine if other attributes and the contextual data support the movement of goods or people. The three key additional lines of evidence were ceramic sherd data, burials, and architecture.

Whole and partial vessels were the focus of this research as they are crucial for style analysis and determining manufacturing centers. However, vessels offer up a snapshot of the entire ceramic assemblage. Small broken sherds occur in the thousands and analyses of these sherds often focus on the same attributes as vessels. For the UNLV excavations, the sherds recovered each year were subjected to the same style and attribute analyses. Because of this, a more detailed view of ceramic style distribution by room and feature is possible where a certain room may have not yielded any vessels or yielded vessels of only one ware.

Burial data can provide additional support for the presence of non-locals by examining burial goods as Upland individuals were usually buried with small jars and smudged bowls versus the usually decorated bowls of the Mimbres. Osteological data is also useful for identifying individuals with distinct skeletal morphology. Distinct physical features alone cannot

indicate the cultural background of an individual; however, if they are buried with non-local objects in a room with distinct architecture, it may be suggested that this individual was non-local. Many burials with the Upland pattern may indicate the movement of people rather than just the movement of goods as the burial tradition may have been of extreme importance in the retention of identity.

The distinction between the movement of goods or people can be further addressed through differences in architecture, as the means of building a room or formal feature most likely is indicative of an ingrained technological style that was learned during one's youth and that (sub)consciously carries identity. Changes in building techniques or differences between rooms would suggest multiple traditions. As discussed in Chapter 2, the Upland were influenced by northern building traditions which are visually distinct from the Mimbres trajectory. Although both had masonry pueblos, the exterior walls of Upland pueblos utilized shaped rocks in even rows where the Mimbres used unshaped cobbles with no apparent organization. If Upland individuals moved into the site, architecture of later room additions may reflect the Upland technology, or a mixture of technologies may be present depending on the building sequence of rooms.

To best see these architectural traits, the presence of distinct burials, and Upland ceramics, the architectural sequence was broken down into four phases based on the date of construction- Phase 1/pithouse to pueblo transition, Phase 2/early adobe pueblo, Phase 3/adobe pueblo expansion, and Phase 4/cobble-adobe masonry. The presence of foreign ceramics can solely be indicative of the movement of goods. The addition of Upland stylistic attributes on locally made vessels combined with differences in architecture and burial practices, can represent the movement of people.

Summary

To fully understand how ceramics can inform on a subject a variety of methods need to be utilized and these methods need to be applied to all the ceramic wares. While hands on stylistic analysis provides a framework for identifying similarities and differences between sites and/or cultural groups, scientific tests such as INAA can be used to further investigate the social impacts of these variables. The artifacts and their information do not exist in isolated vacuums, making a multi-method and contextual based approach necessary to understand the artifacts' place in the world and how that reflects daily life.

Chapter 6 – Results

This chapter presents the results of both the stylistic analysis and the INAA tests (see Appendices A and B for the vessels used for both analyses). Style was examined first to determine both general ceramic typology and gain an understanding of what types of elements/variables were present in the households and extramural areas. Style was also examined first so that biases related to the manufacture locale were not introduced, leaving style to be determined based on visible ceramic attributes. INAA results were then examined to examine the level of production of styles at Elk Ridge versus what was imported from other sites or areas.

Style

A stylistic analysis was completed on 105 vessels, representing both those recovered during the UNLV excavations and those that were part of the Croteau collection. During the Classic period, plainwares, corrugated wares, and decorated wares between the Mimbres and Upland Mogollon became distinct enough that styles can be used to infer cultural identity. Plain and corrugated bowls of the Upland were often smudged and corrugated styles became more complex over time. Upland decorated styles were heavily influenced by northern Cibola styles, and became formalized, while Mimbres decorated designs had an immense catalog of motifs, patterns, and figurative imagery. Since the site only yielded two redware vessels, they were not included in the style analysis. The rare occurrence of redware in Classic period contexts and similarity between the Mimbres and Upland also indicates that redware cannot provide data that would be critical to understanding interaction between the two groups.

Plainware

A total of 24 plainware vessels were analyzed for style (Table 6.1). Key characteristics for plainware was the presence/absence of smudging and if the smudging was burnished and

Table 6.1 Plainware style analysis determinations.

#	Context	Form	Smudged	Color	Burnish	Style
Burial 110	Room 101	Bowl	No	NA	NA	Mimbres
Burial 115B	Room 103	Flare Rim	No	NA	NA	Mimbres
Burial 118	Room 113	Bowl	Yes	Black	Yes	Reserve
Burial 130	Room 117	Bowl	Yes	Gray	Yes	Mimbres
Burial 132	Room 117	Bowl	Yes	Black	Yes	Reserve
Burial 133	Room 117	Bowl	Yes	Black	Yes	Reserve
FN 163	Room 101, Floor	Jar	No	NA	NA	Mimbres
FN 180	Room 101, Floor	Bowl	Yes	Black	Yes	Reserve
FN 187	Room 101, Floor	Bowl	Yes	Black	Yes	Reserve
FN 188	Room 101, Floor	Bowl	Yes	Black	Yes	Reserve
FN 189	Room 101, Floor	Bowl	Yes	Black	Yes	Reserve
FN 264	Room 107, Roof Fall	Bowl	No	NA	NA	Mimbres
FN 268	Ramada	Jar	No	NA	NA	Mimbres
FN 532	Ramada	Seed Jar	Yes	Gray	Yes	Mimbres/ Reserve
FN 1183	Room 117, Floor	Bowl	Yes	Black	No	Mimbres/ Reserve
FN 1353	Room 117, Subfloor	Bowl	No	NA	NA	Mimbres
CRO007	South Side	Jar	No	NA	NA	Mimbres
CRO008	South Side	Jar	No	NA	NA	Mimbres
CRO011	South Side	Bowl	Yes	Gray	Yes	Mimbres
CRO012	South Side	Jar	No	NA	NA	Mimbres
CRO013	South Side	Bowl	Yes	Black	Yes	Reserve
CRO015	South Side	Bowl	No	NA	NA	Mimbres
CRO023	South Side	Jar	No	NA	NA	Alma Rough
CRO032	South Side	Effigy	No	NA	NA	Mimbres

black in color. Not obtaining a dark color and failing to burnish smudging could indicate the potter was not familiar with Upland techniques/tradition and, perhaps, a Mimbres individual was attempting to copy the style. Half (n= 12, 50%) of the plainware vessels exhibited smudging, and not surprising, all those vessels were bowls (n= 11) or seed jars (n=1). Jars, due to their shape, would not be expected to have smudging as applying this finishing technique would have been

difficult. When just considering bowls 12 out of 17 (70.5%) were smudged. Four of these bowls were from burials (three from Room 117, one from Room 113) and another four bowls were from a cache of small vessels found on the floor of Room 101 in the northeast corner of the room. Another bowl was from the floor of Room 117, the seed jar was in the ramada, and the remaining two bowls were from the south side. Eight (75%) of the smudged bowls came from Rooms 101 and 117, a pattern further explored in Chapter 7.

Four of the smudged vessels warrant further discussion as they may represent attempts at copies. The bowl from Burial 130, an infant in Room 117, was smudged with clear burnishing streaks; however, the resultant color was a lighter gray color indicating the firing atmosphere failed to produce the desired effect or those controlling the firing did not understand how to produce a dark interior. The exterior of this vessel was light brown in color which was also not typical in Reserve smudged pots as the exterior should be a darker drown. Bowl CRO011 from the south side was also typed as a Mimbres attempt due to similar characteristics; it was burnished but had a gray-colored smudged interior and an exterior that would not be typical as it was also black in color.

Figure 6.1 Plainware bowls with combination Mimbres/Reserve smudging FN 532 (left) and FN1183.

Two vessels (FNs 532 and 1183) were typed as Mimbres/Reserve (Figure 6.1), as their observed characteristics could be argued to belong to either group. FN 532 was a seed jar recovered from the ramada. The smudging was burnished but gray in color. However, the form and unevenness of the rim could have had an unexpected effect on the result. To produce a dark, black interior, the interior surface needs to be starved of oxygen, most likely by being placed upside down on burning organics. An uneven rim may not have sealed off the interior by allowing too much oxygen to enter interior of the vessel causing the black color to not fully form. FN 1183, a bowl from the south wall vessel cache on the floor of Room 117, was unusual for a variety of reasons. The interior of the vessel was smudged, and the color was black. However, the smudged surface had no visible burnishing and no indication that burnishing had been worn off from use. The exterior was also black in color, which is unusual although not unheard-of in Reserve smudged pottery. This could represent missed steps in the process by an Upland potter or perhaps a Mimbres attempt with some knowledge of the process of how to produce such a vessel.

Corrugated

As with the plainware, corrugated wares were also analyzed for the presence of smudging, the color of the smudging, and if the smudging was burnished. However, with corrugated wares, additional insight into style could be gathered through coil manipulation and finishing. Coils were analyzed for tooling and indenting (pressing into the coil with a tool or finger to create impressions) and where on the coils the manipulation was present. Tooling on limited coils, particularly the last one, is typical of Three Circle Neck Corrugated which was present in both the Mimbres and Upland. Full body or sectioned indenting was limited to Upland styles. Tooling in patterns and incising could point to either Mogollon branch and are thus further discussed for each vessel that fell into this category. Reserve coils also had the tendency

to go through extra finishing including being flattened and/or burnished. These variables were tabulated yes/no. However, some caution was exercised with this being the main determinant of style, as Mimbres vessels could have also utilized these finishing techniques, particularly flattening. To make a final determination, all variables were considered together.

Figure 6.2 Reserve Incised jar (FN 34) from the floor of Room 101.

A total of 34 corrugated vessels were analyzed for style (Table 6.2). Fifteen of the 34 (44%) vessels were typed as Upland Mogollon styles. Two of the corrugated jars were typed as Reserve Corrugated based on the coils being flattened and/or burnished, FN 181 from the Room 101 small vessel cache and FN 428 from the floor of Room 105. One Reserve Incised jar (FN 34) was recovered from the floor of Room 101 (Figure 6.2). The incising, which was in a zig-zag pattern, covered all the coils, which is typical for a Reserve style. The bowl from Burial 114, a 2–4-year-old child in Room 103, had characteristics that could assign the vessel to either the

Table 6.2 Corrugated style analysis determinations.

#	Context	Form	Coil Manip	Coil Flat	Burnish	Smudged	Color	Burnish	Style
Burial 114	Room 103	Bowl	NA	NA	NA	Yes	Black	Yes	Alma Punched Smudged
Burial 115A	Room 103	Jar	Last Coil	Yes	Yes	No	NA	NA	Three Circle
Burial 117	Room 105	Bowl	No	No	No	Yes	Black	Yes	Reserve Smudged
FN 34	Rm 101, Floor	Jar	Incised	No	No	No	NA	NA	Reserve Incised
FN 162	Rm 101, Floor	Jar	Last Coil	Yes	No	No	NA	NA	Three Circle
FN 164	Rm 101, Floor	Bowl	All Indent	No	No	Yes	Black	Yes	Reserve Indented Sm.
FN 181	Rm 101, Floor	Jar	No	No	Yes	No	NA	NA	Reserve
FN 184	Rm 101, Floor	Jar	Last Coil	No	No	No	NA	NA	Three Circle
FN 186	Rm 101, Floor	Jar	NA	NA	NA	No	NA	NA	Alma Scored
FN 323	Rm 103, Subfloor	Jar	No	No	No	No	NA	NA	Mimbres
FN 356	Rm 103, Subfloor	Jar	Last Coil	Yes	No	No	NA	NA	Three Circle
FN 426	Ramada	Jar	No	Yes	No	No	NA	NA	Mimbres
FN 428	Rm 105, Floor	Jar	No	Yes	Yes	No	NA	NA	Reserve
FN 466	Ramada	Jar	Last Coil	No	No	No	NA	NA	Three Circle
FN 467	Ramada	Jar	Incised	No	No	No	NA	NA	Three Circle
FN 546	Rm 113, Subfloor	Bowl	All Indent	Yes	Yes	Yes	Black	Yes	Reserve Indented Sm.

Table 6.2 Continued

FN 1181	Rm 117, Roof	Bowl	All Indent	Yes	No	Yes	Black	Yes	Reserve Indented Sm.
FN 1253	Rm 118/119, Roof	Jar	Last Coil	Yes	No	No	NA	NA	Three Circle
FN 1254	Rm 117, Floor	Jar	All Indent	Yes	No	No	NA	NA	Reserve Indented
FN 1292	Rm 118	Jar	Last Coil	Yes	No	No	NA	NA	Three Circle
FN 1352	Rm 117, Subfloor	Jar	Last Coil	No	No	No	NA	NA	Three Circle
CRO024	South Side	Jar	Last Coil	Yes	Yes	No	NA	NA	Three Circle
CRO027	South Side	Bowl	NA	NA	NA	No	NA	NA	Datura
CRO028	South Side	Jar	No	No	No	No	NA	NA	Three Circle
CRO029	South Side	Bowl	All Indent	Yes	Yes	Yes	Black	Yes	Reserve Indented Sm.
CRO030	South Side	Jar	NA	NA	NA	No	NA	NA	Alma Scored
CRO031	South Side	Jar	Partial Indents	Yes	No	No	NA	NA	Tularosa Patterned
CRO033	South Side	Jar	Last Coil	No	No	No	NA	NA	Three Circle
CRO034	South Side	Bowl	Partial Indents	Yes	No	Yes	Yes	Yes	Tularosa Patterned Sm.
CRO035	South Side	Bowl	All Indent	Yes	Yes	Yes	Black	Yes	Reserve Indented Sm.
CRO036	South Side	Jar	Last Coil	Yes	No	No	NA	NA	Three Circle
CRO037	South Side	Jar	All Indent	Yes	No	No	NA	NA	Reserve Indented
CRO038	South Side	Jar	No	No	No	No	NA	NA	Three Circle
CRO044	South Side	Jar	All Indent	Yes	Yes	No	NA	NA	Reserve Indented

Upland or Mimbres. The Alma Punched general style was produced by both groups during both the Pithouse and Classic periods. However, the smudged interior of the bowl firmly indicates that this Alma Punched vessel was in line with Upland pottery. FN 1254 was a Reserve Indented jar with flattened coils (an Upland attribute) from the floor of Room 117. Three bowls typed as Reserve Indented Smudged (Figure 6.3) were found on the floor of Room 101 (FN 164), the subfloor of Room 113 (FN 546), and from the collapsed roof of Room 117 (FN 1181). One corrugated bowl from Burial 117, an 8–14-month-old infant in Room 105, was typed as Reserve Smudged.

Figure 6.3 Reserve Indented Smudged bowls. From left FN 164, FN 546, FN 1181.

There were four Reserve Indented vessels from the south side. Two (CRO037, CRO044) of these were jars, and two (CRO029, CRO035) were bowls that were smudged. The indented coils on all four vessels were flattened and the coils on three were also burnished, both attributes considered standard on Upland corrugated vessels. The south side also yielded two vessels, CRO031 (jar) and CRO034 (bowl), that were typed as Tularosa Patterned and Tularosa Patterned Smudged respectively. Both are considered the Reserve variant as the changed in coils are bound within the coil rows.

One jar with coil incision needs further discussion since it was not typed as a Reserve corrugated type despite being incised. FN 467 (Figure 6.4), a jar found in the ramada, had a zig-zag incision pattern over the coils like FN 34, but was typed as Three Circle Neck Corrugated for two reasons. First, the incised pattern was limited to the lower coils, whereas with the Reserve variant it covered all the coils. Second, tooling was present on the last coil which is the most common manipulation on Three Circle Neck Corrugated vessels. Both the Mimbres and Upland incised coils, but though the consideration of other characteristics of the design it was possible to discern the cultural affiliation.

Figure 6.4 Three Circle Neck Corrugated jar (FN 467) from the ramada.

Like the plainware, when considering the corrugated vessels from the UNLV excavation, a pattern is visible given the distribution of the Reserve style vessels. Seven out of nine Reserve style corrugated vessels came from three rooms- Room 101, 105, and 117. Rooms 101 and 117

held almost all the Reserve plainwares. The INAA data is thus crucial to understand why and/or how these rooms had so many vessels that were not present at such numbers in other rooms and at other sites.

Decorated

A total of 47 decorated vessels were analyzed to determine if any elements or motifs indicated Mimbres versus Upland design influence, or if a combination of the two was present. Keys traits involved the presence/absence of figurative images as these representations were limited to Mimbres pottery, the presence of a stepped pyramid image or cloud terrace with 90° angles (indicative of Upland style), and solid and opposed steps or scrolls which are the most common Upland decorated motifs. Table 6.3 lists all decorated vessels analyzed along with their stylistic determinations.

Most of the decorated vessels analyzed for style fit within typical design motifs that are seen on Mimbres vessels, with only 17 (36%) of those analyzed having design elements and motifs that warranted extra consideration. Three vessels (Figure 6.5) yielded the cloud terrace motif. However, the larger design on all three examples still indicated they were primarily Mimbres in design and represented influence or a mixture of styles:

Figure 6.5. Vessels with the cloud terrace element (l to r: Burial 100, FN 1327, CRO003).

Table 6.3 Decorated vessel style analysis determinations.

#	Context	Form	Figurative	Cloud Terrace	Opposed Design	Style
Burial 100	Arroyo	Bowl	No	Yes	Yes, Mixed	III-Early
Burial 102A	Room 101	Bowl	No	No	No	III-Early
Burial 103	Room 104	Bowl	No	No	No	Mimbres Polychrome
Burial 105	Room 101	Flare Rim	No	No	No	III-General
Burial 107A	Room 101	Bowl	No	No	No	III-Early
Burial 107A	Room 101	Bowl	Yes, dog	No	No	III-Middle
Burial 108A	Room 101	Bowl	No	No	Yes, Upland	Reserve
Burial 109	Room 101	Bowl	Yes, human	No	No	III-Middle
Burial 112	Room 103	Bowl	No	No	Yes, Mimbres	III-Early
Burial 113	Room 105	Bowl	No	No	Yes, Mimbres	III-Early
Burial 115A	Room 103	Bowl	Yes, turkey	No	No	III-Middle/Late
Burial 115C	Room 103	Bowl	No	No	Yes, Mimbres	III-Middle
Burial 116	Room 105	Bowl	No	No	No	III-Early
Burial 119	Room 113	Bowl	Yes, animal	No	Yes, Mixed	III-Early
Burial 121	Room 112	Bowl	No	No	Yes, Mixed	III-Middle
Burial 124	Room 112	Bowl	No	No	No	III-Middle
Burial 128A	Room 112	Bowl	No	No	No	II/III, III-Early
Burial 134	Room 117	Bowl	No	No	No	III-Middle
Burial 135	Room 117	Bowl	No	No	No	Gallup
Burial 138B	Room 117	Bowl	No	No	No	III-Middle
Burial 139	Room 117	Bowl	No	No	Yes, Mimbres	III-Middle
FN 72	Room 101, Floor	Bowl	Yes	No	No	III-Middle
FN 100	Room 102, Floor Fill	Bowl	No	No	No	III-Early
FN 155	Room 104, Floor Fill	Bowl	No	No	No	III-General
FN 178	Room 102, Floor	Bowl	No	No	No	III-Middle

Table 6.3 continued.

FN 179	Room 101, Floor	Bowl	No	No	No	III-Early
FN 182	Room 101, Floor	Flowerpot	No	No	No	III-Early
FN 183	Room 101, Floor	Bowl	No	No	Yes, Mimbres	III-Middle
FN 345	Room 103, Subfloor	Bowl	No	No	No	Gallup/Reserve
FN 468	Ramada	Bowl	No	No	Yes, Mimbres	III-Middle
FN 469	Ramada	Bowl	Yes, human	No	No	III-Middle
FN 540	Ramada	Bowl	No	No	No	III-Middle
FN 1184	Room 117, Floor	Olla	No	No	No	III-Middle
FN 1185	Room 117, Floor	Olla	No	No	No	Mimbres Polychrome
FN 1186	Room 117, Floor	Bowl	Yes, bird	No	No	III-Late
FN 1324	Room 117, Subfloor	Bowl	Yes, turtle	No	No	III-Late
FN 1327	Room 117, Subfloor	Flare Rim	No	Yes	No	III-General
FN 1413	Room 117, Subfloor	Bowl	Yes, rabbits	No	No	III-Early
CRO001	South Side	Bowl	Yes, human	No	No	III-Middle
CRO002	South Side	Bowl	No	No	Yes, Mimbres	III-Middle
CRO003	South Side	Bowl	No	Yes	Yes, Mixed	III-Middle
CRO004	South Side	Bowl	No	No	No	III-Early
CRO005	South Side	Bowl	No	No	No	III-General
CRO006	South Side	Seed Jar	No	No	No	Cibola/Puerco
CRO010	South Side	Bowl	No	No	No	III-Middle
CRO014	South Side	Olla	No	No	No	III-General
CRO026	South Side	Olla, Effigy	No	No	Yes, Mimbres	III-Middle

Burial 100 (found eroded in the arroyo, excavated by the Forest Service): The cloud terrace here is hollow and it was an element in a larger opposed step design that has 90º angles. Both the terrace and opposed steps are not the sole design, as a combination hatched triangle and diamond motif are also present. The entire design is also bounded by thin lines which is standard for the Mimbres Style III-Early typology.

FN 1327: The cloud terrace at the center of this bowl is the best example of Upland Mogollon influence for this element found in this analysis. It is solid and stands alone from any other painted decoration. The bowl form, Flare Rim, is not common, but does appear in Classic Mimbres contexts. The geometric design along the rim is also standard for Mimbres Flare Rim bowls.

CRO003 (south side of the site): This vessel had similar motifs to Burial 100. The cloud terrace here is hatched but is still incorporated into an opposed step design. The sets of thin and thick lines in the center of the design break up the opposed motifs as would be expected in a Mimbres pattern, and the two thick lines near the rim are hallmark to the Mimbres Style III-Middle type.

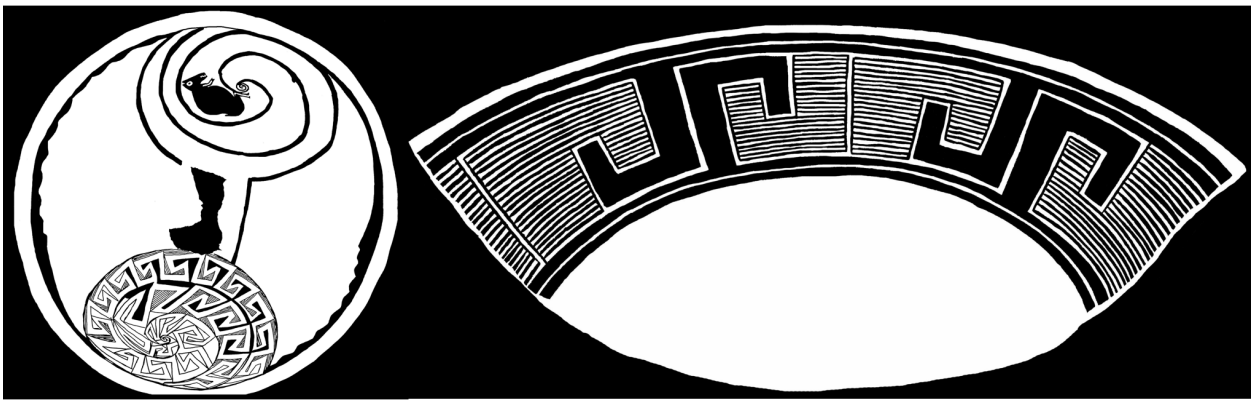


Figure 6.6 Mixed Mimbres/Upland painted designs on vessels from Burials 119 (left) and 121.

Eight of the vessels had the opposed step motif; however, they were considered to represent the Mimbres variety because they were not at a 90° angle (slanted angles are considered Mimbres) and incorporated into larger designs. Two vessels, those from Burials 119 (Room 113, adult male) and 121 (Room 112, 2-4-year-old child) (Figure 6.6) were considered to have opposed designs that represented more blending of Upland and Mimbres styles similar to what was seen in the Burial 100 and CRO003 vessels. The bowl from Burial 119 had motifs that both typical of both Mimbres and Upland styles. A solid thin line scroll and an animal figurative are hallmark Mimbres images. However, the other side of the bowl yielded a scroll consisting of smaller, slightly angled opposed scrolls that can be interpreted as more Upland in nature. The designs are separated by a significant amount of empty space but are connected with two lines through the center of the vessel. Although interpretation of the meaning of Mimbres designs is difficult, the connecting line could possibility be indicating a connection between the two groups. The bowl from Burial 121 was the only vessel analyzed that yielded an opposed scroll design at 90º angles. Based on the portion of the vessel present, the design appears to repeat and was probably the only design present on the bowl which is also different than the other mixed style vessels. More typical to Mimbres is the bounding of the design by the thick border lines on the top and bottom of the main geometric band.

Four of the decorated vessels yielded designs that could be classified as Reserve or another Cibola whiteware type (Figure 6.7). Perhaps the clearest Reserve black-on-white style was found on the bowl recovered from Burial 108A (Room 101, adult probable female). This bowl featured four sets of opposed solid and hatched right-angle steps. The design covered the entirety of the vessel and was not mixed with any other large geometric pattern. The thin lines separating the set of steps is also a common element seen in the Cibola style of Puerco black-on-

Figure 6.7 Reserve and Cibola decorated vessels (clockwise from top left: Burial 108A, Burial 135, FN 345, CRO006).

white. The bowl recovered from Burial 135 (Room 117, adult) is most reminiscent of Gallup black-on-white known for its hatched geometrics with little to no solid elements and simple symmetry (Hays-Gilpin 1998). FN 345 from the subfloor of Room 103 may also be an example of an early Gallup or Reserve black-on-white. No style guide yielded an example that could account for both large hatched shapes and rows of triangles. The design also appears to be quite crude, which could indicate a novice potter who may not have understood proper design layouts. Finally, CRO006 from the south side of Elk Ridge has design elements that could fit into a variety of the Cibola whitewares including, but not definitively, Puerco black-on-white.

Distinguishing between the various Cibola black-on-white types is difficult as many have not gone through extensive spatial and temporal analysis to formalize changes the various types underwent.

INAA

Of the 94 samples submitted for INAA, 60 of the vessels (64%) were manufactured at the Elk Ridge site (Table 6.4). This fits with the larger Mimbres Valley pattern of production center sites made most of their own pottery (Creel 2022). Amongst the four ceramic wares, decorated wares saw the widest distribution of production locales with 41% made at other sites. INAA results are further presented by ware to understand the basic distribution of wares compared to their production locale (see Appendix C for INAA element data). This also highlights instances in which the production locale was unexpected given the ceramic style, which is then further discussed in Chapter 7. For most of the results, a reference to being sourced to Elk Ridge indicated the vessel was assigned to the Mimbres-49A2 group as clay and unfired vessels from the Elk Ridge site have sourced to this group, indicating a high plausibility that Elk Ridge is the production center for this source. The decorated wares are the only exception to this, as a second source group, Mimbres-01A, which is also tentatively assigned to Elk Ridge for decorated pottery based on its high percentage of ceramics sourcing to the site and proximity to other sites that have yielded high numbers of pottery sourcing to this group. Mimbres-01A is differentiated by its high thorium and uranium levels (Creel 2022). It is important to note that some sources have not been associated with specific sites and refer to a general area within or near the Mimbres Valley (see Chapter 5 for source group table and map). Group membership probabilities are presented with their respective samples and further discussed when group probability does not match bivariate confidence intervals.

Table 6.4 Distribution of ceramic ware by production locale.

Source Group	Plainware	Redware	Corrugated	Decorated	Total
01A- Elk Ridge				9	9
01B- Eby				1	1
02A- Swarts			1	1	2
03- West Fork				1	1
04A- Cottonwood			3	5	8
04B- Mattocks				2	2
04C- Galaz				1	1
05B- TJ Ruin			1		1
09- Middle Sapillo			1	5	6
10- Burro Mts			1		1
41- NAN Ranch				1	1
49A1- Upper Valley		1	1	2	4
49A2- Elk Ridge	13	1	19	18	51
SCib2c	1		1		2
Unassigned			4		4

Redware

Only two bowls typed as San Francisco redware were recovered from Elk Ridge. The first, CRO025, was collected by the landowners on the southern side of the site and thus lacks detailed provenance. This vessel sourced to the Ek Ridge 49A2 source (*p*=85.176). The second redware vessel was recovered from the left shoulder area of Burial 128A, a young adult male from Room 112. This vessel sourced to Mimbres-49A1 which is associated with the Upper Valley (*p*=15.810). Overall redware was not a reliable source of information regarding the movement of pottery/interaction during the Classic period. Their decline in production noted at various sites during the Classic period indicates a shift in their popularity during this period. It is unknown why the production of this ware declined and almost stopped. The hematite used to produce the slip was still plentiful as witnessed through its presence in Classic contexts and redware was again later produced at higher numbers during the Terminal and Post-Classic periods.

Plainware

Of the 14 plainware vessels submitted for INAA, 13 returned as being manufactured at the Elk Ridge site (Table 6.5). These data were not surprising given the long-held theory that utilitarian pottery was probably not being traded, and given the results compiled by Creel (2022) that supported this theory. Therefore, the results for this ceramic ware will be briefly presented. Six of the plainware bowls sourced to Elk Ridge were recovered in burials. Two of these were adults- a probable female adult from Room 101 (Burial 110) and an adult male from Room 113 (Burial 118). The bowl with the adult male was classified as Reserve Smudged and thus served as the first example of a surprising local manufacturing result given the non-local style of the vessel. The other four burial vessels were all with infants- one in Room 105 (Burial 115B) and three from Room 117 (Burials 130, 132, and 133). The bowls from Burial 132 and 133 were also identified as Reserve Smudged. The bowl from Burial 130 had a light gray interior and was one of the vessels described as a Mimbres attempt at smudging (see above style results). Six of the remaining seven plainware vessels sourced to Elk Ridge were from household and extramural

Table 6.5 Plainware INAA source results.

#	Context	Style	Group	*p*	Source Site
B110	Room 101	Reserve Smudged	49A2	19.895	Elk Ridge
B115B	Room 103	Mimbres	49A2	79.377	Elk Ridge
B118	Room 105	Reserve Smudged	49A2	84.216	Elk Ridge
B130	Room 117	Mimbres	49A2	0.583	Elk Ridge
B132	Room 117	Reserve Smudged	49A2	54.227	Elk Ridge
B133	Room 117	Reserve Smudged	49A2	0.262	Elk Ridge
FN 163	Room 101	Mimbres	49A2	56.596	Elk Ridge
FN 180	Room 101	Reserve Smudged	SCib2c	-	Reserve Area
FN 264	Room 107	Mimbres	49A2	0.284	Elk Ridge
FN 268	Ramada	Mimbres	49A2	1.965	Elk Ridge
FN 532	Ramada	Mimbres	49A2	43.385	Elk Ridge
FN 1183	Room 117	Mimbres/Reserve	49A2	45.773	Elk Ridge
FN 1353	Room 117	Mimbres	49A2	13.184	Elk Ridge
CRO032	South Side	Mimbres	49A2	98.627	Elk Ridge

contexts including the floor of Room 101 (FN 163), roof fall of Room 107 (264), the ramada (FNs 268 and 532), and two (FNs 1183 and 1353) from the Room 117 caches (one of which was Reserve Smudged). The remaining Elk Ridge-sourced ceramic piece was a possible effigy or prayer stick holder (CRO032) from the south side of the site and lacks specific context.

One miniature Reserve Smudged bowl (FN 180; Figure 6.8) recovered from the Room 101 cache of miniature vessels sourced to the newly defined group SCib2c. This result was both surprising and unsurprising. Unsurprising was the fact that a Reserve Smudged vessel sourced to a large area around Quemado or Reserve where this type was one of the most common (Hays-Gilpin 1998; Martin and Rinaldo 1950b; Rinaldo and Bluhm 1956). Surprising in the fact that a plainware bowl was brought into the Elk Ridge site as the majority were made on-site. Although, the other three smudged bowls from this same cache were not submitted for INAA, it can be noted that they may have been part of a larger trade or migrant event. However, a significant number of samples are still needed to determine a specific production locale and probability scores for this source.

Figure 6.8 Miniature Reserve Smudged bowl from the Room 101 small vessel cache.

The membership probabilities for several of the plainware vessels were low (particularly Burials 110, 130 and 133, and FNs 264, 268, and 1353) when considering membership for Mimbres-49A2 using all the elements. When considering the bivariate concentration plot of the principal components for Mimbres-49A2 (europium and cesium), the membership of these samples is more defined (Figure 6.9). The vessel from Burial 133 (sample MVP1049) is the only one that falls outside of the ellipse drawn at the 90% confidence interval. All other low probabilities are within the ellipse thus suggesting strong membership to Mimbres-49A2.

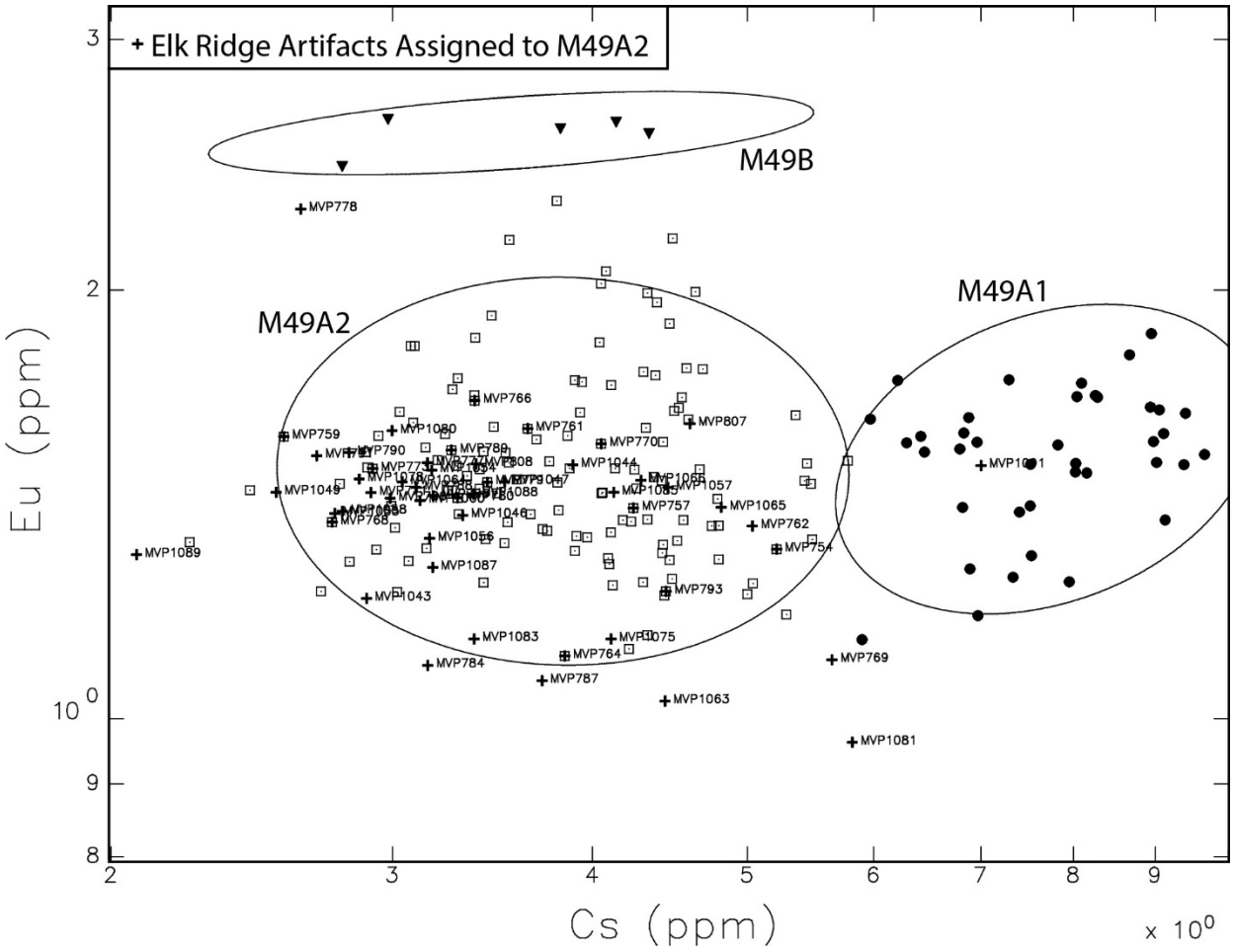


Figure 6.9 Source group Mimbres 49A2 bivariate concentration plot.

Corrugated

Because the results of the corrugated and decorated vessels are more complex, the results are described in more detail than the plainware and redware. A total of 32 corrugated ware vessels were submitted for INAA with 19 sourcing to Elk Ridge, four possibly from nearby sites in the Upper Mimbres Valley, five coming from other known source groups, and four sourcing to a new unassigned group (Table 6.6). Like plainwares, corrugated vessels have also been viewed as strictly utilitarian and made locally. However, more recent studies have shown that corrugated wares can carry identity markers and may have moved around more than what was previously believed (Creel 2022; Romero 2014). The INAA results for the corrugated wares at Elk Ridge show that a majority (59%) were manufactured at the site, with the remainder coming from a variety of sources. The high number of corrugated wares made at Elk Ridge may also correspond to wider data suggesting Elk Ridge was one of the main producers of corrugated pottery (Creel 2022). However, this data could be skewed by corrugated wares not usually being subject to INAA.

Beginning with the Croteau vessels recovered from the south side of Elk Ridge, various styles were present and a range of manufacturing sources accounted for these vessels. Six of the corrugated vessels tested from the south side returned as being manufactured at Elk Ridge, with styles representing both Mimbres and Upland Mogollon trends. Three (CRO033, CRO036, and CRO038) were Three Circle Neck Corrugated and are typical examples of corrugated wares found in Pithouse and Classic contexts in the Mimbres region. CRO033 had a low probability of membership with Mimbres-49A2 and plotted outside of the 90% confidence interval. Although attributed to Mimbres-49A2 given the current data, the source group for this vessel may change over time. CRO027 was a bowl in the “datura” style, where small, pinched ceramic appliques

Table 6.6 Corrugated INAA source results.

#	Context	Style	Group	*p*	Source Site
B114	Room 103	Alma Punched Smudged	49A2	0.002	Elk Ridge
B115A	Room 103	Three Circle	49A2	75.362	Elk Ridge
B117	Room 105	Reserve Smudged	49A2	4.358	Elk Ridge
FN 34	Room 101	Reserve Incised	49A2	59.051	Elk Ridge
FN 162	Room 101	Three Circle	49A2	56.596	Elk Ridge
FN 164	Room 101	Reserve Indented Smudged	49A2	18.552	Elk Ridge
FN 181	Room 101	Reserve	49A2	51.051	Elk Ridge
FN 184	Room 101	Three Circle	SCib2c	-	Reserve Area
FN 323	Room 103	Mimbres	49A2	7.993	Elk Ridge
FN 356	Room 103	Three Circle	49A2	71.659	Elk Ridge
FN 426	Ramada	Mimbres	10	15.825	Burro Mts Area
FN 428	Room 105	Reserve	49A2	0.078	Elk Ridge
FN 466	Ramada	Three Circle	49A2	0.155	Elk Ridge
FN 467	Ramada	Three Circle	49A2	5.713	Elk Ridge
FN 546	Room 113	Reserve Indented Smudged	Unassigned	-	Cibola Area
FN 1181	Room 117	Reserve Indented Smudged	02A	0.000	Swarts
FN 1253	Room 118/119	Three Circle	49A2	48.379	Elk Ridge
FN 1254	Room 117	Reserve Indented	Unassigned	-	Cibola Area
FN 1292	Room 118	Three Circle	09	-	Middle Sapillo
FN 1352	Room 117	Three Circle	04A	92.209	Cottonwood
CRO024	South Side	Three Circle	04A	77.310	Cottonwood
CRO027	South Side	Datura	49A2	56.7	
CRO028	South Side	Three Circle	49A1	.169	Upper Valley
CRO029	South Side	Reserve Indented Smudged	05B	4.962	TJ Ruin
CRO030	South Side	Alma Scored	04A	98.653	Cottonwood
CRO031	South Side	Tularosa Patterned	49A2	93.585	Elk Ridge
CRO033	South Side	Three Circle	49A2	.819	Elk Ridge
CRO034	South Side	Tularosa Patterned Smudged	49A2	23.237	Elk Ridge
CRO035	South Side	Reserve Indented Smudged	Unassigned	-	Cibola Area
CRO036	South Side	Three Circle	49A2	47.934	Elk Ridge
CRO037	South Side	Reserve Indented	Unassigned	-	Cibola Area
CRO038	South Side	Three Circle	49A2	7.161	Elk Ridge

were applied to the exterior giving the appearance of datura fruit. Overall, not many bowls in this form have been recovered from Mimbres sites so their general purpose and style is not well understood. CRO031 and CRO034, although made at Elk Ridge, are a Tularosa Patterned jar and Tularosa Patterned Smudged bowl respectively and are considered to be styles representative of the Upland Mogollon.

The remaining six corrugated vessels submitted for INAA from the south side sourced to a variety of locales. CRO024, a Three Circle Neck Corrugated jar, and CRO030, an Alma Scored jar, sourced to Mimbres-4A, which is believed to be the source for the neighboring pueblo site of Cottonwood. The Cottonwood site is potentially part of the larger Elk Ridge community (Roth et al 2022), and this connection is further discussed in Chapter 7. CRO028, a Three Circle Neck Corrugated jar, sourced to Mimbres-49A1 which is, at present, broadly assigned to the Upper Mimbres Valley (p= 0.169). A large Reserve Indented Smudged bowl (CRO029) sourced to the TJ Ruin, located roughly 35 kilometers north of the Elk Ridge site. Two of the vessels- CRO035 (Reserve Indented Smudged bowl) and CRO037 (Reserve Indented jar)- yielded source results that caused them to be unassigned to any known group. According to Creel and Ferguson (2021), CRO037 has a high probability of belonging to the Plateau and OverlapTC2 groups which would indicate production in the Cibola area. It is possible that CRO035 was also produced in the Cibola area; however, much more work needs to be done to assess production locales for that region, including the reassessment of the Plateau and OverlapTC2 sources (Creel and Ferguson 2021).

Switching to the corrugated vessels recovered from the UNLV excavations, 14 were found in domestic household contexts. Beginning with Room 101, five corrugated vessels were tested. Two, FNs 181 and 184, were a part of the small vessel cache discussed earlier. The small

Reserve corrugated jar sourced to Elk Ridge, while the Three Circle Neck Corrugated sourced to the newly defined SCiB2c. Given the style, it would have been expected for those source results to have been switched. The remaining three vessels were all recovered from the floor and all sourced to Elk Ridge; however, their styles ranged. FN 34 was a Reserve Incised jar, FN 162 a Three Circle Neck Corrugated Jar, and FN 164 a Reserve Indented Smudged bowl. When plotted, FN 162 (MVP787) was outside of the 90% confidence interval indicating not as strong as a relationship as others that sourced to Mimbres-49A2. FN 323, a Mimbres corrugated jar, and FN 356, a Three Circle Neck Corrugated jar, were recovered from the subfloor of Room 103. Both of these vessels sourced to Elk Ridge; however, FN 323 had a lower probability of membership and was plotted outside of the confidence interval on the bivariate plot (p=7.993).

The superimposed complex of Rooms 112, 113, and 105 only yielded two corrugated vessels from domestic contexts. The first, FN 546, was a large Reserve Indented Smudged bowl from the subfloor of Room 113 (possible room fill of Room 112) that represented a third vessel from the new unassigned source. Though not similar enough to CRO037 to fit in the same possible group, it is likely that this vessel also originated in the Cibola area. The second, FN 428, was a small full-bodied corrugated jar (see discussion of style in the previous section) located in Feature 105G, a small pit near the hearth. The jar was sourced to Elk Ridge; however, the probability of membership was low (p=0.078) and was plotted outside of the bivariate confidence interval. Further sample additions may reassign this vessel to Mimbres 49B which is tentatively assigned to the northern Mimbres Valley or the Sapillo Drainage.

Room 117 yielded three corrugated vessels in domestic contexts. FN 1181 (MVP1059), a Reserve Indented Smudged bowl from the roof fall/wall fall, sourced to Mimbres-02A which is associated with the Swarts site in the southern Mimbres Valley (p=0.000*)*. Although the

Mahalanobis distance yielded no probability of membership, bivariate analysis showed belonging to Mimbres-02A at the 90% confidence interval (Figure 6.10). Available data points to the Swarts site potentially being another manufacturing locale of Reserve style ceramics in the Mimbres Valley (Creel 2022). FN 1254 was a partial large Reserve Indented jar found on the floor. This is the fourth and final vessel that sourced to the new unassigned group and probably also originated from the Cibola area. Finally, FN 1352 was a Three Circle Neck Corrugated jar from the subfloor cache along the north wall and sourced to the Mimbres-4A group, which is most likely Cottonwood pueblo.

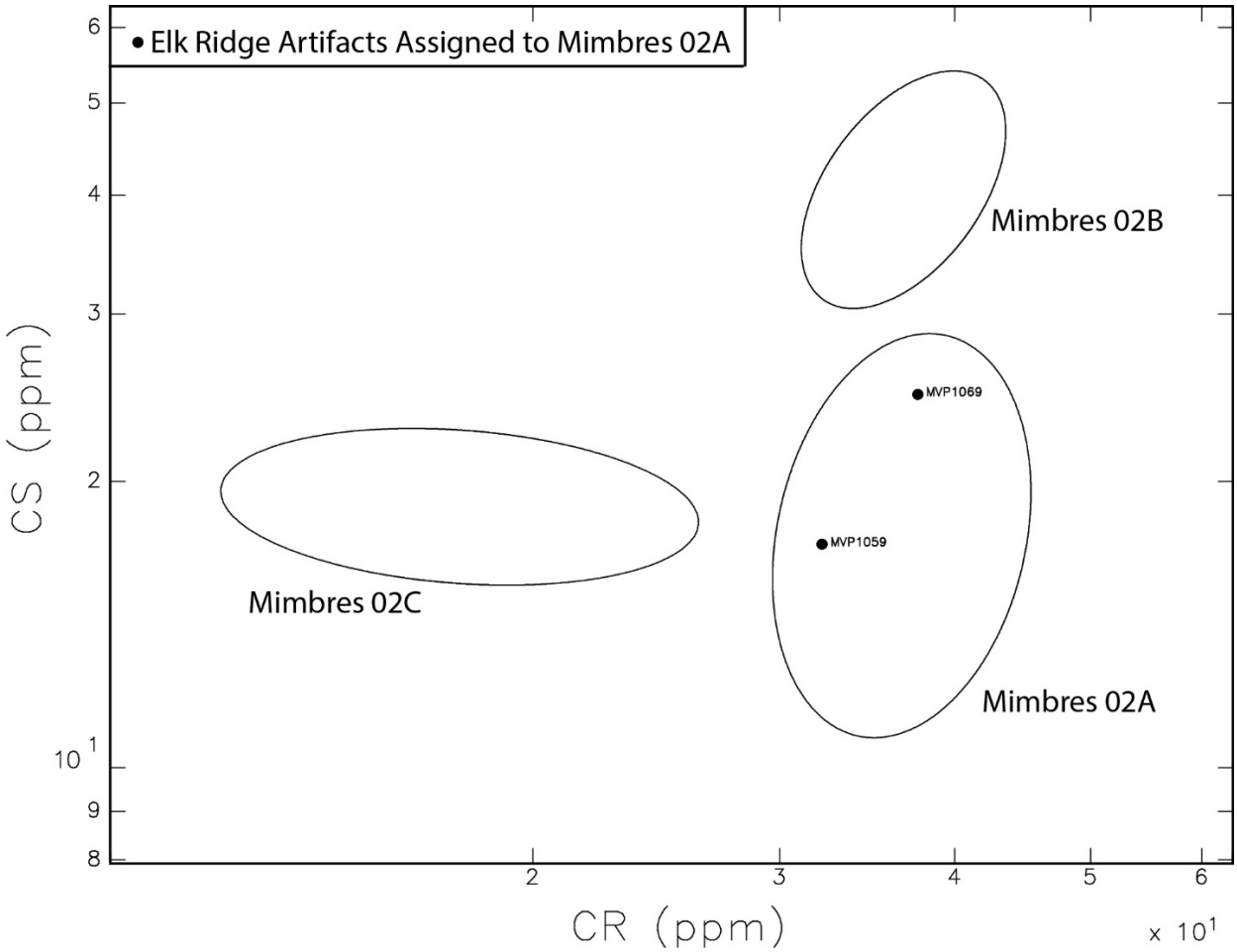


Figure 6.10 Source group Mimbres-02A bivariate concentration plot.

The final two corrugated vessels from domestic contexts come from the Room 118 and 119 complex which had undergone numerous remodeling events. FN 1253 was found in the roof fall/wall fall of Room 118/119 and was a Mimbres/Three Circle Neck Corrugated jar that sourced to Elk Ridge. The second, FN 1292, was a Three Circle Neck Corrugated jar found in the rock lined feature 118L. This jar sourced to Mimbres-09, which is associated with the Sapillo Drainage area, although a specific site has yet to be assigned. The Sapillo Drainage area is directly north of the Mimbres Valley.

All three of the corrugated vessels recovered from burials sourced to Elk Ridge. Burial 115A (newborn, Room 103) had a Three Circle Neck Corrugated jar while Burial 114 (infant, Room 103) had an Alma Punched Smudged bowl, and Burial 117 (infant, Room 105) had a Reserve Smudged bowl. The two smudged bowls appeared to continue a trend seen with burials of smudged vessels being placed with infants at the Elk Ridge site. Although this was not the case for all infant/child burials, the trend stood out as unusual and is worth further investigation. This also lent further evidence of smudged vessels being produced locally; however, the vessel from Burial 114 yielded both a low probability of membership and plotted outside of the 90% confidence interval.

Three corrugated vessels were recovered from the extramural/ramada area. Two (FNs 466 and 467), both Three Circle Neck Corrugated variants, were made at Elk Ridge. The third (FN 426), a full body Mimbres Corrugated, sourced to the southern Burro Mountains area. Although on the surface it seems unusual for a corrugated/utilitarian vessel to travel this far, research has shown that the Burro Mountains source was quite a prolific production locale for corrugated wares (Creel 2022). Since only one extramural area of the UNLV excavations produced vessels and the number of corrugated vessels in that area was small, it is hard to draw

conclusions regarding the production locale and extramural areas for vessels that are considered utilitarian.

Decorated

Before presenting the results of the decorated vessels, it is important to reiterate that there are two clay sources that now must be considered for such vessels produced at the site. First is the Mimbres 49A2 source, which is considered the main clay source for the Elk Ridge site and has been discussed in the previous three INAA results sections. The second is Mimbres 1A, a source that is believed to be associated with Elk Ridge, but which so far has only been associated with decorated vessels. It is, at present, unclear why this secondary source is present and why it has only been used to produce decorated vessels. In total, 46 samples from decorated vessels were submitted for INAA (Table 6.7). Like the previous sections, the decorated ware results are presented in terms of context and clay source.

A total of 18 decorated vessels sourced to the Elk Ridge source Mimbres-49A2. Although some low membership probabilities were calculated via the Mahalanobis distance, all the decorated vessels from this source fell within the 90% confidence interval on the bivariate concentration plot. For decorated vessels from the south side, only one, CRO005, which is a slip-only bowl, came from this source. In Room 101, three burial vessels sourced to Elk Ridge including the Flare Rim bowl of infant Burial 105A, a Style III-Middle dog figurative from possible infant Burial 107A, and a Reserve black-on-white style bowl from probable female, young adult Burial 108A. For Room 101 domestic contexts, one slip-only bowl from the floor fill (FN 155), one Style III-Early geometric bowl from the floor fill (FN 100), and one small Style III-Early bowl (FN 179) from the miniature vessel cache sourced to Elk Ridge under the Mimbres-49A2 group.

Table 6.7 Decorated INAA source results.

#	Context	Style	Source	*p*	Source Site
Burial 100	Arroyo	III-Early	49A1	75.473	Upper Valley
Burial 102A	Room 101	III-Early	04A	98.193	Cottonwood
Burial 103	Room 104	Polychrome	09	-	Middle Sapillo
Burial 105A	Room 101	III-General	49A2	83.187	Elk Ridge
Burial 107A	Room 101	III-Early	09	-	Middle Sapillo
Burial 107A	Room 101	III-Middle	49A2	71.797	Elk Ridge
Burial 108A	Room 101	Reserve	49A2	99.932	Elk Ridge
Burial 109	Room 101	III-Middle	04A	99.126	Cottonwood
Burial 112	Room 103	III-Early	49A2	16.374	Elk Ridge
Burial 113	Room 105	III-Early	04B	50.432	Mattocks
Burial 115A	Room 103	III-Middle/Late	09	-	Middle Sapillo
Burial 115C	Room 103	III-Middle	49A2	93.860	Elk Ridge
Burial 116	Room 105	III-Early	41	0.000	NAN Ranch
Burial 119	Room 113	III-Early	01B	0.000	Eby (probable)
Burial 121	Room 112	III-Middle	49A2	8.583	Elk Ridge
Burial 124	Room 112	III-Middle	01A	11.681	Elk Ridge
Burial 128A	Room 112	II/III, III-Early	03	96.687	West Fork
Burial 134	Room 117	III-Middle	01A	56.376	Elk Ridge
Burial 135	Room 117	Gallup	49A2	66.314	Elk Ridge
Burial 138B	Room 117	III-Middle	04C	98.111	Galaz
Burial 139	Room 117	III-Middle	49A2	43.202	Elk Ridge
FN 72	Floor, Room 101	III-Middle	01A	0.000	Elk Ridge
FN 100	Floor Fill, Room 102	III-Early	49A2	99.447	Elk Ridge
FN 155	Room Fill, Room 104	Slip Only	49A2	80.927	Elk Ridge
FN 178	Floor, Room 102	III-Middle	04B	95.406	Mattocks
FN 179	Floor, Room 101	III-Early	49A2	23.770	Elk Ridge
FN 182	Floor, Room 101	III-Early	01A	0.213	Elk Ridge
FN 183	Floor, Room 101	III-Middle	01A	95.486	Elk Ridge
FN 345	Subfloor, Room 103	Gallup/Reserve	49A2	92.245	Elk Ridge
FN 468	Ramada	III-Middle	01A	97.267	Elk Ridge
FN 469	Ramada	III-Middle	01A	93.456	Elk Ridge
FN 540	Ramada	III-Middle	01A	84.080	Elk Ridge
FN 1184	Floor, Room 117	III-Middle	04A	56.586	Cottonwood
FN 1185	Floor, Room 117	Polychrome	49A2	94.671	Elk Ridge
FN 1186	Floor, Room 117	III-Late	49A2	35.430	Elk Ridge
FN 1324	Subfloor, Room 117	III-Late	49A2	57.701	Elk Ridge
FN 1327	Subfloor, Room 117	III-General	49A2	37.141	Elk Ridge

Table 6.7 continued.

FN 1413	Subfloor, Room 117	III-Early	49A2	10.765	Elk Ridge
CRO001	South Side	III-Middle	02A	93.892	Swarts
CRO002	South Side	III-Middle	04A	92.876	Cottonwood
CRO003	South Side	III-Middle	01A	98.791	Elk Ridge
CRO004	South Side	III-Middle	09	-	Middle Sapillo
CRO005	South Side	Slip Only	49A2	5.155	Elk Ridge
CRO006	South Side	Puerco	09	-	Middle Sapillo
CRO010	South Side	III-Middle	49A1	14.201	Upper Valley
CRO026	South Side	III-Middle	04A	78.340	Cottonwood

Room 103 yielded two burial vessels that sourced to Elk Ridge under Mimbres-49A2 including one Style III-Early geometric bowl from old adult male Burial 112 and one Style III-Early geometric bowl from child Burial 115C. For domestic contexts, one smaller Gallup/Reserve style bowl (FN 345) was recovered from the subfloor of the room. The Elk Ridge source for this bowl was surprising given the design and light gray colored paste of the ceramic, both indicating that this would have been typed as a non-local tradeware if INAA had not been conducted on this bowl. Room 112 yielded one Style III-Middle geometric bowl that sourced to Elk Ridge from child Burial 121.

Room 117 yielded the most decorated vessels from the site that sourced to Elk Ridge group Mimbres-49A2. One of these vessels was a Style III-Middle geometric bowl from the old adult female Burial 139. The other burial yielding a decorated bowl from this source was that of late adolescent Burial 135. Although sourcing to Elk Ridge, the decoration is quite unusual and more in-line with Reserve/Cibola styles, particularly Gallup black-on-white. Five other decorated vessels sourced to Mimbres-49A2 were recovered from domestic contexts in this room. FN 1185 was a larger Mimbres Polychrome olla that was split between two caches (central cache and south wall cache) left in Room 117 upon closing of the structure. FN 1186, a Style III-Late bird

figurative bowl, was also a part of the central cache. Two vessels from the subfloor sourcing to Elk Ridge including a Flare Rim bowl (FN 1327) and a Style III-Late turtle figurative bowl (FN 1413). The last decorated bowl sourcing to Elk Ridge from Room 127 was a Style III-Early rabbit figurative bowl (FN 1413) from the subfloor cache along the north wall.

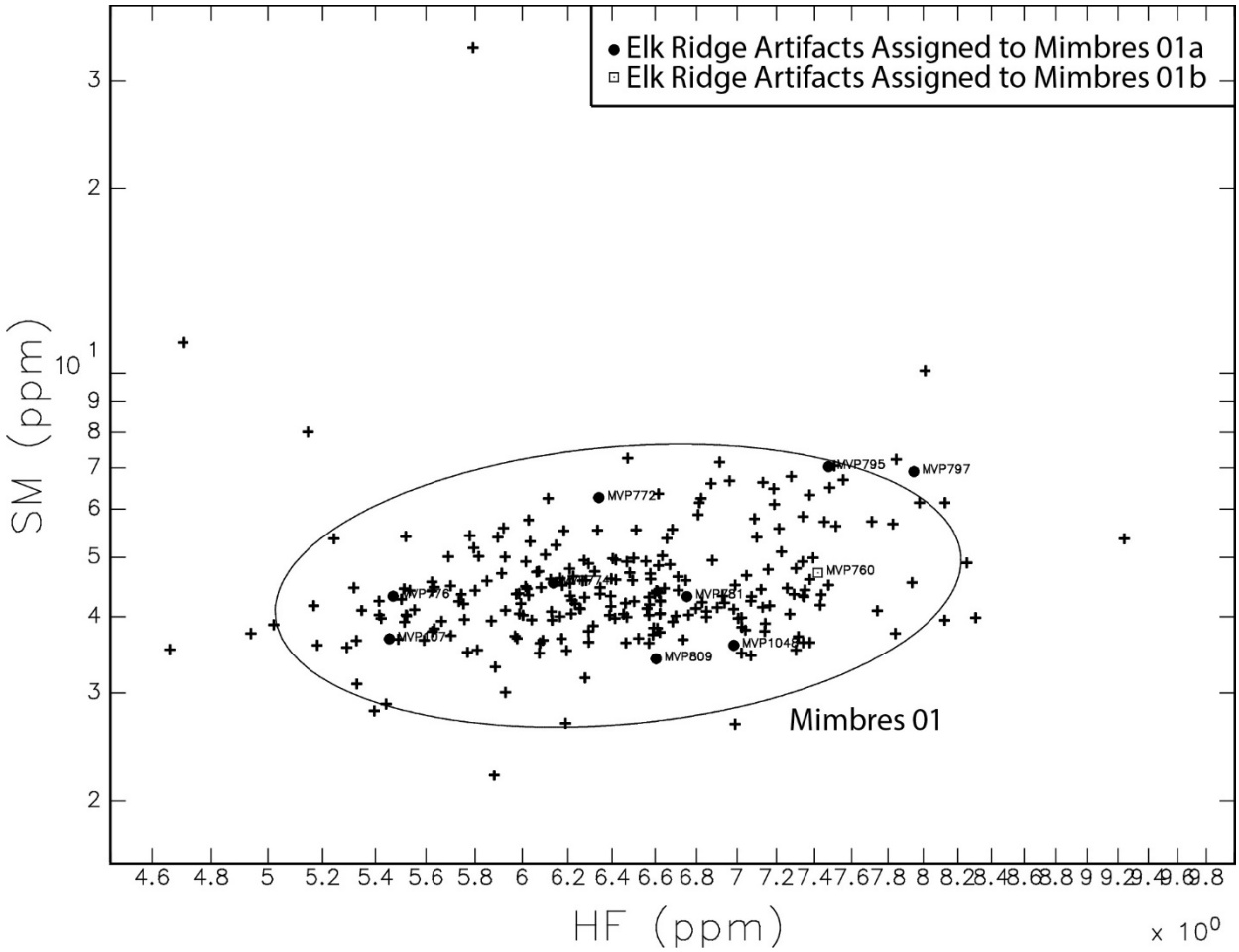


Figure 6.11 Source group Mimbres-01 bivariate concentration plot.

Mimbres-01A is considered to be a secondary source of decorated wares manufactured at the Elk Ridge Site as nine vessels sourced to this group. While probability of membership was low for some of these vessels, only FN 72 (MVP797) plotted outside of the 90% confidence interval (Figure 6.11). It should also be noted that the split of Mimbres-01 into -01A and -01B is

recent, so group membership of some of these associations may change as the groups continue to be refined. During excavation and laboratory analysis, the similarity in most of these vessels was noted and included thinner ceramic walls, a gray clay body, fine line work, and the inclusion of drop pendants (triangles attached to thin or thick lines). Prior to INAA testing, vessels with similar elements and motifs were noted by Shafer and Brewington (1995) at NAN Ranch and they were speculated to either be an indicator of a temporal style or a potter/potting family. The vessels from Elk Ridge included one Style III-Middle geometric bowl from the south side (CRO003), one Style III-Middle geometric bowl from old adult female Burial 124 in Room 112, and one Style III-Middle geometric bowl from adult Burial 134 in Room 117. The remaining six Mimbres-01A vessels clustered in Room 101 and the ramada. In Room 101, two of the bowls (FNs 72 and 183) were found on the floor in or near vessel caches. Both were Style III-Middle geometric bowls. The third was a flowerpot form Style III-Early miniature bowl (FN 182) found in the cache of miniature vessels in the northeast corner of the room. The three bowls from the ramada area (FNs 468, 469, and 540) were the most visibly similar from the Mimbres-01A group (Figure 6.12). All three of the bowls (whose styles were discussed earlier) were found together, smashed in a cache near a hearth/firepit.

The remaining 19 decorated vessels were sourced to groups outside of Elk Ridge. The most common outside sources with five vessels each were Mimbres-04A, thought to be representative of Cottonwood pueblo, located roughly one mile south of Elk Ridge, and Mimbres-09 representing the middle Sapillo Valley. The vessels from Mimbres-04A included two Style III-Middle ollas, one from the south wall cache of Room 117 (FN 1184) and one from the south side of the site (CRO026), a Style III-Middle geometric bowl from the south side

Figure 6.12 Mimbres-01A similar vessels from the ramada (clockwise from top FN 469, FN 468, FN 540).

(CRO002), a Style III-Early geometric from probable female adult Burial 102A in Room 101, and a Style III-Middle human figurative bowl from old adult female Burial 109 in Room 101. All of these vessels had high probabilities of membership and fell within the 90% confidence interval on the Mimbres-04 macro group bivariate plot measuring chromium and thorium (Figure 6.13). Those from the Mimbres-09 source included a Style III seed jar from the south side (CRO006), Style III-Early geometric bowls from the south side (CRO004) and from infant Burial 107A in Room 101, Style III-Middle turkey figurative bowl from newborn Burial 115A in Room 103, and Mimbres Polychrome bowl from probable female adult Burial 103 in Room 104. The Mimbres-

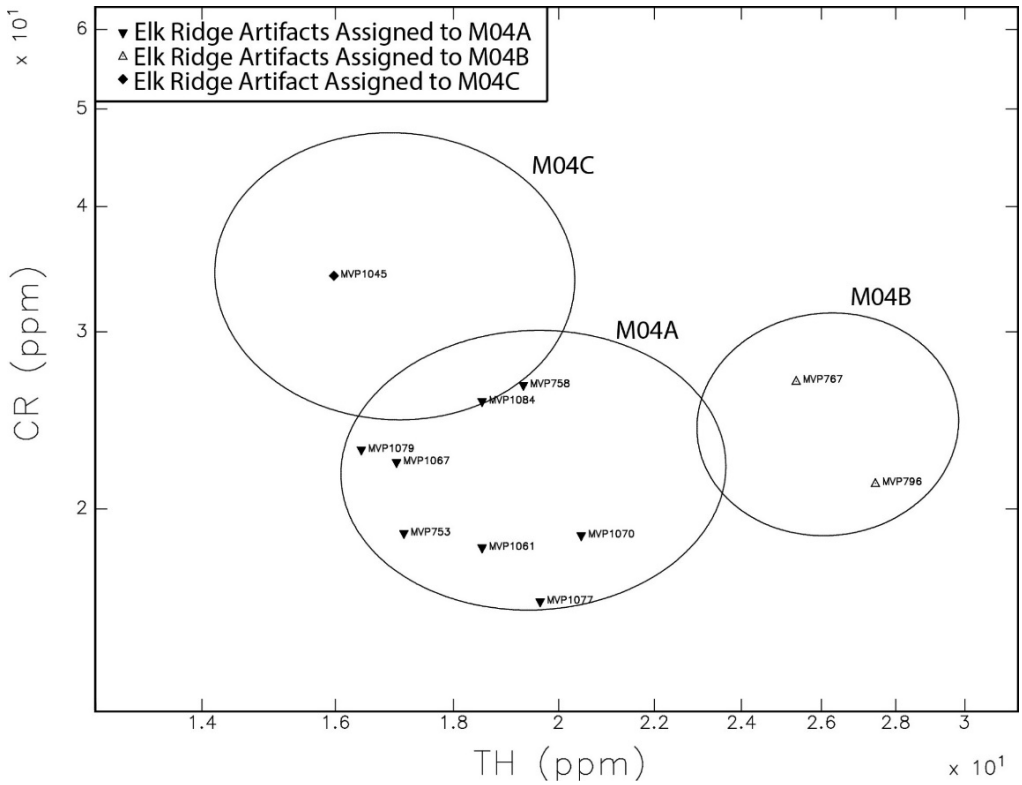


Figure 6.13 Macro group Mimbres-04 bivariate concentration plot which accounts for Mimbres- 04A (Cottonwood), -04B (Mattocks), and -04C (Galaz).

09 source group often does not get assigned membership probability through Mahalanobis Distance calculations. In this research all samples assigned to Mimbres-09 originally returned as unassigned or having less than 1% probability of belonging to group Mimbres-10. However, the bivariate concentration plot for Mimbres-09 shows all samples belonging at a 90% confidence interval (Figure 6.14).

The remaining nine vessels were represented by one or two vessels from each source. This included a Style III-Early geometric bowl from child Burial 113 in Room 105 and a Style III-Middle geometric bowl from the floor of Room 102 (FN 178) from Mimbres-04B, the Mattocks site (p=50.432, 95.406). Source Mimbres-49A1, the Upper Mimbres Valley, also yielded two vessels including a Style III-Early geometric bowl from Burial 100 found by the

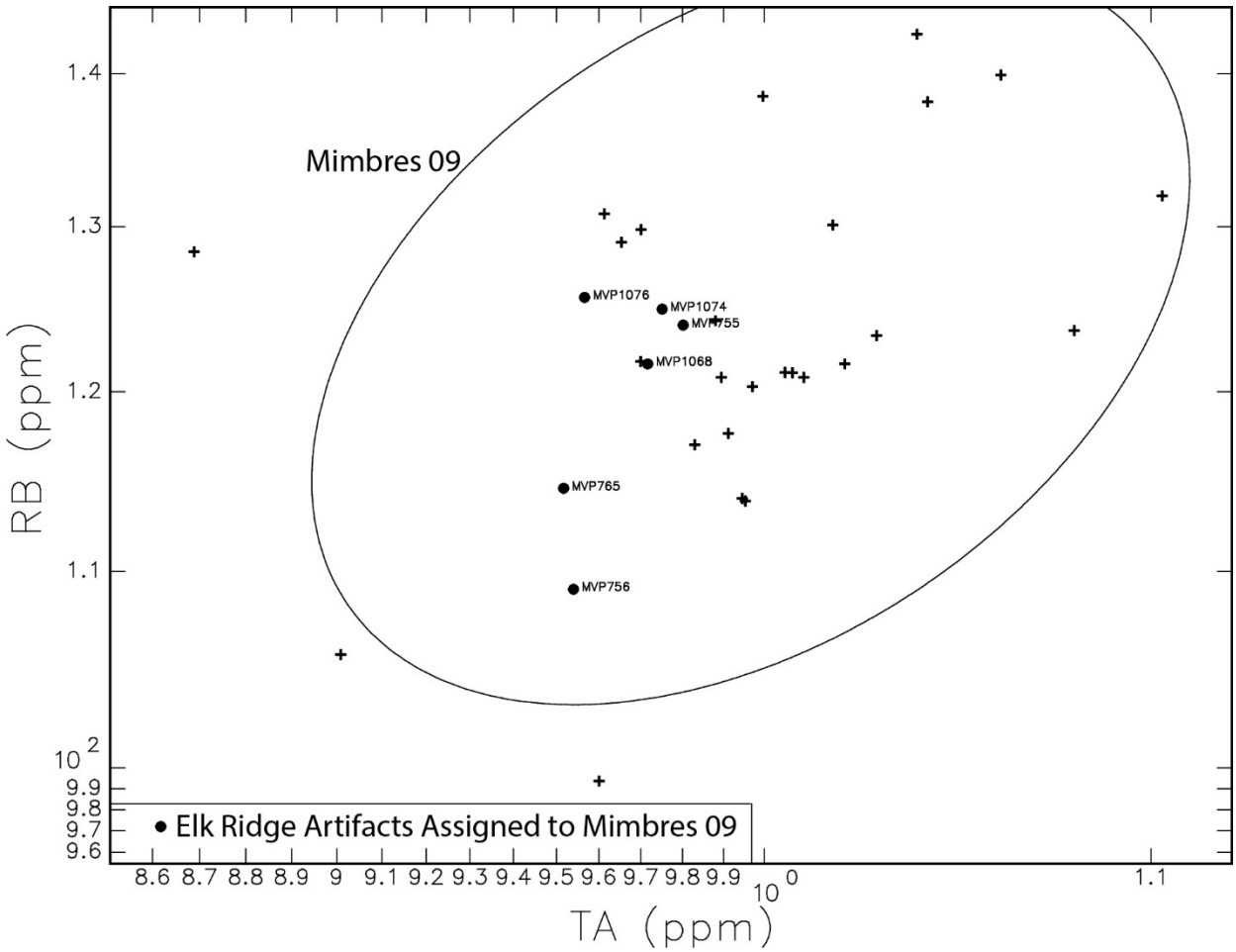


Figure 6.14 Source group Mimbres-09 bivariate concentration plot.

United States Forest Service in the arroyo on the west end of the roomblock, and a Style III-Middle bowl from the south side (CRO010). The Style III-Middle human figurative bowl recovered from the south side (CRO001) source to Mimbres-02A, the Swarts site (p=93.892). The Style III-Early geometric bowl from infant Burial 116 in Room 105 sourced to Mimbres-41, NAN Ranch, as seen through the bivariate concentration plot (Figure 6.15) over the Mahalanobis Distance probability (p=0.000). The Style III geometric bowl from old adult Burial 138B from Room 117 sourced to Mimbres-04C, the Galaz site. The Style III-Early animal figurative bowl from adult male Burial 119 in Room 113 sourced to Mimbres-01B, currently believed to

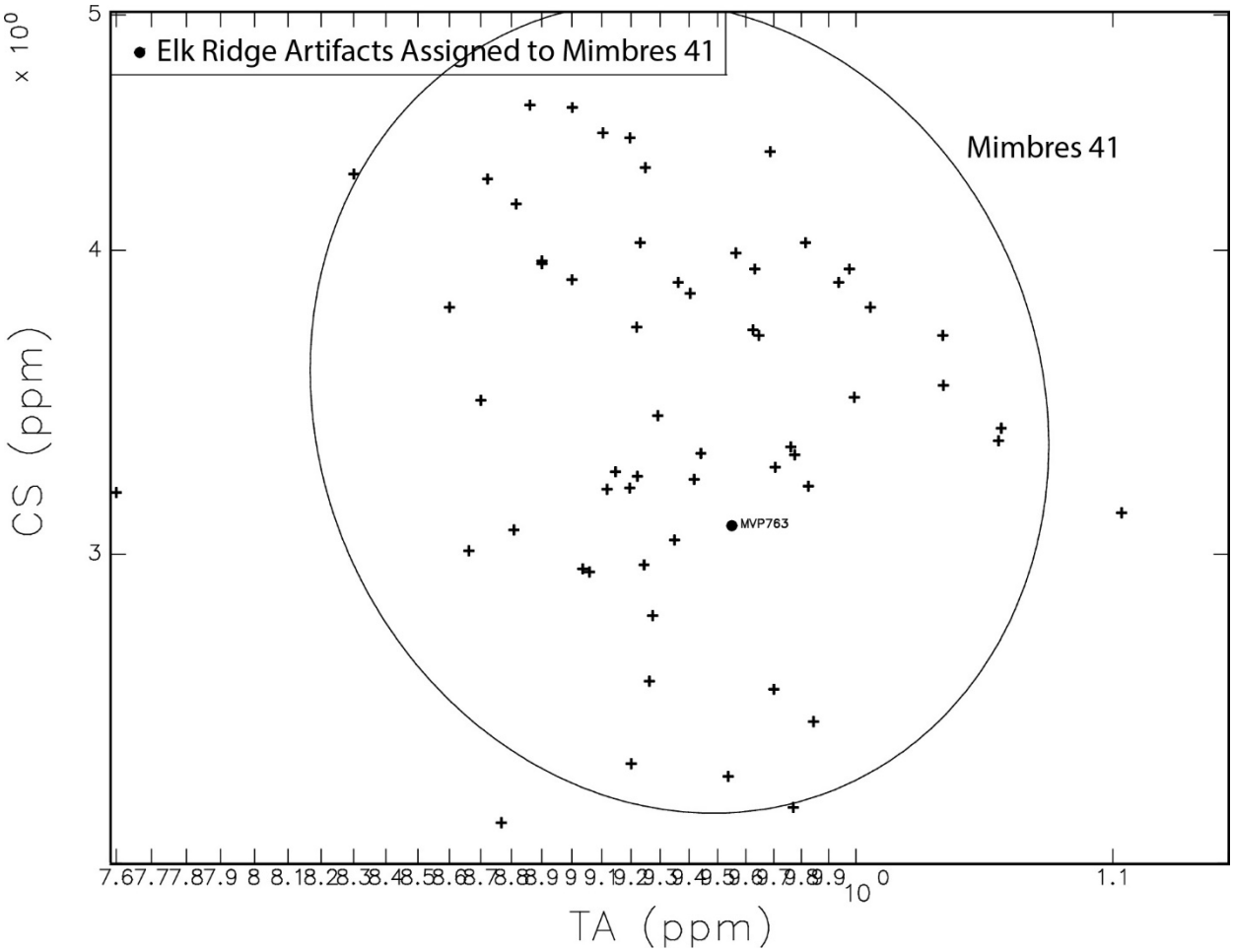


Figure 6.15 Source group Mimbres-41 bivariate concentration plot.

represent the Eby site in the southern Mimbres Valley. Although the Mahalanobis distance returned a result of no probability of membership, the bivariate plot showed this vessel within the 90% confidence interval (see Figure 6.11). However, this source is not as well defined as others and the associated to the Eby site is still tentative. The Style II/III geometric bowl from young adult male Burial 128A in Room 112 sourced to Mimbres-03, most likely the West Fork site in the Gila Forks area which was roughly 45 kilometers to the northwest of Elk Ridge (p=96.687).

Summary

During the stylistic analysis, it became clear that Elk Ridge yielded a high number of Reserve style vessels, particularly plain and corrugated wares, when compared with other large pueblos in the Mimbres valley. These wares also appeared to suggest a pattern of distribution of these vessels that confined them mostly to a few habitation rooms, which is further explored in the next chapter. Although decorated vessels showed some non-local influence, the majority fell within the Mimbres catalog of images. The introduction of INAA data indicated that Elk Ridge was both importing and producing non-local pottery, making it possibly the second site in the Mimbres Valley to be a production area of Reserve pottery, along with the Swarts site in the southern valley. The INAA data also showed that Elk Ridge was not importing large numbers of vessels from most of the other large Mimbres pueblos, getting more from nearby sites and sites to the north. This data also included the identification of new INAA groups that have no known source but appear to be similar to other Reserve and Cibola area sources. In the next chapter, I further investigate what can be discerned about interaction concerning the Elk Ridge site and other Mimbres pueblos and Elk Ridge and the Upland Mogollon using style, INAA, and additional datasets.

Chapter 7 – Interpreting Interaction

Stylistic and INAA data provide information that reflects a ceramic vessel's place as an item during its use in daily life. However, to use that information to ask broader questions, other data sets and context need to be considered. This chapter takes the data presented in Chapter 6 to interpret interaction within the larger Mimbres Valley and with non-local groups. Adding context allows for the discussion to broadly place Elk Ridge into a larger interaction network and show how we can use Mimbres archaeology to trace the movement of goods and people.

Mimbres Connectivity

This first section discusses how the people at Elk Ridge were interacting with other Mimbres sites in the Mimbres Valley and Sapillo Valley through the lens of ceramic trade. Table 7.1 shows the comparison of imported and exported ceramics between Elk Ridge and other Mimbres sites in the larger Mimbres and Sapillo areas. These import/and export numbers consider the vessels tested for this research and those acquired during earlier projects and compiled by Creel (2022).

Table 7.1 Number of ceramic vessels imported to and exported from Elk Ridge based on INAA data (based on Creel 2022).

Site	Import to Elk Ridge	Export from Elk Ridge
TJ Ruin	1	0
Lake Roberts Dam	9	53
Cottonwood	11	8
Mattocks	8	22
Galaz	1	21
Swarts	3	61
NAN Ranch	1	19
Eby	2	6
Old Town	0	30

Before examining these numbers, a few considerations need to be addressed. For the Middle Sapillo (source group Mimbres-09) a specific site for the source has yet to be determined; however, the Lake Roberts Dam site is, at present, the most logical assumption based on how many vessels that site has yielded that source to the Mimbres-09 group (Creel 2022). Because of this the Lake Roberts Dam sample numbers were used in the above table to represent this clay source so that all import/export comparisons were at the site level. The import/export data from the Old Town site, the southernmost large pueblo in the Mimbres Valley was also included. Although no vessels were imported to Elk Ridge from Old Town, the high export numbers from Elk Ridge were important to consider when interpreting the role of Elk Ridge throughout the Mimbres Valley.

Most large Mimbres Valley Classic period pueblos in the central and southern valley have undergone significant INAA analyses. At all of these sites (Mattocks, Galaz, Swarts, NAN Ranch, Eby, and Old Town) Elk Ridge has exported significantly more than it has imported, with the largest difference between Swarts and Elk Ridge with an import/export ration of 3:61. The big question here is does this support that Elk Ridge had limited interaction with the larger pueblos in the middle and south valley? Data at this time cannot rule out that this does indicate minimal interaction with the southern half of the Mimbres Valley. However, the relationship between Elk Ridge and the sites from the southern Mimbres Valley is skewed due to factors such as the environment and perishable artifacts that would provide a more complete and more adequate picture. The agricultural growing season in the Upper Valley, including Elk Ridge, is shorter than in the southern valley due to unpredictable early and late frosts. Researchers know that the southern valley was drier and hotter and more conducive to growing both crops and cotton. These conditions also made it so the southern valley could not waste limited timber

resources on making their own pottery. Considering the environmental differences between the regions of the valley and what each had to offer, the skewed pottery relationship makes sense. The people of Elk Ridge utilized their resources to produce an abundance of pottery that could be sent/given to the southern sites in exchange for food and fibers, particularly cotton. The limited survivability of such perishables makes interpreting this system of interaction more difficult; however, the combination of environmental data and surviving artifacts offers a glimpse into the interaction network.

The interaction with the middle and southern valley can also be discussed through the context of the vessels found that sourced to the other large Classic period pueblos. Of the vessels recovered during the excavation one corrugated and five decorated vessels sourced to these sites. Five of the six were recovered from phase 4/cobble-masonry rooms, rooms that were inhabited during the Classic period (AD 1000-1150). During this period, the Mimbres population was at its highest and ceramic production was the most prolific (Shafer 2003; Shafer and Brewington 1995). Although five imported vessels from the central and southern valley is not a large amount, it was still an increase from phase 3/adobe pueblo expansion which only had one vessel from the Eby site showing an interaction network that was growing. If there was a boom in the population, the residents of Elk Ridge may have increased the number of ceramic exports to increase food and textile supply.

The picture is still too unclear to understand the interaction between Elk Ridge and most of the northern end of the Mimbres Valley (not including the Cottonwood site discussed below). Located roughly 6.5 km to the south of Elk Ridge in the Mimbres Valley is the site cluster of Mitchell, Montezuma, and Beauregard. Creel (2022) has noted that 20 of the 62 samples from the sites have sourced to Elk Ridge, but there is no data available on exports. The 62 samples

also represent the three sites combined, treating them as a single entity when they were distinct locations both spatially and temporally. Although the sites may be key in northern Mimbres Valley and wider valley relationships, the lack of INAA and excavation data for the three sites make further speculation difficult at this time. Further, the Mimbres-49A1 and 49B sources have yet to be assigned to a specific site, although are both believed to be from the northern end of the Mimbres Valley.

Locally, the import/export relationship with the Cottonwood site is telling of the close relationship between the two sites. Ongoing work on the larger Elk Ridge community (Roth et al 2022) is focused on how the short distance (roughly 1.6 km) between these two large pueblos influenced how they interacted with each other daily. The import/export ratio was the most equal when considering the travel of pottery in both directions, and stylistically there were two jars, one sourced to each site, which appeared to be made by the same individual. Figure 7.1 shows two jars both of which were recovered from the central and south vessel caches on the floor of Room 117. FN 1185 sourced to Mimbres-49A2/Elk Ridge, while FN 1184 sourced to Mimbres-04A/Cottonwood. The conclusion that these were made by the same individual was based on a few characteristics including the manner of how the slip was applied, specifically to the base of the vessel, and the tool marks/finishing technique of both interiors. Therefore, it was surprising when the vessels returned with different clay source signatures. However, when coupled with the geographic location of the two sites and the distance between them, this may not be that unusual. Both sites would have faced similar environmental concerns with agriculture and familial/clan relationships were most likely strong. Considering these variables, the inhabitants of both sites most likely shared various resources.


Figure 7.1 Similar vessels FN 1185 (left) and FN 1184 that sourced to different groups.

The data on the relationship between Elk Ridge and the Sapillo Valley is still minimal. This area has not been the subject of intense academic research and large-scale excavations, such as those in the southern Mimbres Valley. There is a trade relationship between Elk Ridge and the Middle Sapillo; however, more INAA sample data is needed to better understand the Middle Sapillo source locales as they relate to individual sites. Elk Ridge was clearly supplying Middle Sapillo sites with pottery, but what was the trade-off? Some ceramics are coming into Elk Ridge, but what other resources could the Middle Sapillo have supplied to Elk Ridge? The Middle Sapillo region would have faced similar environmental challenges when it came to agriculture, so extra crop yields were not likely the main trade items. Other food items, such as pinon or game, could have been the primary resources traded between these areas.

Overall, Elk Ridge played a significant role in the production and supply of ceramics for the entire Mimbres Valley and beyond. Distance between sites does not seem to have played a major role in the number of vessels received from Elk Ridge; however, there are still significant amounts of work and samples to be done on other Mimbres pueblos before the full picture is

clear. For example, NAN Ranch is one of the most extensively excavated sites (Shafer 2003), most of the vessels have never been submitted for INAA. It appears that a community level link played a role in interaction, as the import/export between Elk Ridge and the neighboring Cottonwood Pueblo indicates. Still missing from the overall picture is the conclusive import for Elk Ridge- raw cotton, textiles, food, or a combination of the above- and which sites provided those items.

Upland Interaction

As discussed in Chapter 2, there are noticeable differences between the Mimbres and Upland Mogollon groups. While the Mimbres generated a large catalog of geometric and figurative images on pottery, the Upland consistently produced smudged wares and limited geometric patterns. Upland pueblo architecture became more formalized with slabs and shaped rocks in even courses, while Mimbres architecture remained unshaped river boulders and cobbles. Where Mimbres favored decorated bowls inverted over the skull in burials, the Upland primarily used smudged vessels and multiple small jars. While architectural technology under plaster and burial practices are generally unseen compared to vessels in household and extramural contexts, the methods/practices utilized are often ingrained in cultural habits and thus inform on the identity of the individuals involved. To understand the type and level of interaction between local and non-local individuals, the vessels were considered within their larger context. Additional information from ceramic sherd analysis, burial/osteological data, and architecture were used in conjunction with the vessels' style and INAA results to understand whether Elk Ridge was witnessing the movement of ideas, goods, or people and how that changed as the site grew. Thus, this section is presented following the building sequence of the roomblock excavated by UNLV. Since this portion of the research was so reliant on contextual clues, only

the vessels recovered during the UNLV excavation were utilized in this portion of the research. For sherd counts, only plainware and corrugated sherds were considered, as redware is very rare and too similar amongst the groups to discern differences. Decorated sherds were also not considered as decoration was usually not complete enough to truly assess style.

Phase one of the roomblock is represented by Room 116, the transitional pithouse. Architecture was standard for Mimbres pithouse structures; however, at this time Upland architecture was not much different. There were no burials or vessels recovered from this room. Three of the 16 corrugated sherds (18.8%) were classified as Reserve style while four of the 77 plainware sherds (5.2%) were Reserve Smudged. Due to the fact that only Reserve style sherds were present at this phase with no other supporting evidence, only the movement of non-local goods into Elk Ridge can be assumed. However, it is clear a relationship with an Upland individual or community was established by the end of this phase. This could have set the stage for increased interaction in later phases.

Phase two consisted of three adobe pueblo habitation rooms and one storage room (Figure 7.2). These rooms did not appear to share any walls; however, precontact remodeling may have destroyed other rooms from this period. Early adobe architecture during the transition to pueblos is similar between the Mimbres and Upland, so no architectural distinctions were present. Sherd data (Table 7.2) showed that interaction established during the previous phase for at least the movement of goods continued. Although low overall numbers of sherds from each room may be skewing the data, the Upland style corrugated sherd percentage increased in three out of the four rooms, while plainware percentages remained low.

Of the six vessels that come from Phase 2, three (all from Room 112) are of interest due to their design or context. The decorated bowl from child Burial 121 (Figure 7.3) showed a

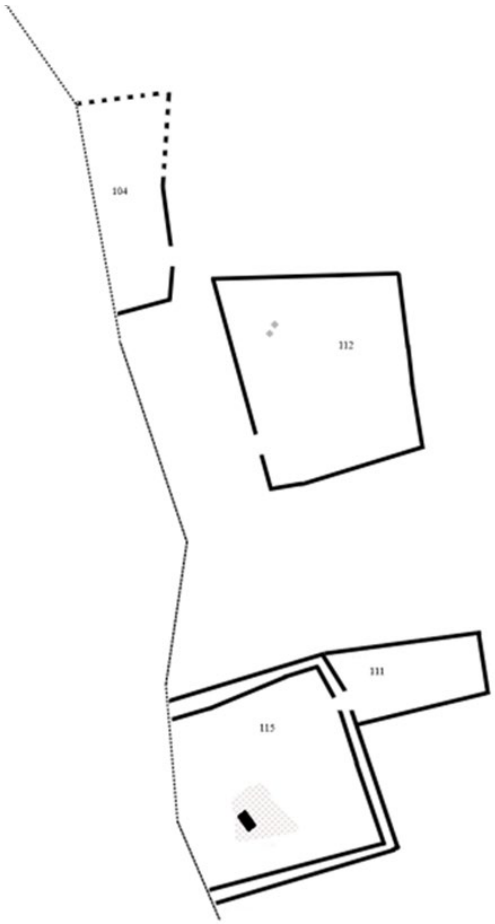


Figure 7.2 Phase two architecture of the roomblock.

Table 7.2 Phase two ceramic sherd percentages of Upland styles.

	Plainware	Corrugated
Room 104	1/17; 5.9%	1/4; 25%
Room 111	0/8; 0%	5/12; 41.7%
Room 112	1/27; 3.7%	6/14; 42.9%
Room 115	12/357; 3.4%	4/115; 3.5%

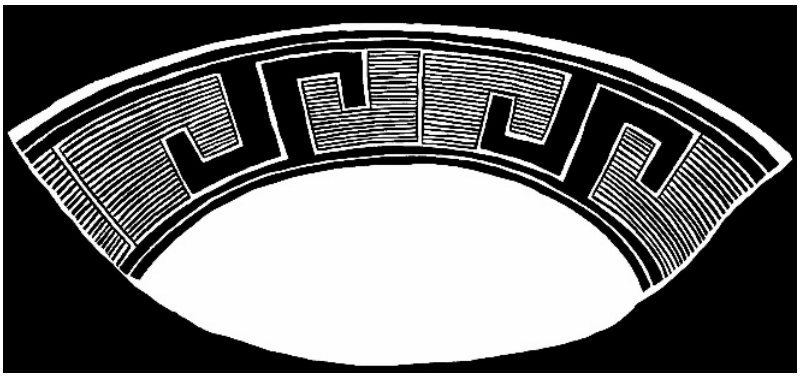


Figure 7.3 Burial 121 vessel showing opposed hatched and solid partial scrolls.

mixed design that included Reserve opposed solid and hatched elements in an overall Mimbres style. This vessel sourced to Elk Ridge. The other two vessels were the decorated and redwares bowls from adult male Burial 128A. Though neither stood out as Reserve /Upland styles, this was the first burial to yield more than one vessel and the first to yield a small vessel from the upper torso. Both characteristics are in line with Upland burial practices, although it is difficult to conclusively say this individual was originally from the Upland area. The vessels sourced to the Gila Forks area (decorated) and general upper Mimbres Valley (redware), so neither were non-local goods. From an osteological standpoint, the male individual from Burial 128A had a robust mandible that stood out compared to the other individuals recovered at Elk Ridge. Although this also does not necessarily indicate a non-local person, a similar male from the room directly above also had distinct facial features with additional lines of evidence he was non-local. Overall, this phase showed the continued, and possibly increased, movement of goods between the Mimbres and Upland.

Phase three sees the continued use of Rooms 104, 111, and 115. Room 112 was remodeled into Room 113, with early cobble architecture and Room 108, a storage area, was built (Figure 7.4). From an architectural standpoint, these rooms fall in line with typical Mimbres

room construction. However, the Upland were also still in the transition to more formalized architecture at this time. Only three vessels were recovered from this phase, all from Room 113. The decorative bowl from Burial 119 with a figurative image of a possible bear sourced to the lower Mimbres Valley. FN 546 was a large Reserve Indented Smudged bowl from the subfloor with an unassigned INAA source group that is like those in the Cibola region indicating it was brought into the site or traded from a non-local area. Burial 118 yielded a Reserved Smudged bowl that sourced to Elk Ridge and was thus the first non-local style vessel made with local clay. When looking at the sherd data for this phase (Table 7.3), Upland corrugated styles are still high with the percentage increasing in Room 113. Reserve plainware percentages remained low; however, there was also an increase in Room 113.

The adult male from Burial 118 stood out from the other burials in Room 113 and the larger roomblock due to significant vertical occipital flattening on the back of the skull and a prognathic face. Although these traits are not necessarily indicative of an Upland individual, the stark contrast to the other individuals in the burial population and the presence of a Reserve vessel as a burial good suggest that this was a non-local individual who married into the core family of the roomblock. This individual could have been related to the male in Burial 128A and may have arrived at the site at the same time. It is difficult to assume the difference between time of death for the individuals as they are associated with different rooms; however, those rooms are superimposed and have been interpreted as representing an extended family group.

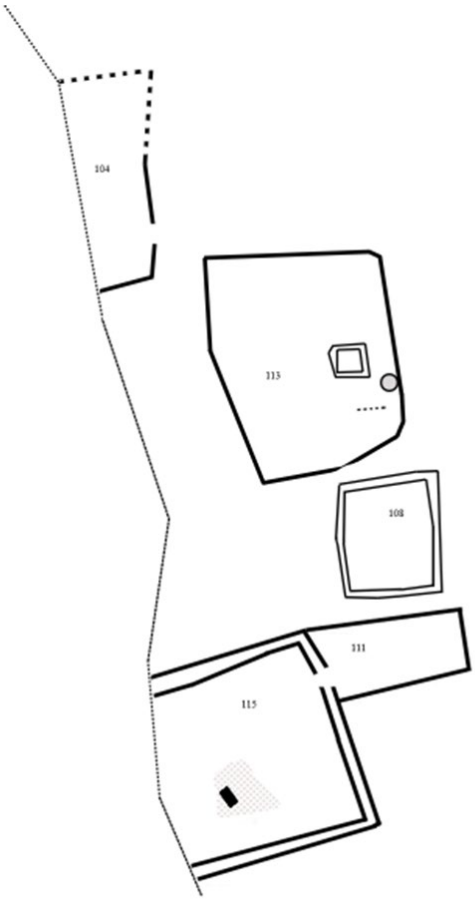


Figure 7.4 Phase three architecture of the roomblock.

Table 7.3 Phase three ceramic sherd percentages of Upland Styles.

	Plainware	**Corrugated**
Room 108	2/52; 3.8%	9/25; 36%
Room 113	5/46; 10.9%	23/40; 57.5%

Overall, phase three seems to support the movement of goods and people. The male individual from Burial 118 is indicative of a transmigrant and the possible result of an interaction network between two communities that had been established in phase one. The vessel FN 546 could have been brought by the individual when he moved into the village or later through continued trade. However, the Reserve Smudged vessel from Burial 118 was made at Elk Ridge, which suggests the presence of an Upland potter also at Elk Ridge. The increase in plainware and corrugated sherds in Room 113 also point to an increased relationship between the Upland and Mimbres. This increase could be due to more non-local items being traded or brought into the site or an Upland potter now producing the non-local styles at Elk Ridge.

Phase four represents the final occupation of the roomblock, which saw immense growth and consistent remodeling of a few rooms (Figure 7.5). A total of 21 vessels from phase four were classified as a Reserve decorated or corrugated style (n= 17), an attempt at smudging (n= 3), or included a Reserve decorated element in a larger Mimbres design (n= 11). Of the 21 vessels 18 were submitted for INAA and 15 sourced to Elk Ridge, suggesting at least one Upland potter was living at the Elk Ridge site at this time. These vessels were primarily concentrated in two rooms, with eight recovered in Room 101 and eight from Room 117. Two were recovered from both Rooms 103 and 105, and one typed as a Mimbres attempt at smudging was found in the ramada. In line with the previous phases, the sherd data showed Upland corrugated styles continued to be present at high percentages while plainware was still low in comparison (Table 7.5).

Architecture from this phase indicates that Rooms 101, 117, and 118/120/121 were partially built by Upland individuals. Particularly the north wall of these rooms showed shaped rocks in visible courses which was typical of Upland pueblo exterior walls (Figure 7.6). This

method was also visible in the east wall of Room 118/120/121. Interior walls for these rooms were cobble adobe which was common for both the Mimbres and Upland at this time. In conjunction with the increased number of Upland style ceramics in these rooms, it suggests that the increased population during this phase may have in part been an extended family group from the Reserve area moving into Elk Ridge.

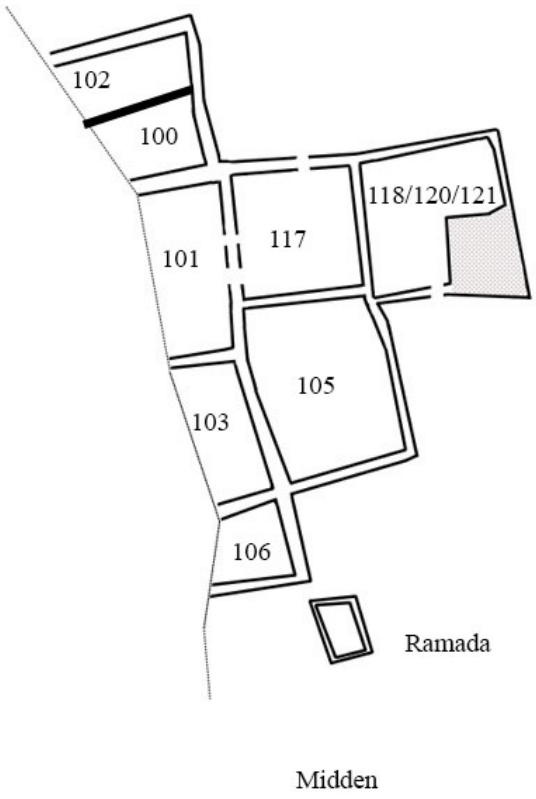


Figure 7.5 Phase four architecture of the roomblock.

Table 7.4 Phase four ceramic sherd percentages of Upland styles.

	Plainware	Corrugated
Room 100	3/70; 4.3%	15/27; 55.6%
Room 101	18/176; 10.2%	23/67; 34.3%
Room 102	4/133; 3%	37/84; 44%
Room 103	0/71; 0%	27/41; 65.9%
Room 105	11/227; 4.8%	107/209; 51.2%
Room 106	6/72; 8.3%	17/42; 40.5%
Ramada	6/146; 4.1%	18/46; 39.1%
Room 117	19/175; 10.9%	53/114; 46.5%
Room 118	11/239; 4.6%	44/129; 34.1
Room 120	2/8; 25%	1/5; 20%
Room 121	1/7; 14.3%	2/3; 66.7%
Midden	25/1405; 1.8%	186/618; 30.1%

From an osteological perspective, no burials from this sequence showed distinct morphological features like those observed in Burial 118. However, when considering burial practices for this phase, there were seven individuals buried with ceramic vessels that either exhibited Upland style designs or reflected the tendency of the Upland to include a plain or smudged smaller vessel. Four of these individuals were in Room 117 with the other three in Rooms 101, 103, and 105. Five of the seven were infants or children under the age of four years old. Most of these burials being children may reflect on the identity of the household inhabitants and not just the children themselves. There is evidence of infants being used to mark important households at the Mimbres pithouse village site of Harris (Roth & Baustian 2015) as well as wealthy infant burials at NAN Ranch (Shafer 2003). Given that the majority of these burials were in a later room, the importance of this may not necessarily be on the importance of the

Figure 7.6 North wall of Room 101 (top), north wall of Rooms 117 and 118, and east wall of Room 118 that show Upland style shaped stones in courses.

family at the site, but on their identity in relationship to the rest of the inhabitants. Although Upland traits in architecture, ceramics, and burial practices were present, they existed alongside Mimbres material culture. Smudged ceramics would have been used in daily life and visible to the larger community, thus serving as the core reminder of the identity of specific inhabitants. Therefore, burying infants with a smudged bowl may not have been to signify wealth or importance, but who lived in that room.

Overall, this phase has strong evidence of a non-local population that has moved into the roomblock reflecting the transnational relationship of the few non-local individuals that were already at the site during the previous phases. Based on the number of Reserve style vessels made with Elk Ridge clay, it can be assumed that at least one of these individuals was a potter. Inherent *habitus* was seen in the building of walls that follow the method of Upland pueblos and the internment of numerous individuals with plain or corrugated vessels instead of the more typical decorated vessels found in the Mimbres graves. The few Upland vessels that sourced to the Cibola region could have been brought with the larger group of non-locals who moved into the site or represent a continued relationship with the parent population.

Summary

While ceramics are the most visible data set for Mimbres archaeology and provide a wealth of information regarding daily life, the importance of acknowledging the context of these artifacts cannot be understated. Within Mimbres Valley trade, Elk Ridge was clearly a ceramic production center that exported much more than what was imported into the site. However, Mimbres archaeology lacks the context of possible perishable material to understand what northern valley sites might have received in trade. This can result in interpretation that the trade was one sided and Elk Ridge did not benefit when the network was most likely equitable. For

local interaction, deciphering a clearer picture relies on extrapolating environmental and perishable data for which limited physical remains are present.

For non-local interaction with the Upland Mogollon, by breaking down Elk Ridge into phases, the influx of non-local ceramics in conjunction with changes in burial practices and architecture shows how this roomblock saw increased movement of non-local people and their goods over time, possibly as the result of a long-standing transnational relationship. Without context and INAA data, one would have assumed the non-local vessels were being moved through a trade network that saw more items moving over time, perhaps to support the demands of a larger population. Including other data sets showed that individuals were also moving and retaining various aspects of their culture. The combined data also showed that this relationship between Elk Ridge and the Upland was built over time. As the interaction increased and people started to move into the site, the organization and material culture of Elk Ridge changed as the non-local individuals integrated into daily life while maintaining key attributes that informed on their identity.

Chapter 8 – Discussion and Future Research

Determining levels of interaction in the precontact Southwest can be a daunting task especially when the culture in question had no governing body that dictated how sites, families, or individuals interacted with local and non-local populations. For these cultures, it is important to focus on the site level before investigating larger patterns that can be used to describe the culture. Focusing on just a single Mimbres pueblo, the Elk Ridge site, this research had two objectives:

1) How did Elk Ridge interact with the larger Mimbres Valley, and

2) What was the level of interaction between Elk Ridge and non-local populations, particularly the Upland Mogollon?

Using ceramic analyses as the core method for this research, interaction networks for both areas could be established. The context of the vessels was used to further extrapolate levels of interaction, particularly when discussing non-local populations.

The Mimbres Interaction Network

Elk Ridge was a major producer of ceramics for the Mimbres Valley and neighboring Sapillo Drainage. The primary clay source attributed to the site, Mimbres 49A2, was used to produce the full range of Mimbres wares and styles during the Pithouse and Classic periods (Creel 2022). On the surface, it appeared that Elk Ridge was not receiving much in exchange as import numbers were far less. However, the geographic location of Elk Ridge put it at risk for unpredictable early and late frosts making agriculture risky and restricted the site from being able to grow cotton. The sites in the southern portion of the Mimbres Valley were more suitable for growing crops and most likely supplied Elk Ridge with these resources in return for pottery as

the southernmost sites stopped or limited pottery production by the Classic period (Creel 2022). Distance from Elk Ridge did not appear to influence the amount of pottery exported from/imported to the site, with Cottonwood being the only exception. The short distance between the two sites indicates they may have been a part of a local community that interacted daily including sharing of clay resources. Although more perishable data is needed, the archaeological data still suggests the Mimbres Valley interaction network was equitable. Sites were able to create/provide surpluses in specific resources based on their local environment that could be traded for other necessities.

The Upland Interaction Network

Although the Mimbres and Upland were part of the larger Mogollon, their material culture during the Classic period was different enough to leave visible differences in the archaeological record. Differences in pottery, architecture, and burial practices can be used to discuss the level of interaction between the two groups. In the case of Elk Ridge, these Upland traits were dispersed amongst a Mimbres roomblock that required context clues to understand the full picture. Through this method not only was evidence of interaction present, but the growth of the network over time was also visible in various material culture datasets. The earliest structure excavated during the UNLV project, the transitional pithouse Room 116, yielded seven Reserve ceramics out of 93 (7.5%) recovered in the room. As the roomblock grew into early adobe above ground rooms, these percentages increased and Burial 128A in Room 112 was possibly the first individual to show that a non-local had moved into the site. The next phase of the site saw a small expansion of the adobe roomblock; however, the presence of a few non-local individuals became clear. The osteological data and Reserve bowl as a burial good with Burial 118 in Room 113 indicated this was an Upland individual. In addition, that Reserve bowl was made at the site

indicating an Upland potter had also moved into Elk Ridge and had continued with their tradition of making smudged pottery. The final phase of the site saw a large expansion of the roomblock and the shift to masonry rooms. The excavated materials showed the continued increase of Upland pottery and burial practices and the introduction of Upland architectural features. Rooms 101 and 117 may have been the main rooms in which the Upland family lived as these rooms yielded the most Reserve style pottery, the Upland pattern of building walls with shaped rocks in even courses, and Upland burial practices. What began as a trade network turned into a non-local population moving into the site. The movement of an individual or family into a new area would not have been a quick process but would have required sustained communication between the two areas. This would have begun with individuals in both areas that maintained contact via trade and later becoming a transmigrant individual or small group moving into the site that stayed in contact with their parent population.

This research showed that it is important to think beyond the explanation of trade or movement of goods between two groups. As the items were crossing a landscape, individuals were also in communication with each other, building long-term relationships. This allowed for an individual or individuals to relocate. These non-locals continued a relationship with their parent community which continued to build the connection between the communities and later allowed for a larger family group to move into the site. The non-local identity of the individuals was seen though the *stuff* that filled their households. These served as key attributes from their culture that signaled who they were. It is important to note that had this research gone the usual route of focusing on painted ceramics, the presence of these non-local individuals may have been missed. Giving all the ceramics wares equal attention allowed for the patterns to emerge and

placing them in context bolstered the visibility of the interaction network and how it changed over time.

Future Research

Various avenues of future research can further archaeological knowledge regarding internation networks within the Mimbres and between the branches of the Mogollon. Researchers need to keep submitting samples from all ceramic wares for INAA testing. As more samples from the Mimbres, Sapillo Drainage, Reserve, and Cibola areas are submitted, the clay source signatures will become more defined. Sources that are currently assigned to larger areas can be refined to the site level. As this happens, it will be important for interaction studies to reevaluate networks as site-to-site connections will become clearer.

Interaction at the community level can be further explored using additional technological style analysis and investigation of other nearby sites. For the vessels recovered from Elk Ridge and Cottonwood that sourced to the other site, detailed technological analysis on the ceramics (coil width, width of painted lines, etc.) can be used to parse out how often clay resources were shared between the sites. Where the similar vessels from Room 117 an outlier in which the same potter used clay from different sources, or was this a common occurrence? Were the sites cooperating on other resources such as game and stone tool production? Community research should also consider smaller sites, including the site of Bradsby which is roughly 1 kilometer to the southeast of Elk Ridge. The Bradsby site had one large structure considered to be a Classic period great kiva and a few rooms. A kiva not incorporated into a roomblock during the Classic period and away from a main site is unusual. Did this site serve as a ritual location for the broader community rather than a specific site?

Although not used in this research, the data recovered during the Human Systems Research (HSR) excavation of the southern portion of Elk Ridge can further expand what we know about an Upland population at the site. Although the original landowner caused significant damage to the roomblocks, the HSR work salvaged many rooms that could undergo the same breakdown of building phases to trace how interaction changed over time. Additional sampling of Reserve style sherds from each room could help determine when an Upland potter moved into the site.

Finally, the Mimbres-Upland interaction model seen at Elk Ridge needs to be applied to other Mimbres sites to see if this pattern can be seen throughout the Mimbres Valley. The presence of Reserve Smudged bowls at other large Mimbres pueblos has been minimal. For example, six smudged bowls were found at the Mattocks site and two were found at the NAN Ranch (Gilman and LeBlanc 2017; Shafer 2003). Although this number is significantly lower than the amount recovered at Elk Ridge, it does not mean that Upland individuals were not present at these sites. Where Elk Ridge appeared to have had an Upland extended family group, these sites may have only had a few individuals. The context of Reserve vessels should be reanalyzed, and they should be submitted for INAA if samples have not been previously acquired. In the Mimbres Valley, the Swarts and Mattocks sites are of particular interest as the Swarts site has been identified as a producer of smudged vessels and the Mattocks site had an unusually high number of Reserve sherds in the 100s roomblock (Creel 2022; Gilman and LeBlanc 2017). Gilman and LeBlanc (2017) suggested the higher number of Reserve sherds in that roomblock indicates those inhabitants had a relationship with Upland populations that was not as intense across the entire site.

Conclusions

Interaction of past groups can be tenuous to discern, especially for middle-range societies in which each site was most likely forming their own networks with local and non-local populations. For local Mimbres interaction, it is necessary to place the sites in their environmental context to extrapolate what commodities each site could provide to other communities. To best understand non-local networks, it is important to identify what distinguishes these groups from each other in terms of material culture and how to interpret these differences when they appear in non-local areas. Although the Mimbres and Upland were both branches of the same overarching Mogollon culture, their differences during the Classic period were enough to determine the presence of non-local goods and/or individuals. By focusing on these differences and the contexts in which they were found, it was possible to discern between the movement of goods versus people and examine how the interaction grew through time.

Appendix A: Table of Vessels Used

Table A.1 Vessels used in the research.

#	Ware	Style	Building Phase	Feature	INAA #	Source Group	Current Repository	Plate
Burial 100	Decorated	III-Early	-	Arroyo	MVP752	49A1	Under Repatriation	1A
Burial 102A	Decorated	III-Early	4	Room 101	MVP753	04A	Under Repatriation	1B
Burial 103	Decorated	Mimbres Polychrome	2	Room 104	MVP756	09	Under Repatriation	1C
Burial 105	Decorated	III-General	4	Room 101	MVP807	49A2	Under Repatriation	1D
Burial 107A	Decorated	III-Early	4	Room 101	MVP755	09	Under Repatriation	1E
Burial 107A	Decorated	III-Middle	4	Room 101	MVP754	49A2	Under Repatriation	1F
Burial 108A	Decorated	Reserve	4	Room 101	MVP757	49A2	Under Repatriation	2A
Burial 109	Decorated	III-Middle	4	Room 101	MVP758	04A	Under Repatriation	2B
Burial 110	Plainware	Mimbres	4	Room 101	MVP759	49A2	Under Repatriation	2C
Burial 112	Decorated	III-Early	4	Room 103	MVP768	49A2	Under Repatriation	2D
Burial 113	Decorated	III-Early	4	Room 105	MVP767	04B	Under Repatriation	2E
Burial 114	Corrugated	Alma Punched Smudged	4	Room 103	MVP769	49A2	Under Repatriation	2F
Burial 115A	Decorated	III-Middle/Late	4	Room 103	MVP765	09	Under Repatriation	3A
Burial 115A	Corrugated	Three Circle	4	Room 103	MVP766	49A2	Under Repatriation	3B
Burial 115B	Plainware	Mimbres	4	Room 103	MVP770	49A2	Under Repatriation	3C
Burial 115C	Decorated	III-Middle	4	Room 103	MVP764	49A2	Under Repatriation	3D
Burial 116	Decorated	III-Early	4	Room 105	MVP763	41	Under Repatriation	3E
Burial 117	Corrugated	Reserve Smudged	4	Room 105	MVP762	49A2	Under Repatriation	3F
Burial 118	Plainware	Reserve	3	Room 113	MVP761	49A2	Under Repatriation	4A
Burial 119	Decorated	III-Early	3	Room 113	MVP760	01B	Under Repatriation	4B
Burial 121	Decorated	III-Middle	2	Room 112	MVP808	49A2	Under Repatriation	4C
Burial 124	Decorated	III-Middle	2	Room 112	MVP809	01A	Under Repatriation	4D
Burial 128A	Decorated	II/III; III-Early	2	Room 112	MVP811	03	Under Repatriation	4E
Burial 128A	Redware	San Francisco	2	Room 112	MVP810	49A1	Under Repatriation	4F
Burial 130	Plainware	Mimbres	4	Room 117	MVP1043	49A2	Under Repatriation	5A
Burial 132	Plainware	Reserve	4	Room 117	MVP1044	49A2	Under Repatriation	5B

#	Ware	Style	Building Phase	Feature	INAA #	Source Group	Current Repository	Plate
Burial 133	Plainware	Reserve	4	Room 117	MVP1049	49A2	Under Repatriation	5C
Burial 134	Decorated	III-Middle	4	Room 117	MVP1048	01A	Under Repatriation	5D
Burial 135	Decorated	Gallup	4	Room 117	MVP1046	49A2	Under Repatriation	5E
Burial 138B	Decorated	III-Middle	4	Room 117	MVP1045	04C	Under Repatriation	5F
Burial 139	Decorated	III-Middle	4	Room 117	MVP1047	49A2	Under Repatriation	6A
FN 34	Corrugated	Reserve Incised	4	Room 101	MVP771	49A2	WNMU Museum	6B
FN 72	Decorated	III-Middle	4	Room 101	MVP797	01A	WNMU Museum	6C
FN 100	Decorated	III-Early	4	Room 102	MVP793	49A2	WNMU Museum	6D
FN 155	Decorated	III-General	2	Room 104	MVP789	49A2	WNMU Museum	6E
FN 162	Corrugated	Three Circle	4	Room 101	MVP785	49A2	WNMU Museum	6F
FN 163	Plainware	Mimbres	4	Room 101	MVP787	49A2	WNMU Museum	7A
FN 164	Corrugated	Reserve Indented Smudged	4	Room 101	MVP788	49A2	WNMU Museum	7B
FN 178	Decorated	III-Middle	4	Room 102	MVP796	04B	WNMU Museum	7C
FN 179	Decorated	III-Early	4	Room 101	MVP780	49A2	WNMU Museum	7D
FN 180	Plainware	Reserve	4	Room 101	MVP782	SCib2c	WNMU Museum	7E
FN 181	Corrugated	Reserve	4	Room 101	MVP773	49A2	WNMU Museum	7F
FN 182	Decorated	III-Early	4	Room 101	MVP772	01A	WNMU Museum	8A
FN 183	Decorated	III-Middle	4	Room 101	MVP795	01A	WNMU Museum	8B
FN 184	Corrugated	Three Circle	4	Room 101	MVP783	SCib2c	WNMU Museum	8C
FN 186	Corrugated	Alma Scored	4	Room 101	-	-	WNMU Museum	8D
FN 187	Plainware	Reserve	4	Room 101	-	-	WNMU Museum	8E
FN 188	Plainware	Reserve	4	Room 101	-	-	WNMU Museum	8F
FN 189	Plainware	Reserve	4	Room 101	-	-	WNMU Museum	9A
FN 264	Plainware	Mimbres	-	Room 107	MVP1054	49A2	WNMU Museum	9B
FN 268	Plainware	Mimbres	4	Ramada	MVP791	49A2	WNMU Museum	9C
FN 323	Corrugated	Mimbres	4	Room 103	MVP784	49A2	WNMU Museum	9D
FN 345	Decorated	Gallup/Reserve	4	Room 103	MVP779	49A2	WNMU Museum	9E
FN 356	Corrugated	Three Circle	4	Room 103	MVP786	49A2	WNMU Museum	9F
FN 426	Corrugated	Mimbres	4	Ramada	MVP775	10	WNMU Museum	10A

#	Ware	Style	Building Phase	Feature	INAA #	Source Group	Current Repository	Plate
FN 428	Corrugated	Reserve	4	Room 105	MVP778	49A2	WNMU Museum	10B
FN 466	Corrugated	Three Circle	4	Ramada	MVP790	49A2	WNMU Museum	10C
FN 467	Corrugated	Three Circle	4	Ramada	MVP777	49A2	WNMU Museum	10D
FN 468	Decorated	III-Middle	4	Ramada	MVP776	01A	WNMU Museum	10E
FN 469	Decorated	III-Middle	4	Ramada	MVP774	01A	WNMU Museum	10F
FN 532	Plainware	Mimbres/Reserve	4	Ramada	MVP1055	49A2	WNMU Museum	11A
FN 540	Decorated	III-Middle	4	Ramada	MVP781	01A	WNMU Museum	11B
FN 546	Corrugated	Reserve Indented Smudged	3	Room 113	MVP792	Unassigned	WNMU Museum	11C
FN 1181	Corrugated	Reserve Indented Smudged	4	Room 117	MVP1059	02A	WNMU Museum	11D
FN 1183	Plainware	Mimbres/Reserve	4	Room 117	MVP1065	49A2	WNMU Museum	11E
FN 1184	Decorated	III-Middle	4	Room 117	MVP1067	04A	WNMU Museum	11F
FN 1185	Decorated	Mimbres Polychrome	4	Room 117	MVP1066	49A2	WNMU Museum	12A
FN 1186	Decorated	III-Late	4	Room 117	MVP1063	49A2	WNMU Museum	12B
FN 1253	Corrugated	Three Circle	4	Room 118/119	MVP1064	49A2	WNMU Museum	12C
FN 1254	Corrugated	Reserve Indented	4	Room 117	MVP1062	Unassigned	WNMU Museum	12D
FN 1292	Corrugated	Three Circle	4	Room 118	MVP1068	09	WNMU Museum	12E
FN 1324	Decorated	III-Late	4	Room 117	MVP1057	49A2	WNMU Museum	12F
FN 1327	Decorated	III-General	4	Room 117	MVP1056	49A2	WNMU Museum	13A
FN 1352	Corrugated	Three Circle	4	Room 117	MVP1061	04A	WNMU Museum	13B
FN 1353	Plainware	Mimbres	4	Room 117	MVP1058	49A2	WNMU Museum	13C
FN 1413	Decorated	III-Early	4	Room 117	MVP1060	49A2	WNMU Museum	13D
CRO001	Decorated	III-Middle	-	South Side	MVP1069	02A	WNMU Museum	13E
CRO002	Decorated	III-Middle	-	South Side	MVP1070	04A	WNMU Museum	13F
CRO003	Decorated	III-Middle	-	South Side	MVP1071	01A	WNMU Museum	14A
CRO004	Decorated	III-Early	-	South Side	MVP1076	09	WNMU Museum	14B
CRO005	Decorated	III-General	-	South Side	MVP1075	49A2	WNMU Museum	14C
CRO006	Decorated	Cibola/Puerco	-	South Side	MVP1074	09	WNMU Museum	14D
CRO007	Plainware	Mimbres	-	South Side	-	-	WNMU Museum	14E

#	Ware	Style	Building Phase	Feature	INAA #	Source Group	Current Repository	Plate
CRO008	Plainware	Mimbres	-	South Side	-	-	WNMU Museum	14F
CRO010	Decorated	III-Middle	-	South Side	MVP1072	49A1	WNMU Museum	15A
CRO011	Plainware	Mimbres	-	South Side	-	-	WNMU Museum	15B
CRO012	Plainware	Mimbres	-	South Side	-	-	WNMU Museum	15C
CRO013	Plainware	Reserve	-	South Side	-	-	WNMU Museum	15D
CRO014	Decorated	III-General	-	South Side	-	-	WNMU Museum	15E
CRO015	Plainware	Mimbres	-	South Side	-	-	WNMU Museum	15F
CRO023	Plainware	Alma Rough	-	South Side	-	-	WNMU Museum	16A
CRO024	Corrugated	Three Circle	-	South Side	MVP1077	04A	WNMU Museum	16B
CRO025	Redware	San Francisco	-	South Side	MVP1078	49A2	WNMU Museum	16C
CRO026	Decorated	III-Middle	-	South Side	MVP1079	04A	WNMU Museum	16D
CRO027	Corrugated	Datura	-	South Side	MVP1080	49A2	WNMU Museum	16E
CRO028	Corrugated	Three Circle	-	South Side	MVP1081	49A1	WNMU Museum	16F
CRO029	Corrugated	Reserve Indented Smudged	-	South Side	MVP1082	05B	WNMU Museum	17A
CRO030	Corrugated	Alma Scored	-	South Side	MVP1084	04A	WNMU Museum	17B
CRO031	Corrugated	Tularosa Patterned	-	South Side	MVP1083	49A2	WNMU Museum	17C
CRO032	Plainware	Mimbres	-	South Side	MVP1085	49A2	WNMU Museum	17D
CRO033	Corrugated	Three Circle	-	South Side	MVP1089	49A2	WNMU Museum	17E
CRO034	Corrugated	Tularosa Patterned Smudged	-	South Side	MVP1088	49A2	WNMU Museum	17F
CRO035	Corrugated	Reserve Indented Smudged	-	South Side	MVP1086	Unassigned	WNMU Museum	18A
CRO036	Corrugated	Three Circle	-	South Side	MVP1087	49A2	WNMU Museum	18B
CRO037	Corrugated	Reserve Indented	-	South Side	MVP1091	Unassigned	WNMU Museum	18C
CRO038	Corrugated	Three Circle	-	South Side	MVP1090	49A2	WNMU Museum	18D
CRO044	Corrugated	Reserve Indented	-	South Side	-	-	WNMU Museum	18E

Appendix B: Vessel Images

Note: All vessels in this research that were from known burial contexts are presented here as digital drawings. All drawings were done by Danielle Romero.

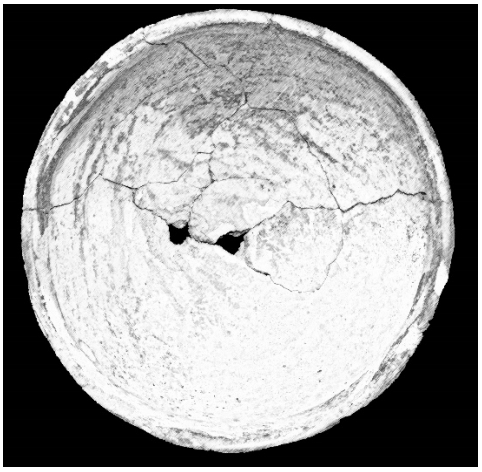
Vessel Note: CRO001 (Plate 13E), the portion of the vessel that includes the figure's upper torso and head is a modern restoration and not original to the vessel.

PLATE 1

A

B

C



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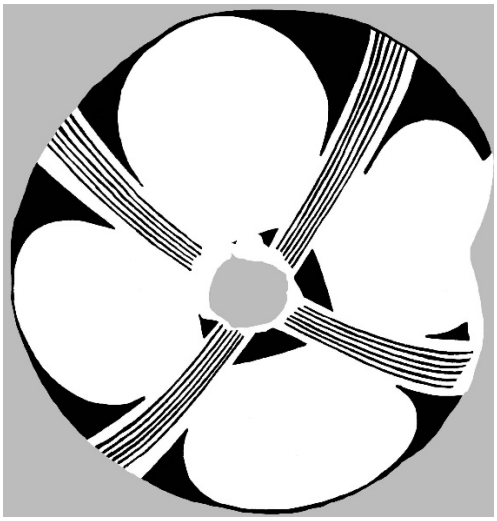
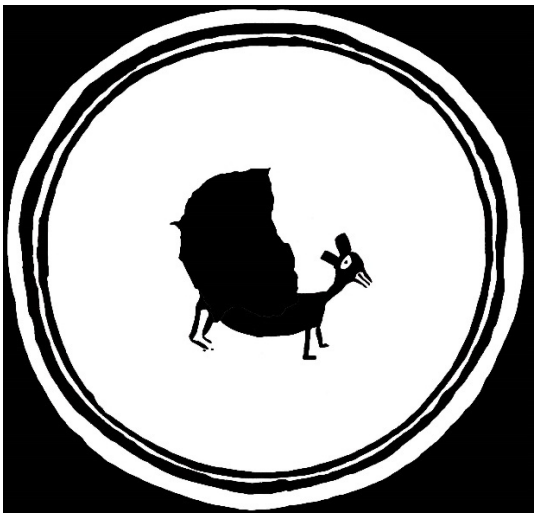


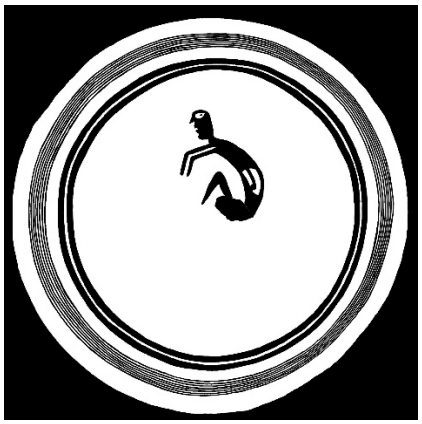
E



F

PLATE 2

A



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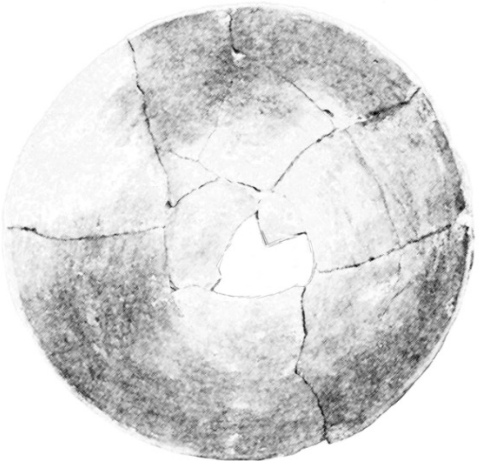

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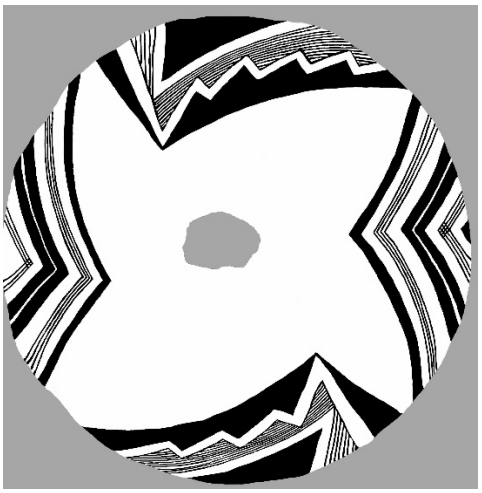

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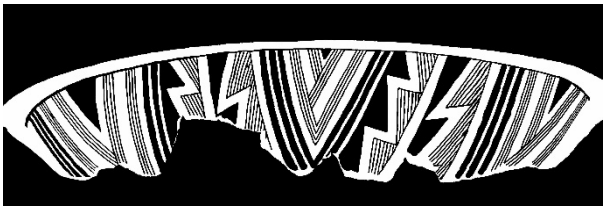

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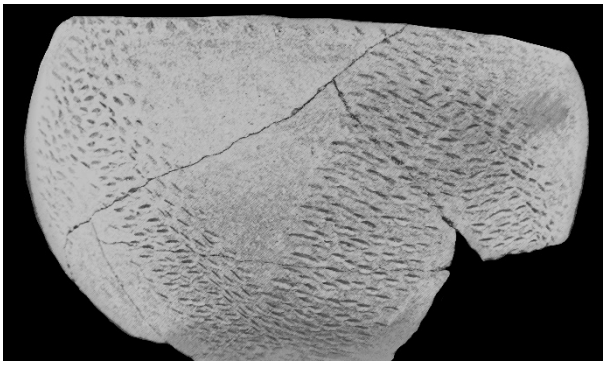
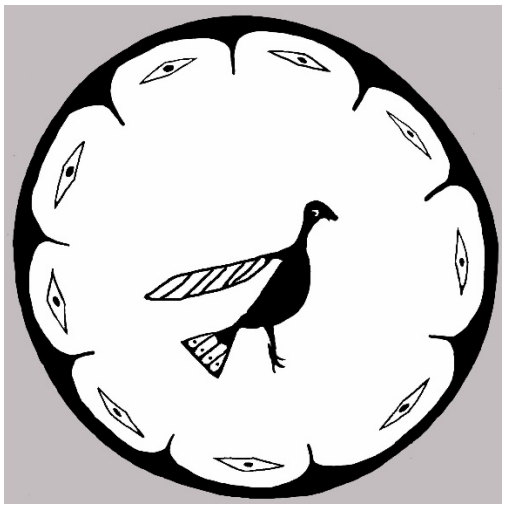


F

PLATE 3



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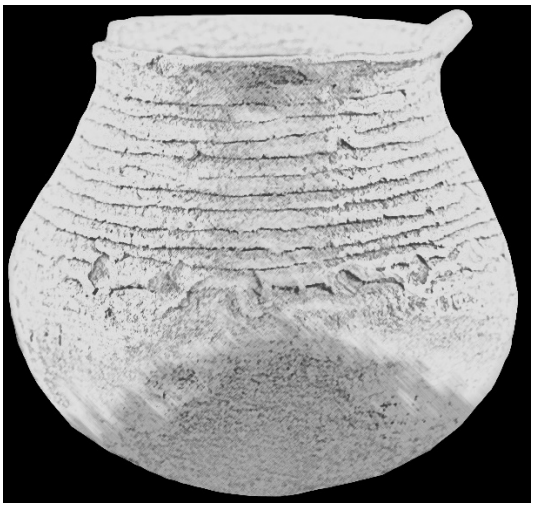

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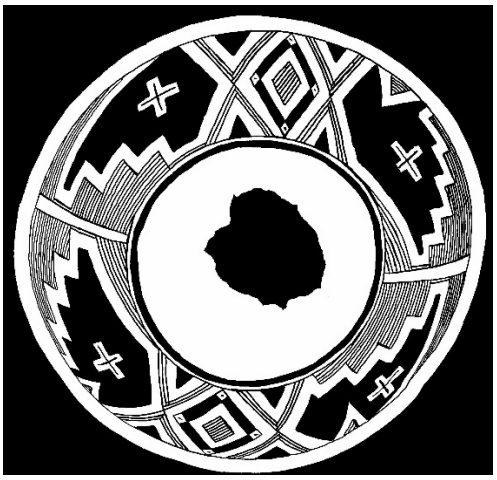
C



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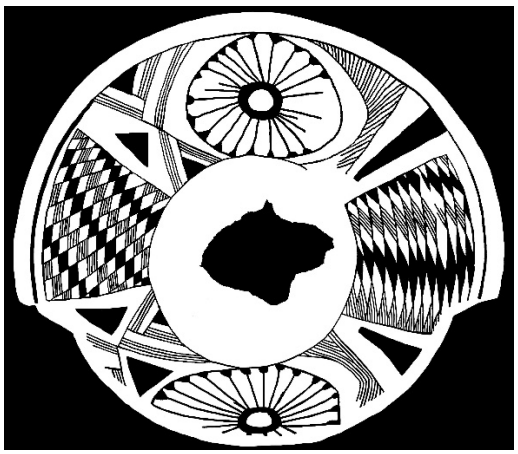

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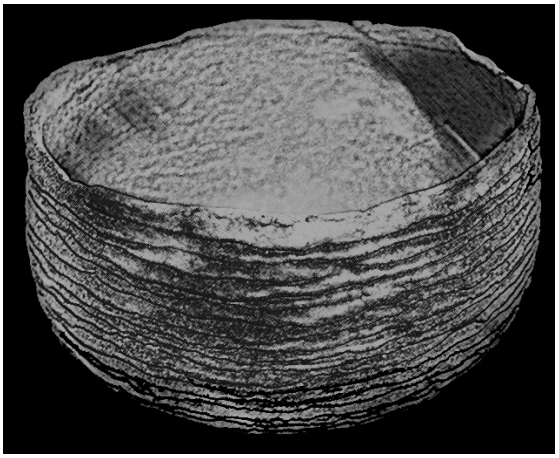

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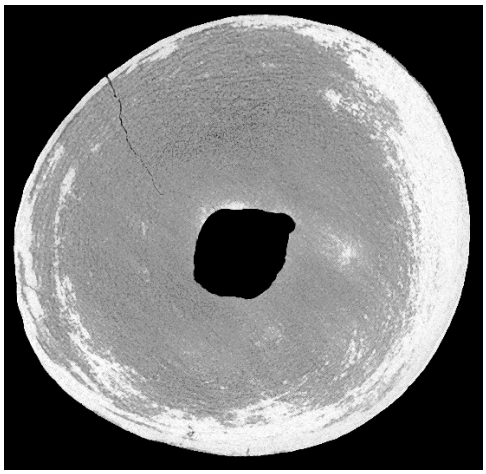
PLATE 4



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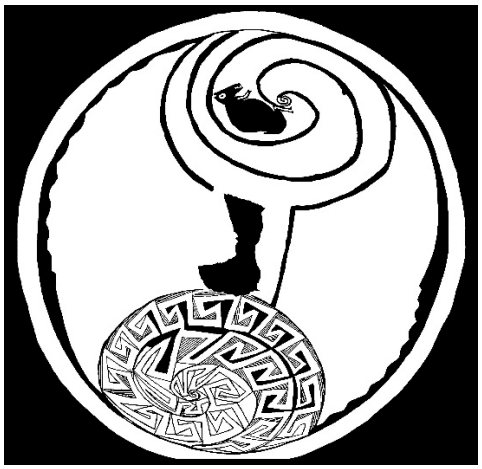

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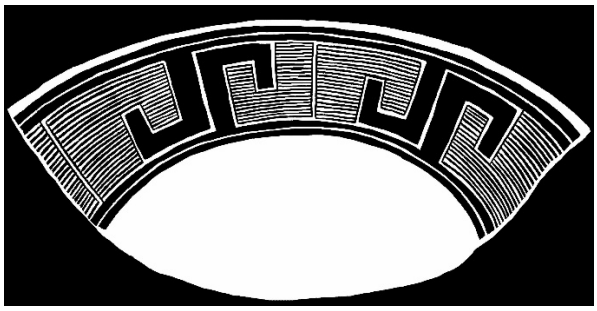

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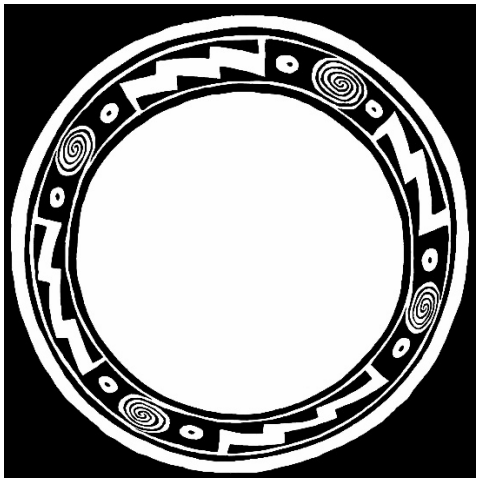

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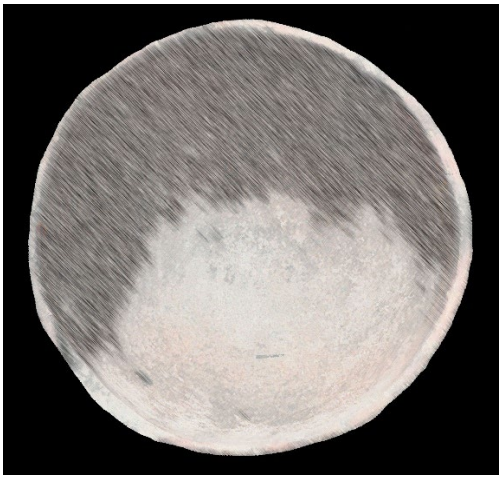

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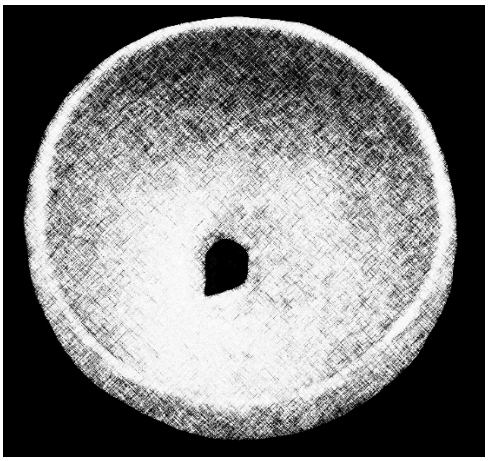
PLATE 5



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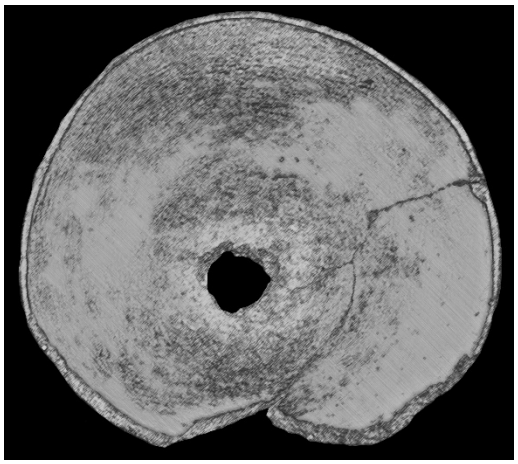
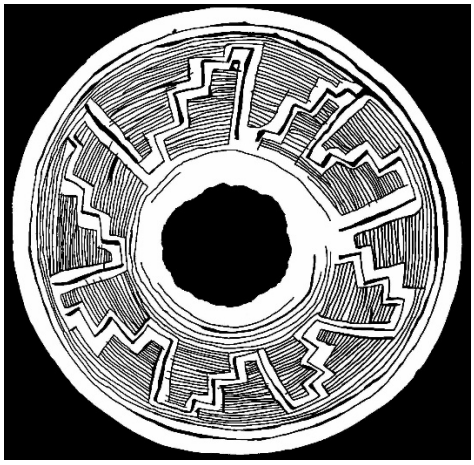


B

C

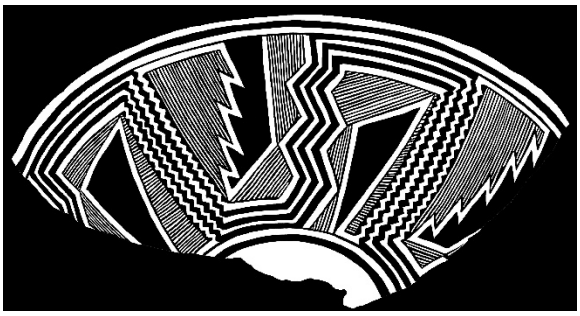
D



E

F

PLATE 6



A

B

C

D

E

F

PLATE 7

A

B

C

D

E

F

PLATE 8

A

B

C

D

E

F

PLATE 9

A

B

C

D

E

F

PLATE 10

A

B

C

D

E

F

PLATE 11

A

B

C

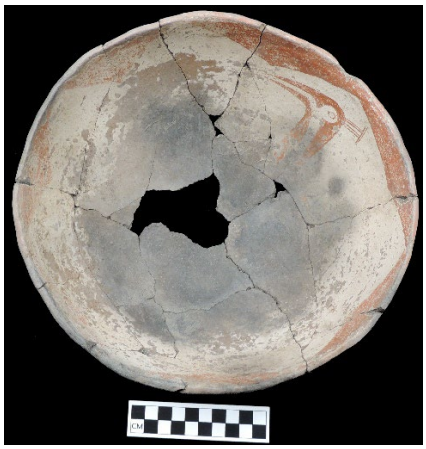
D

E

F

PLATE 12

A



B

C

D

E

F

PLATE 13

A

B

C

D

E

F

PLATE 14

A

B

C

D

E

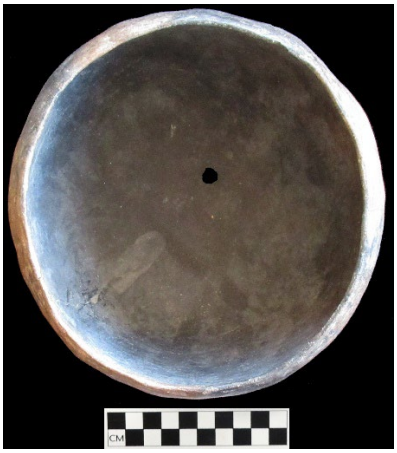
F

PLATE 15

A

B

C



D

E

F

PLATE 16

A

B

C

D

E

F

PLATE 17

A

B

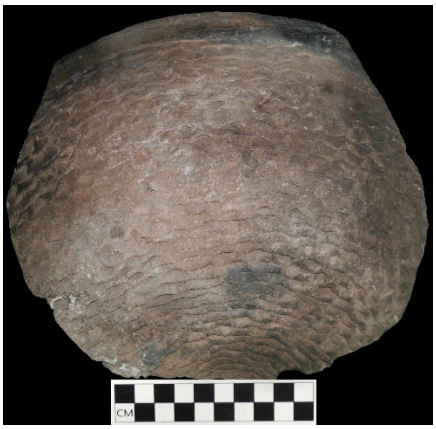
C

D

E

F

PLATE 18



A

B

C

D

E

Appendix C: INAA Elemental Data

	As	La	Lu	Nd	Sm	U	Yb	Ce	Co	Cr	Cs	Eu	Fe
MVP752	2.9588	45.7128	0.4334	39.9953	7.6239	2.3112	2.9811	91.4631	12.9857	53.794	6.7469	1.5132	39693.7
MVP753	3.6509	44.9986	0.5235	33.6604	6.7433	4.5001	3.2739	87.6564	6.9777	18.892	3.6894	1.3048	23129.8
MVP754	4.5795	40.5161	0.4136	32.8267	6.3511	3.098	2.5997	84.3335	16.2516	59.97	5.2151	1.315	38608.4
MVP755	2.3442	62.7152	0.6729	120.015	13.4435	3.6269	4.8844	151.314	1.8014	14.791	4.69	2.6984	13974.3
MVP756	4.1384	46.8893	0.552	38.6797	8.0611	3.6724	3.5878	89.5843	3.1932	14.343	3.3156	1.7223	22334.5
MVP757	2.6299	41.8901	0.3717	32.8747	6.4124	2.7635	2.4298	78.651	12.0182	55.394	4.2439	1.4062	36339.4
MVP758	3.566	42.8207	0.4896	34.5155	6.7863	3.8458	3.0991	84.362	6.7999	26.54	4.7745	1.3333	25574.7
MVP759	4.7405	44.0408	0.3999	37.628	7.5345	1.8821	2.3997	80.7198	13.9802	56.648	2.5649	1.5781	38029.7
MVP760	3.6292	39.194	0.4247	23.4264	4.7179	5.493	2.6823	81.6605	6.9755	22.333	6.1942	0.8346	18545.3
MVP761	2.6521	40.688	0.4216	41.1373	7.4691	1.739	2.7739	77.994	12.2854	59.138	3.6433	1.5984	40415.3
MVP762	4.9552	51.157	0.4402	37.5942	7.3804	2.3535	3.0515	77.9924	11.79	47.853	5.0369	1.3655	36732.6
MVP763	2.3424	53.3959	0.5667	41.9448	8.9719	2.5233	3.6329	105.278	6.5849	32.547	3.0818	2.1315	22230.3
MVP764	2.3901	35.4764	0.369	26.5052	5.0651	2.6211	2.22	71.2146	10.8656	55.174	3.8436	1.1068	38065.1
MVP765	2.2006	53.6522	0.5746	47.2075	9.3741	3.7543	3.6424	112.5506	5.4671	17.368	3.0463	2.0685	25159.4
MVP766	2.8574	42.3651	0.4293	37.3571	7.6127	2.2198	2.789	85.4725	14.5915	59.067	3.3771	1.6725	38589
MVP767	3.3966	51.6673	0.5731	36.3318	7.7048	7.9106	3.915	92.5075	6.0379	26.801	6.3721	1.2987	27521.8
MVP768	4.4834	35.5706	0.3703	32.0931	6.1914	2.611	2.4791	73.3171	6.5133	49.903	2.749	1.374	28624.5
MVP769	7.2513	42.4471	0.5068	35.2814	6.2041	2.9791	3.296	82.4538	7.4197	55.892	5.6491	1.0997	30376.2

Hf	Ni	Rb	Sb	Sc	Sr	Ta	Tb	Th	Zn	Zr	Al	Ba	Ca	Dy
7.3921	33.26	128.31	0.6444	12.7913	460.16	1.303	1.0497	14.043	96.72	172.7	95673.1	861.9	23065.2	5.7543
7.8794	0	125.88	0.2722	6.3051	346.02	1.3265	0.9264	17.1289	47.62	226.25	85752.5	1068.6	14306.9	5.5303
7.6368	0	128.22	0.539	11.3372	210.02	1.2377	0.7301	14.4779	74.2	164.51	96424.6	852.2	11923.2	4.5556
8.07	33.16	123.93	0.667	9.6278	244.49	0.9801	1.8363	14.6799	91.01	204.01	92866.3	1128.2	9802	10.0212
8.6628	0	109.05	0.5679	8.4413	264.12	0.954	1.0453	14.2411	77.41	210.93	90020.7	1192.5	11879.7	6.6525
6.9605	0	108.12	0.4076	10.4647	338.86	1.0934	0.7414	12.3042	73.17	173.39	96576	869.8	16042.2	4.3001
8.4919	0	144.95	0.3656	7.2524	214.54	1.4328	0.8581	19.3011	53.31	206.34	81315.2	790.7	9826	5.2667
7.6964	0	79.34	0.2679	10.1439	464.54	0.9143	0.8729	10.1575	92.14	179.94	98588.2	988.6	17954.2	5.1791
7.4176	0	177.65	0.4807	5.465	133.12	1.4677	0.5844	25.4568	37.24	180.93	75031.5	613.8	6368.4	3.6146
6.8903	35.89	95.29	0.3354	11.3723	399	1.0375	0.8461	11.2617	98.88	157.8	99482.9	656	17030.4	5.393
5.8196	29.1	92.49	0.6347	11.4659	428.14	1.0827	0.942	12.5897	92.66	131.15	90463.2	1223.3	24772.8	5.5543
8.4424	0	80.46	0.6919	7.4723	402.66	0.955	1.2472	12.0439	72.24	237.43	88139.6	863.7	19861.5	6.9035
9.4504	0	117.05	0.3774	9.6413	290.63	1.1714	0.6468	13.72	78.58	244.9	89350.5	747.3	16471.2	3.3428
8.8268	0	114.51	0.526	8.2387	247.73	0.9517	1.121	13.6342	78.38	225.89	88914.2	1078.4	14583.8	6.9929
6.3635	0	81.14	0.4153	11.7024	579.25	0.8461	0.9191	9.688	94.36	146.01	84431.9	963.7	27244.8	5.3395
5.4507	0	158.63	0.4289	8.8597	126.21	1.5812	1.0413	25.3477	74.38	166.17	93474.4	506.5	8404.2	6.3722
6.6576	0	93.23	0.2548	9.4709	425	1.0059	0.6607	12.4363	91.1	175.48	88936.1	899.4	17145.7	4.3882
8.0121	0	88.9	0.7063	9.8615	305.33	1.3195	0.8919	16.0903	76.1	204.31	94278.5	897.5	17599.8	5.3003

K	Mn	Na	Ti	V
24633.5	642.53	15449.9	4597.1	86.38
29064.6	521.07	17352.2	3431.4	46.26
25863.9	859.87	14970.8	4435.1	86.79
32755.8	191.03	18616	2991.2	42.66
31783.9	332.9	17312.3	3116.6	38.85
24780.4	512.41	18001	4123.1	72.62
30936.5	519.66	14762.8	4201.5	60.76
27172.9	654.66	16395.5	4335.7	80.93
33964	1213.89	11267.7	2860.2	45.6
24250.5	568.1	16570.3	4427.5	76.58
39258.2	558.72	13702.5	3423.1	76.46
22324.8	444.55	16215.7	3494.6	51.37
27196.4	586.74	17331.7	4905	78.54
33024.3	743.92	20483.8	3162.7	36.53
26182.9	675.22	15354.8	4628.7	77.92
27676.1	546.05	10472.5	2102.6	64.05
29151.4	400.06	17466.6	3690.9	73.45
21489.1	391	10806.6	3827.7	70.52

	As	La	Lu	Nd	Sm	U	Yb	Ce	Co	Cr	Cs	Eu	Fe
MVP770	2.2135	41.3354	0.3941	36.7912	6.83	2.7582	2.6648	97.6835	15.5134	56.516	4.051	1.5599	35919.2
MVP771	2.7402	34.5670	0.3096	28.2370	6.2595	1.7661	2.2666	69.7610	12.3860	59.667	2.9075	1.4411	40062.0
MVP772	2.5951	89.0288	0.5023	38.9452	6.2605	17.3022	3.1347	137.849	2.6671	5.7484	18.5347	0.694	11703.1
MVP773	2.1294	35.8464	0.3703	31.9467	6.5244	2.0587	2.3009	70.6901	10.6682	50.772	2.9151	1.4982	33690.9
MVP774	3.6005	57.3317	0.4729	22.1743	4.5415	16.493	2.7382	90.7946	1.3614	4.3575	15.9194	0.5045	11643
MVP775	3.485	100.546	0.886	86.973	17.8819	6.7245	6.2225	222.429	11.6377	60.184	5.1988	2.1311	36230.1
MVP776	2.6529	56.8724	0.4887	25.7538	4.3217	13.8192	2.7769	90.0012	2.0658	6.8765	19.8586	0.5109	11510.1
MVP777	2.1122	34.9510	0.3634	29.1550	6.3770	2.3699	2.6332	68.8830	9.3943	53.270	3.1542	1.5122	29120.0
MVP778	1.9815	56.9190	0.6004	54.2180	11.4470	2.3519	4.7526	107.2000	9.2404	45.465	2.6274	2.2799	37436.0
MVP779	1.4318	38.4534	0.3452	37.4716	6.1642	2.4713	2.3857	84.411	16.1538	53.339	3.4377	1.4661	39560.6
MVP780	1.3286	35.4138	0.3636	31.2496	6.497	2.5309	2.2962	73.2393	8.787	54.437	3.2938	1.4291	29479.5
MVP781	3.8388	59.6246	0.4549	21.8541	4.3153	15.9301	2.6128	90.0966	1.487	3.1387	17.5738	0.453	11993
MVP782	2.5783	32.5234	0.3543	28.9775	6.1936	2.4546	2.2185	67.205	7.4168	52.217	2.1297	1.333	26854.8
MVP783	2.065	31.1884	0.3278	29.8252	5.83	1.9148	2.0905	77.8913	7.1194	50.524	2.3357	1.4494	29518.3
MVP784	1.7567	33.6140	0.3058	26.7720	5.4763	2.1578	2.3330	68.8800	5.9435	38.816	3.1558	1.0899	26151.0
MVP785	3.0765	35.5860	0.3232	29.5860	6.4267	2.3445	2.5050	68.1180	10.8970	55.049	3.1789	1.4340	37672.0
MVP786	2.3352	39.9200	0.3320	33.7150	6.3945	2.2630	2.4737	78.5940	12.2550	50.218	2.9891	1.4282	33448.0
MVP787	3.7811	33.1590	0.3451	23.4720	4.8656	3.0406	2.2509	72.5450	12.5010	46.564	3.7201	1.0633	32588.0
MVP788	2.0813	37.2060	0.3646	31.2170	6.4050	2.2990	3.0016	70.2190	6.8780	53.820	3.1022	1.4533	35707.0

Hf	Ni	Rb	Sb	Sc	Sr	Ta	Tb	Th	Zn	Zr	Al	Ba	Ca	Dy
6.9819	54.34	102.56	0.3808	10.3088	391.17	1.0705	0.8521	11.6751	73.17	157.52	88402.8	738.3	19713.1	4.5577
7.0218	0.00	87.94	0.3127	10.4020	482.76	1.0217	0.7099	10.4820	98.30	220.66	94993.1	896.2	18240.0	4.2023
6.3394	0	233.6	1.5096	3.9822	105.2	2.6498	0.5443	51.2663	45.65	192.74	97926.3	322.2	5956.2	3.4495
5.5086	29.57	75.15	0.3471	10.9472	418.2	0.7701	0.8312	9.7594	79.54	131.61	84477.2	744.2	26339.2	4.5362
6.1341	0	190.81	0.4856	4.2748	126.17	2.4679	0.3816	57.1951	55.41	181.86	109578.4	432.5	8119.7	2.5359
9.9436	33.73	196.07	0.5202	11.9661	137.53	1.407	2.5497	33.4629	107.85	251.35	76951.3	627.9	10717.4	12.68
5.4682	0	257.18	0.7422	4.5246	102.92	2.2813	0.4158	51.8341	41.29	141.79	100230.2	502.1	5857.7	3.0608
5.4876	43.42	81.28	0.3341	11.7780	365.87	0.6899	0.7210	9.1247	79.99	153.54	87974.1	704.5	20862.9	4.4754
9.0505	26.94	102.84	0.2359	11.5510	465.41	1.3073	1.4762	12.6410	73.84	296.99	86469.8	879.6	18627.7	8.6212
7.8139	0	95.16	0.3595	10.5972	359.31	0.9512	0.7343	11.1941	84.77	192.75	98865.7	805.7	15875.1	4.4678
5.559	0	74.79	0.2801	11.1877	362.93	0.93	0.7909	9.6017	71.46	145.2	83915.9	639.8	18493.1	4.288
6.7523	0	186.64	0.5488	3.9946	78.9	2.4769	0.3483	55.7843	47.99	196.56	102333	326.3	6243.1	2.8171
5.6446	0	60.21	0.2637	9.9606	378.93	0.7855	0.6955	8.274	68.9	130.6	79096.8	694.4	19424.4	4.2915
5.5762	0	60.08	0.3163	10.2241	338.9	0.7075	0.7235	7.8127	67.5	165.3	78938.1	774.2	17190.8	4.067
5.3956	0.00	97.51	0.3711	7.9506	292.64	0.9411	0.6521	12.2780	70.31	140.57	71032.6	811.9	14915.1	3.9595
6.5345	0.00	92.01	0.4502	10.2880	447.55	1.0353	1.0517	10.5270	102.84	173.81	90879.5	799.4	16148.8	5.2005
8.1461	25.81	108.62	0.3811	9.5658	363.49	0.9464	0.7002	11.7990	71.58	196.92	89475.3	942.3	15306.8	5.0998
7.7980	0.00	123.29	0.4930	9.5095	306.71	1.0966	0.5305	14.4600	65.84	176.09	86634.1	770.3	14899.4	3.3524
9.9960	0.00	96.50	0.2628	11.0940	327.87	1.0228	0.7531	12.7300	68.24	261.67	92180.3	842.4	15874.2	4.5134

K	Mn	Na	Ti	V
21508.1	745.05	19692.3	4473	76.09
32213.7	568.14	15716.9	4329.1	72.62
32388	149.21	12765.1	1716.2	22.99
22848.4	489.9	15077.4	3742.2	73.15
38647.7	169.63	15351.4	1479	14.83
32122.2	1188.66	13692.3	3810.6	71.19
41938	180.98	8445.5	1348.1	20.72
30381.6	322.81	14703.1	3468.3	86.33
35858.6	499.29	17421.0	5208.3	65.83
25561.2	731.2	16914	4189.8	88.99
19922	315.15	15074	4219.3	104.52
34387.5	165.78	18775	1404.9	19.74
18693.9	300.06	14074.1	3557.6	91.86
20508.5	313.9	14464.6	3828.6	116.83
27769.3	188.40	12754.3	3317.9	76.64
26701.7	494.61	14245.0	4653.4	78.98
30009.7	536.76	17495.9	4395.1	67.02
43194.3	499.74	14672.7	3620.1	74.12
28330.6	278.62	14851.5	4520.2	78.25

	As	La	Lu	Nd	Sm	U	Yb	Ce	Co	Cr	Cs	Eu	Fe
MVP789	3.1483	42.3169	0.3813	36.6543	6.9961	2.3341	2.3724	73.8929	13.8503	52.28	3.2652	1.5433	39728.1
MVP790	2.3911	36.2300	0.3638	32.5210	6.5167	1.9925	2.6719	90.9200	6.8531	56.620	2.8167	1.5377	26717.0
MVP791	3.9799	35.5980	0.3494	30.8840	6.3752	2.5243	2.1865	82.8400	7.6338	55.081	2.6895	1.5302	26376.0
MVP792	1.3581	36.8630	0.3704	25.8580	4.9606	2.1189	2.6836	72.8420	4.8158	15.040	5.0914	1.3693	20800.0
MVP793	3.8169	38.6022	0.3762	30.5089	5.9249	2.5838	2.5841	75.1596	12.9416	64.42	4.448	1.2285	39974.9
MVP795	2.0802	74.3057	0.7115	36.0623	7.0307	11.3076	4.432	122.717	4.2814	9.6353	18.0597	1.0436	11933.2
MVP796	2.7391	46.9613	0.4596	34.8758	6.8222	8.0695	3.0163	84.473	4.537	21.206	4.9636	1.0852	20507.8
MVP797	3.2431	41.8607	0.3888	36.6085	6.9065	2.7037	2.5396	77.5289	10.9054	48.822	4.1074	1.3519	35278.4
MVP807	2.9216	39.1460	0.3680	34.1360	6.9814	2.5269	2.8301	87.8680	6.6147	61.559	4.6038	1.6112	35403.0
MVP808	2.4358	38.1600	0.3630	34.9790	6.7469	2.4829	2.6180	83.6680	8.4509	61.933	3.3829	1.5098	29816.0
MVP809	1.6088	47.5850	0.5080	17.3430	3.4130	8.1913	2.5446	74.6990	3.8204	4.316	23.9120	0.4412	11707.0
MVP810	3.9577	49.0090	0.3744	40.1750	7.6027	2.2904	3.1006	91.8430	13.0240	42.996	6.2564	1.3725	32566.0
MVP811	4.0502	37.0170	1.2067	37.3790	9.7209	5.3866	8.6022	88.9720	2.4578	10.299	4.5050	0.4683	14019.0
MVP1043	1.8163	48.9300	0.3593	35.5120	6.2506	2.4387	2.5639	96.1040	10.9060	41.835	2.8894	1.2145	31665.0
MVP1044	3.1073	39.3650	0.3891	33.3230	6.8849	2.0301	2.7056	90.3780	7.7371	64.841	3.8884	1.5075	36577.0
MVP1045	2.2815	41.1270	0.4579	29.7050	6.4445	4.2300	3.1971	81.7940	7.6523	34.112	4.7719	1.2909	27799.0
MVP1046	3.3234	42.1910	0.3137	33.3220	6.4579	1.6869	2.2790	69.0710	9.3105	53.394	3.3185	1.3893	34129.0
MVP1047	2.5780	37.1650	0.3368	32.0240	6.5037	2.3059	2.5563	76.9220	10.1240	64.849	3.5242	1.4667	38216.0
MVP1048	2.3890	49.7070	0.4875	16.9970	3.5924	13.2020	2.4538	77.2260	1.5754	5.724	9.5053	0.4124	8515.3

Hf	Ni	Rb	Sb	Sc	Sr	Ta	Tb	Th	Zn	Zr	Al	Ba	Ca	Dy
6.338	0	83.33	0.3587	10.9322	451.96	0.8936	0.8299	10.7876	95.63	161.02	87155.9	746.7	17767.9	4.1757
5.5200	0.00	79.95	0.3320	10.4280	335.69	0.8124	0.8437	9.2449	67.88	167.21	84353.1	740.4	17172.2	4.5268
5.4470	0.00	76.54	0.2692	10.4070	365.09	0.7902	0.8156	9.7332	63.63	138.38	83338.5	738.8	18079.6	4.4746
8.3925	21.80	71.53	0.3984	5.7565	528.86	0.9296	0.6821	12.0260	43.92	234.19	84460.1	1158.6	19280.9	3.8298
8.8147	43.4	111.45	0.4615	10.9328	284.66	1.2098	0.7305	13.6916	71.42	202.31	92031.4	750	14616.3	3.8219
7.4733	0	175.37	0.7225	4.7953	92.56	2.1214	1.0245	48.3577	47.55	201.53	106481.1	596.7	11854.7	5.5657
6.0449	0	151.95	0.3332	6.5425	107.74	1.6307	0.7676	27.4384	44.17	162.61	85983	515.6	7212.8	4.5795
7.9445	0	97.81	0.4256	10.0883	453.51	1.2721	0.7672	14.7484	78.31	186.08	93112.8	732.6	16793	4.4426
6.9666	0.00	108.26	0.3647	13.2140	363.83	1.0299	1.1422	12.7870	94.89	203.14	100258.3	684.7	14539.7	4.9512
5.4585	23.88	77.65	0.3426	11.3390	437.65	0.8621	0.8058	9.5037	78.63	140.61	83207.5	709.9	16136.2	4.6699
6.6039	0.00	257.60	0.5697	3.7434	162.10	1.9421	0.3135	39.4890	65.69	169.05	84897.4	412.3	6048.9	2.5556
8.0646	0.00	103.67	0.5659	10.1940	616.79	1.1977	0.8927	13.9760	86.63	232.16	83051.6	900.1	18136.7	5.2049
9.7488	0.00	273.19	0.4597	5.1708	53.74	2.1645	1.8661	39.2480	64.34	168.99	84083.4	119.1	8841.3	12.2371
6.2412	37.86	115.71	0.2617	8.7220	276.71	1.1026	0.9129	15.7910	67.76	140.82	85237.9	764.5	14317.4	4.2087
7.3402	0.00	81.43	0.3773	12.5300	414.88	0.9489	0.8234	11.8850	97.17	191.98	95243.2	831.6	16883.9	4.9996
6.8686	0.00	127.53	0.4370	8.3119	278.05	1.2267	0.8967	15.9730	68.49	156.52	88873.4	824.8	12675.0	5.1698
6.4463	0.00	98.31	0.3530	9.9199	432.15	0.9804	0.8555	12.4260	71.30	165.33	92516.9	912.7	14938.3	4.2449
6.0375	29.95	87.88	0.3094	11.9310	443.11	1.0109	0.7672	10.3360	86.20	130.89	90625.9	755.9	18520.8	4.5615
6.9823	0.00	193.15	0.6024	3.9328	139.92	2.5432	0.3253	50.6840	25.81	186.12	102294.9	403.1	5460.1	2.3304

K	Mn	Na	Ti	V
23545.6	580.67	15054.7	4232.6	72.21
23222.4	241.71	14511.0	3312.6	106.07
23441.9	236.15	14593.3	3698.0	101.30
32717.5	456.54	18669.3	3566.4	50.23
24637.8	543.21	16610	4616.6	82.62
31066.6	341.74	13700.2	2357.1	46.54
30250.6	222.28	11543.7	2895.6	46.99
24922.7	393.02	14095.9	3976.9	76.91
24420.2	314.42	14030.0	4088.4	68.87
20629.2	272.40	13034.6	3909.4	113.05
37881.5	371.71	10187.8	1306.0	20.63
28213.1	1116.41	13724.2	3014.2	68.71
48132.2	661.83	5509.9	1652.6	27.79
30217.8	376.49	15673.8	3163.9	60.00
22793.4	263.19	11387.4	3842.2	79.40
26833.6	397.74	15342.0	3857.5	69.24
27249.1	327.65	17330.1	4620.8	62.55
21996.5	293.11	15598.4	4249.5	108.04
29698.3	63.31	14324.2	1562.1	26.27

	As	La	Lu	Nd	Sm	U	Yb	Ce	Co	Cr	Cs	Eu	Fe
MVP1049	2.4400	40.9230	0.3484	33.5370	6.7027	2.1502	2.5790	88.7340	7.4042	63.409	2.5361	1.4421	30005.0
MVP1054	3.8750	51.6490	0.4128	38.3110	7.7602	3.0094	2.8306	95.3500	10.8700	53.431	3.1737	1.4946	38402.0
MVP1055	1.2430	32.9450	0.3341	30.7320	6.2803	2.1297	2.6497	62.3750	8.0497	53.980	2.7599	1.3936	29528.0
MVP1056	6.4395	37.8530	0.3400	32.6040	6.1329	2.2455	2.3544	83.4060	13.6540	53.775	3.1639	1.3383	39881.0
MVP1057	5.2356	38.4370	0.3538	35.4630	6.5200	3.0908	2.7805	78.8780	12.9710	58.303	4.4581	1.4533	44174.0
MVP1058	2.9617	34.7440	0.3338	32.9240	6.2681	2.0300	2.4949	67.1530	7.3534	55.967	2.7900	1.3979	27478.0
MVP1059	4.8313	48.9050	0.5046	34.4810	6.5552	3.5021	3.6434	88.9280	5.7501	32.162	17.1750	1.4123	28788.0
MVP1060	2.6443	40.2840	0.3517	32.7670	6.4984	2.5306	2.5636	79.3500	8.3640	59.714	3.1211	1.4229	27705.0
MVP1061	1.9536	35.7270	0.3962	25.0590	5.1053	3.1053	2.6781	67.8790	4.1754	18.278	4.4100	1.0628	24403.0
MVP1062	15.4610	58.4450	0.6618	47.9660	10.1620	4.1539	4.7775	114.3000	3.2307	18.886	21.4810	2.3857	26281.0
MVP1063	3.6456	33.4640	0.2890	23.5280	4.6750	2.3672	1.9910	62.5810	12.2300	49.748	4.4411	1.0287	38422.0
MVP1064	3.0616	49.8060	0.3567	41.9920	7.3625	2.4671	2.6400	84.1040	9.3624	45.086	3.0408	1.4664	33154.0
MVP1065	2.8398	35.4280	0.3815	32.5210	6.6491	1.5157	2.7342	64.3820	8.5675	56.984	4.8167	1.4070	37700.0
MVP1066	1.8877	37.3740	0.3495	30.4700	6.3941	2.0533	2.6224	85.1870	13.0230	55.986	4.2903	1.4706	35335.0
MVP1067	3.0124	41.6390	0.4230	30.6170	6.1788	4.1560	2.9656	78.6940	7.0174	22.233	3.9018	1.1944	27428.0
MVP1068	2.8731	62.6480	0.5993	61.5740	13.2270	3.5873	4.1921	129.4000	3.3084	19.094	4.7761	2.5362	18920.0
MVP1069	1.8141	40.7020	0.5005	27.5140	6.0112	5.1718	3.2261	72.0330	7.1532	37.628	24.6880	1.0572	24684.0
MVP1070	2.0758	38.4250	0.3763	26.5510	5.0058	3.1428	2.5223	70.1270	4.4077	18.801	5.1298	1.0181	19549.0
MVP1071	2.7360	47.3660	0.4356	18.6780	3.6795	12.1310	2.1373	76.1660	2.0929	6.416	19.1900	0.4459	11141.0

Hf	Ni	Rb	Sb	Sc	Sr	Ta	Tb	Th	Zn	Zr	Al	Ba	Ca	Dy
6.8281	28.32	63.45	0.4025	11.7720	445.26	0.9614	0.9553	10.2580	78.60	182.20	82405.7	749.6	18079.5	4.0938
7.7209	45.84	82.28	0.5569	10.1150	379.28	1.1168	1.0409	11.5430	72.05	230.85	88738.7	808.4	19859.1	5.3228
6.6155	13.11	71.94	0.3052	10.3190	443.90	0.8721	0.7970	9.2121	73.80	169.96	84340.2	770.1	18855.6	4.5493
6.0345	46.50	90.68	0.4561	11.0570	535.89	0.8779	0.6663	10.8030	103.22	153.08	91518.8	874.0	14316.3	4.1992
6.8864	45.55	104.74	0.5882	12.1470	406.75	0.9703	0.9760	11.3670	134.35	182.78	102526.2	760.3	12766.8	4.4940
5.3020	0.00	74.44	0.3618	10.8060	343.46	0.8058	0.8575	9.0492	79.53	159.29	85961.1	727.7	18747.2	4.3497
8.9938	0.00	104.69	0.6937	10.1940	583.06	1.2634	0.8361	17.9190	81.43	214.12	96393.7	1494.5	18588.8	5.4356
6.2092	19.00	80.94	0.3778	10.7050	376.31	0.8654	0.9663	10.6720	72.76	159.61	81235.6	733.6	16071.0	4.0384
7.0518	0.00	135.41	0.2823	6.5816	267.58	1.2736	0.6119	18.5210	53.98	208.74	88311.6	863.1	11874.3	3.5438
9.9905	0.00	124.47	1.3078	9.9286	889.92	1.4013	1.5433	19.9380	87.11	250.78	104069.9	2172.7	10726.1	8.1426
7.5649	0.00	114.41	0.4572	10.1210	246.14	1.1405	0.6954	13.8490	63.33	177.73	94694.2	766.9	12229.1	3.5630
7.4260	0.00	99.86	0.3823	9.2014	521.69	1.2136	0.8265	14.4060	75.07	201.88	91569.5	987.9	20842.3	4.5317
6.7837	45.00	88.73	0.4203	11.8990	408.91	1.0062	0.8738	11.3330	77.43	154.39	98644.2	800.8	20142.6	4.7811
7.1171	35.28	103.48	0.4039	10.7770	405.47	1.0341	0.8599	12.5260	93.72	217.28	91964.0	800.6	17350.5	4.7843
8.5827	0.00	132.62	0.2673	7.7406	235.61	1.2184	0.8733	17.0040	72.78	233.40	93597.4	852.4	14056.7	4.4944
7.5401	50.48	121.63	0.6809	10.2370	285.43	0.9716	1.7593	15.5840	76.69	220.08	87517.4	1055.4	13419.4	9.0343
6.8546	0.00	150.39	0.5266	10.7030	297.15	1.4630	1.0228	20.2700	74.59	178.35	98120.6	518.5	10503.7	4.5714
7.1273	11.67	167.73	0.3931	5.9380	234.14	1.4735	0.6329	20.4500	52.51	187.52	84722.9	705.2	10350.5	3.3800
5.4543	0.00	225.64	0.6891	3.9428	81.49	2.2736	0.3669	46.9440	43.08	161.30	95660.9	597.6	8041.3	2.4210

K	Mn	Na	Ti	V
21680.8	224.66	12851.9	4328.1	112.93
24076.4	454.85	13523.2	4154.0	72.09
22626.0	327.27	14516.1	4001.7	88.55
25157.4	768.71	11651.6	4044.7	94.07
22135.0	654.91	11362.7	4792.2	106.77
22157.4	298.02	13728.0	4013.2	88.93
25561.8	547.64	13734.5	3884.7	98.50
20489.2	289.12	14670.7	4006.7	103.38
32786.1	247.58	16992.1	3614.2	48.52
27131.1	494.47	12602.9	3208.8	45.73
28553.9	307.85	13807.7	4718.2	90.46
34770.0	371.39	17360.8	4047.7	69.22
24185.9	321.95	13777.6	3964.9	79.88
26794.8	529.31	16452.4	4712.0	81.00
30235.2	837.05	14872.5	3612.3	67.11
35094.9	500.28	16286.5	2538.6	50.98
24650.7	244.70	13047.1	2524.3	54.65
31313.3	262.26	14755.1	2902.9	40.26
37071.5	187.95	9781.9	1737.9	29.53

	As	La	Lu	Nd	Sm	U	Yb	Ce	Co	Cr	Cs	Eu	Fe
MVP1072	5.0560	37.6950	0.4024	32.2610	6.7220	2.5528	2.8361	57.1590	9.8810	55.918	9.0830	1.5687	38358.0
MVP1074	1.0875	58.5330	0.5883	50.3550	11.6730	3.9022	4.2798	120.9900	1.9759	14.898	4.3958	2.4536	16265.0
MVP1075	3.7623	34.0390	0.3263	26.3590	5.3372	2.6992	2.1827	71.7980	12.5160	48.871	4.1078	1.1372	33648.0
MVP1076	2.6806	56.6020	0.5240	53.1750	10.8200	3.6179	3.7663	126.3100	4.7361	26.741	4.3292	2.1752	25277.0
MVP1077	5.2910	44.9900	0.4835	31.8280	7.0512	4.3633	3.2337	85.0150	6.8709	16.161	3.4200	1.3114	20053.0
MVP1078	4.2030	39.2840	0.3359	34.7570	6.4348	2.4087	2.5980	70.9760	11.8040	51.418	2.8588	1.4732	33822.0
MVP1079	1.6757	40.6760	0.4649	31.3440	6.2567	5.8029	3.0272	76.8610	6.4314	22.883	4.0778	1.2473	28846.0
MVP1080	2.9635	40.2940	0.3345	34.6030	6.5675	1.8561	2.4188	94.8390	16.9110	54.709	2.9972	1.5926	38067.0
MVP1081	2.9331	35.7220	0.4412	25.3600	5.2064	3.8814	2.9393	67.7170	6.9413	35.780	5.8164	0.9622	24608.0
MVP1082	3.9174	31.6400	0.7112	27.9040	6.6992	5.8314	5.2520	76.0720	4.8334	32.552	10.2110	0.7270	25019.0
MVP1083	3.4004	32.1110	0.2976	25.7130	4.8522	2.1838	2.2771	65.4540	9.8187	56.994	3.3734	1.1376	37906.0
MVP1084	2.2371	39.2400	0.4311	29.2400	5.9626	4.0935	2.9134	72.8800	5.6811	25.560	5.2246	1.1748	24876.0
MVP1085	3.8840	45.3300	0.3911	37.3150	7.0285	2.6970	2.8917	95.5870	17.6310	58.542	4.1249	1.4419	36261.0
MVP1086	4.8411	56.2230	0.5942	43.2280	7.5951	3.1015	4.1915	106.1800	5.4286	29.978	12.9830	1.4128	28021.0
MVP1087	2.8075	36.8540	0.2819	28.6660	5.6349	1.6758	1.8376	64.8640	10.1590	52.679	3.1773	1.2770	38258.0
MVP1088	2.6762	41.8330	0.4235	36.7700	6.9307	2.7280	2.7789	74.9470	7.2917	57.244	3.3702	1.4384	40948.0
MVP1089	1.5649	35.0560	0.3892	28.7080	5.7569	2.1397	2.6234	71.3500	7.8301	53.310	2.0743	1.3034	26545.0
MVP1090	4.6992	45.5700	0.4401	39.0250	8.0456	2.2334	2.8387	86.8890	11.8860	52.524	5.7632	1.4728	41389.0
MVP1091	3.1209	51.5500	0.5828	42.3710	8.3922	6.1962	4.1051	104.2900	5.2563	47.483	7.0006	1.5060	13349.0

Hf	Ni	Rb	Sb	Sc	Sr	Ta	Tb	Th	Zn	Zr	Al	Ba	Ca	Dy
7.5798	44.15	98.98	0.4901	11.4370	434.92	1.0331	0.7271	10.9640	74.08	173.89	92105.7	813.1	13521.4	4.7471
8.9591	17.23	124.91	0.6623	8.6076	216.86	0.9751	1.5470	14.6380	72.20	284.34	87092.5	1053.1	11228.3	7.6871
7.4840	30.95	107.99	0.5635	9.9415	275.74	1.2287	0.7173	13.1620	65.61	219.01	89411.9	833.1	14100.6	3.8688
8.7879	0.00	125.62	0.5871	9.8102	255.90	0.9566	1.3406	14.4310	83.53	228.73	88193.1	1074.7	11070.6	7.1255
7.2034	38.44	128.61	0.2744	5.8966	301.25	1.2475	0.8958	19.6280	53.10	184.57	69173.0	849.4	21388.6	5.0948
7.6146	36.97	91.32	0.4652	8.6423	695.26	0.9578	0.7520	10.4440	85.62	220.76	80342.6	1063.5	18940.3	4.4836
9.2229	0.00	135.46	0.3251	7.7057	286.41	1.3338	0.7809	16.4150	71.16	244.05	88714.8	804.5	12885.4	4.6849
6.3533	27.40	93.90	0.2620	10.5000	485.19	0.8871	0.9021	10.6290	92.33	178.15	89372.5	809.6	17800.4	4.2508
5.2038	0.00	137.46	0.4925	7.5898	312.71	1.2560	0.7066	15.9060	85.67	155.33	75090.1	642.0	26753.8	4.4101
7.0261	0.00	158.77	0.5176	9.5973	162.99	2.0497	1.0980	21.6100	101.84	162.33	76975.5	347.4	11722.1	7.0206
7.6368	32.64	93.12	0.3372	10.1080	340.22	1.0987	0.5844	11.9040	81.85	193.21	96034.1	876.0	14912.1	3.5043
7.5220	0.00	125.67	0.3830	8.2619	302.10	1.2863	0.7658	18.5210	58.75	218.65	87174.7	806.8	11974.8	4.5020
7.6189	0.00	107.10	0.4187	9.8488	374.59	1.1005	0.8237	13.2170	83.99	177.30	91694.1	921.9	13771.0	4.4821
9.7209	9.13	101.20	0.8044	10.6350	507.89	1.3670	1.0265	19.1170	96.73	261.50	107915.8	1281.6	16090.8	5.4899
6.5519	18.00	91.38	0.3033	10.2890	390.85	0.9222	0.6351	10.3450	106.41	164.23	96822.6	728.9	17952.4	3.7969
8.3113	14.27	100.19	0.2678	12.3230	310.56	1.1128	0.8535	14.3690	78.83	212.57	97578.1	782.1	15889.1	4.8903
8.4241	42.98	82.35	0.3212	8.9566	508.95	0.9269	0.7191	9.3429	72.58	252.33	79094.4	1007.0	20399.5	3.9617
7.1290	18.85	110.95	0.6732	13.3110	409.13	1.2499	1.0711	14.1410	104.92	183.14	101258.8	867.4	13831.2	5.0235
10.9360	25.89	74.00	0.8023	12.5380	102.82	2.0230	1.0930	22.9040	47.52	302.90	110730.8	851.9	10669.1	6.8037

K	Mn	Na	Ti	V
22860.9	472.04	15773.3	4727.2	96.73
30864.7	239.76	19384.6	2731.5	42.65
25132.2	969.65	15138.1	4059.9	83.26
28551.4	387.32	16245.9	2777.1	55.66
38255.7	539.01	16295.8	3083.8	45.63
25002.2	508.00	17844.7	4258.9	59.22
27238.3	343.78	16097.9	3564.2	59.55
21974.7	778.48	17071.8	4762.7	85.71
34992.5	419.87	16251.6	2508.8	65.43
26105.2	597.96	12097.9	2777.9	36.21
26988.3	409.29	15266.8	4302.6	69.38
28302.5	429.12	14070.6	3724.0	45.92
27992.8	660.90	14493.7	4999.4	76.77
31267.7	437.83	11682.3	3698.9	56.95
24810.0	417.18	14894.8	3584.1	58.18
28770.3	292.48	15335.0	4632.0	92.14
32896.3	361.34	18224.3	4257.0	87.81
28556.5	494.01	13963.4	3813.8	52.20
22225.4	88.49	1719.9	6043.0	76.10

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2015 *Migration and Ethnicity in Middle-Range Societies*. University of Utah Press: Salt Lake City, Utah.
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1999 Migrations in Late Anasazi Prehistory: The Evidence from the Goat Hill Site. *Kiva* 65(1): 63-84.

Curriculum Vitae

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EDUCATION

2024 PhD in Anthropology- University of Nevada Las Vegas. Dissertation: *Sourcing Clays and Styles: Interaction Networks at the Elk Ridge Site, Southwestern New Mexico.*

2014 M.A. in Anthropology- University of Nevada, Las Vegas. Thesis: *Corrugated Ware Function and Use as Identity Markers at the Harris Site*

2010 B.S. in Anthropology- California State Polytechnic University, Pomona. Graduated Cum Laude.

EMPLOYMENT HISTORY

2/22-pres WNMU Museum Director, Silver City, NM

2/21-2/22 NVCRIS Assistant; Nevada State Historic Preservation Office

8/17-2/22 Lab Manager; Southwest Archaeology Lab, UNLV

8/17- 2/18 Section 106 Review & Compliance Archaeologist; Nevada State Historic Preservation Office

3/16-5/17 NVCRIS Technician; Nevada State Historic Preservation Office

10/15 Archaeological Technician; SWCA, Las Vegas, NV

1/12-5/14 Lab Manager; Southwest Archaeology Lab, UNLV

PUBLICATIONS

2024 (Barbara J. Roth and Danielle M. Romero)
Children in Mimbres Society. *Kiva* 90(1):1-21.

2023 (Barbara J. Roth, Danielle M. Romero, and Ashley Lauzon)
Pipes, Palettes, and Projectile Points: Kiva Rituals and Ritual Paraphernalia at the Harris Site. In *Mogollon Communal Spaces and Places in the Greater American Southwest,* pp. 48-60. Edited by Robert J. Stokes, Katherine A. Dungan, and Jakob W. Sedig. University of Utah Press, Salt Lake City.

2023 (Roth, Barbara J., Danielle Romero, Thomas E. Gruber, Christina Dykstra, and Linda M. Gregonis)

Ceramic Data. In *Households on the Mimbres Horizon: Excavation at La Gila Encantada, Southwestern New Mexico,* pp. 22-37. Edited by Barbara J. Roth. University of Arizona Press, Tucson.

2022 (Barbara J. Roth and Danielle M. Romero)
Great Kivas and Community Integration at the Harris Site, Southwestern New Mexico. *American Antiquity* 87(4): 743-757.

2020 (Barbara J. Roth, Danielle M. Romero, Katelyn DiBennedetto)
Hunting blinds, the Bow and Arrow, and Land Use Strategies in the Mojave Desert: New Insights from Afton Canyon. *Journal of California and Great Basin Anthropology* 40(2): 214-223.

2018 Excavation Results and Ceramic Analysis. In *2017 Archaeological Investigations at the Elk Ridge Site (LA 79863), Mimbres Valley, Grant County, New Mexico.* Edited by Barbara J. Roth. Gila National Forest.

2018 (Barbara J. Roth, Aaron Woods, Danielle M. Romero, Malka McNeely, Mary Malainey)
Using Residue to Explore Household Activities at the Harris Site, Mimbres Valley, New Mexico. *Journal of Archaeological Sciences: Reports* 19:270-278.

2018 (Katelynn DiBenedetto, Danielle Romero, Barbara Roth) *Class III Non-Collection Survey in Afton Canyon, San Bernardino County, California.* Bureau of Land Management, Barstow, CA.

2017 Ceramic Analysis. In 2016 *Archaeological Investigations at the Elk Ridge Site (LA 79863), Mimbres Valley, Grant County, New Mexico.* Edited by Barbara J. Roth and Darrell Creel. Gila National Forest.

2016 Ceramic Analysis. In *Report on 2015 Archaeological Excavations at the Elk Ridge Site (LA79863), Mimbres Valley, Grant County, New Mexico.* Edited by Barbara J. Roth and Darrell Creel. Gila National Forest.

2015 (Danielle M. Romero and Ashley Lauzon)
The Art of Feasting: Style and Identity in a Ritual Area at the Harris Site. *Collected Papers from the 18th Biennial Mogollon Archaeology Conference.* Edited by Lonnie C. Ludeman. Printed by Edwards Brothers Malloy.

2015 Chapter 7: Plain Ware, Corrugated Ceramics and Worked Sherds.
Chapter 11: Pithouse Rooftop and Floor Assemblages (Barbara Roth, Danielle Romero, and Ashley Lauzon). In *Archaeological Investigations at the Harris Site (LA 1867), Grant County, New Mexico.* Edited by Barbara Roth. National Science Foundation Grant # 1049434.

PRESENTATIONS- ACADEMIC

2024 Natural History of the Gila Symposium, Silver City, NM: Investigating the Presence of a Non-Local Population at a Classic Mimbres Pueblo

2023 New Mexico History Conference, Silver City, NM: Multivocality: Understanding the Full History of a Prehistoric People

2022 21st Biennial Mogollon Archaeology Conference, Tucson, AZ:
1. (Darrell Creel, Danielle Romero, Barbara Roth)
The Architecture of Elk Ridge
2. From Pots to Potters: The Ceramics from the Elk Ridge Site
3. (Barbara Roth, Danielle Romero, Scott Nicolay)
The Elk Ridge Community

2020 Natural History of the Gila Symposium, Silver City, NM: Four Years at Elk Ridge Site: What We Have Learned and Where We Are Going.

2019 SAA Annual Meeting, Albuquerque, NM, Poster: Cache Flow: An Analysis of Vessel Assemblages from the Elk Ridge Site.

2018 19th Biennial Mogollon Archaeology Conference, Las Cruces, NM: From Pithouse to Abandonment: An Analysis of the Ceramics from the Elk Ridge Site

2018 Natural History of the Gila Symposium, Silver City, NM: (Danielle Romero, Barbara Roth, Darrell Creel): Home Is Where the Hearth Is: The Pithouse to Pueblo Transition at the Elk Ridge Site, New Mexico

2017 Three Corners Conference, Las Vegas, NV (Barbara Roth, Katelyn DiBenedetto, Danielle Romero, Dylan Person): Hunting blinds, the Bow and Arrow, and Land Use Strategies in the Mojave Desert: New Insights from Afton Canyon

2017 SAA Annual Meeting, Vancouver CA, Poster (Danielle Romero, Barbara Roth, and Darrel Creel): Chasing Tlaloc and Dragonflies in the Mimbres Valley: An Analysis of Ceramic Motif Distributions

2016 SAA Annual Meeting, Orlando, FL, Poster (Danielle Romero, Barbara Roth, and Darrel Creel): Archaeological Investigations at the Elk Ridge Site, Mimbres Valley, New Mexico

2014 18th Biennial Mogollon Archaeology Conference, Las Cruces, NM, Paper (Danielle M. Romero and Ashley Lauzon): The Art of Feasting: Style and Identity in a Ritual Area at the Harris Site

2014 SAA Annual Meeting, Austin, TX, Paper: Corrugated Wares and Their Potential Use as Identity Markers at the Harris Site

2014 SAA Annual Meeting, Austin, TX, Poster (Sara Gabbert, Danielle M. Romero, and Barbara Roth): Ceramic Tools and Other Worked Sherds from the Harris Site, NM

2013 SAA Annual Meeting, Honolulu, HI, Poster: Corrugated Vessels as Signatures: Household Identity at the Harris Site, New Mexico

2013 GPSA Research Forum, UNLV, Poster: Corrugated Vessels as Signatures: Household Identity at the Harris Site, New Mexico

PRESENTATIONS-OTHER

2023 Southwest Word Fiesta. Silver City, NM: Hidden Word of the Mimbres: Glimpses of Daily Life Through Pottery

2023 Widow Persons, Silver City, NM: An Introduction to the Mimbres

2022 Southwest Kiln Conference, Silver City, NM: Mimbres Sourcing of Clays: The Movement of Objects, Ideas, and People

2022 Silver City Museum Speaker Series, Silver City, NM: The Meaning of Things

2022 Clay Festival, Silver City, NM: Sourcing Clays and Finding Potters

2022 Grant County Archaeological Society, Mimbres, NM: Placing Croteau in Context

2018 Grant County Archaeological Society, Mimbres, NM: Style and Function of Mimbres Ceramics

COURSES TAUGHT/TA

ANTH 101 Introduction to Cultural Anthropology
ANTH 499 Archaeology Lab Internship

PROFESSIONAL SERVICE

9/23-pres Organizer 2024 Mogollon Conference
01/23-pres Board of Directors, Southwest New Mexico Arts, Culture, and Tourism
2023 Co-Organizer CLAY Festival
2023 Gila Symposium Planning Committee
2019 Archaeology Day Presenter at Lost City Museum
2018 Co-Organizer of SWABA Conference
2017 NVFCP Archaeology Workshop Fair Organizer and Presenter

GRANTS AND AWARDS

2021 College of Liberal Arts PhD Summer Stipend, $3000
2020 Nancy S. Coinman Award, $1000
2019 UNLV Graduate and Professional Students Association Research Grant, $1240
2019 Friends of World Anthropology, $920
2017 UNLV Graduate and Professional Students Association Travel Grant, $190
2017 UNLV Graduate College Recruitment Scholarship, $6000
2013 Edwards and Olswang Research Grant, $1100
2013 UNLV Graduate and Professional Students Association Research Forum, 2nd place poster

2013 UNLV Graduate and Professional Students Association Travel Grant, $300
2012 UNLV Graduate and Professional Students Association Research Grant, $850

VOLUNTEER HISTORY

01/16-12/18 President (8/17-12/18)- Nevadans for Cultural Preservation (non-profit)
01/17-5-17 Nevada State Museum
11/15-2/16 Great Basin Institute, NPS, Boulder City Office
10/15-2/16 Nevada SHPO, Las Vegas Office
7/15-5/17 Analyst, Report Writer
9/11-5/15 Southwest Archaeology Labs, UNLV

ARCHAEOLOGICAL PROJECTS

2019 Cottonwood Pueblo Mapping, NM; PI-Barbara Roth
Project Assistant
2015-2018 Elk Ridge Pueblo, NM; PI- Barbara Roth
Crew Chief/Ceramic Analyst
2014 Afton Canyon Survey, CA; Supervisor- Aaron Woods
Volunteer/Crew Chief
2012-13 Blacktail Ranch Field School, MT; PI- Rick Martynec
Assistant Lab Manager
2013 Excavation of Harris Site, NM; PI- Barbara Roth
Crew Member
2012 Lost City Field School, NV; PI- Karen Harry
Student
2012 Kansas Archaeological Training Program, KS; PI- Tricia Waggoner
Volunteer
2011 Blacktail Ranch Field School, MT; PI- Rick Martynec
Student

PROFESSIONAL SKILLS

Archaeological Methods

Field: Multiple handheld GPS devices, EDM/total station, excavation techniques, survey, inventory

Analytical: Ceramic analysis including reconstructing vessels, vessel function, corrugated wares, plainwares, miniature vessels, worked sherds, ceramic pipes; lithics; prehistoric and historic artifact curation

Additional: Section 106 review process, NAGPRA

Museum Studies

Exhibit design and installation, educational programs, curation methods, grant writing

Computer skills

Microsoft Office including Excel VBA programming; PastPerfect; SPSS; FileMaker; Adobe Suite including Photoshop; ArcGIS; QGIS; Metashape; Intuiface

PROFESSIONAL ORGANIZATIONS

American Alliance of Museums
Association of Academic Museums and Galleries

New Mexico Association of Museums

TRAINING AND CERTIFICATES

CITI Social/Behavioral IRB
Museum Abandoned Cultural Property Law

RESEARCH INTERESTS

Southwest archaeology, Mimbres archaeology, ceramic analysis, archaeological theory and method, technological and design style, communities of practice, identity negotiation, transmigration, interaction, public archaeology