ABSTRACT

Humans have long used gender (the cultural interpretation of a wide range of biological traits into social roles and identities) to organize labor in society. Frequently, these gendered divisions of labor are clearly defined in the archaeological and ethnographic record. At other times, these divisions become more ambiguous. In the Middle Rio Grande valley (MRG) of central New Mexico, the division of labor has traditionally been viewed as being rigidly gendered. This poster describes a preliminary analysis of 300 fingerprint impressions found on corrugated ceramic artifacts collected from three Classic Period sites (Pottery Mound, Tonque Pueblo, and Tijeras Pueblo) to estimate the biological sex of potters, one of the components of gender. The results from these analyses reveal that a small but significant number of males participated in the production corrugated wares, suggesting more nuanced views on the division of labor among ceramic producers during the Classic Period.

BACKGROUND

- Gender plays a significant role in organizing labor in the American Southwest (Castañdea 1904; Kelley and Heidke 2016; Mills 1995). .
- Gendered divisions of labor generally thought to be fairly static over time.
- This study assesses the strength of these gendered divisions among ceramic craft producers in the Middle Rio Grande Valley (MRG) in central New Mexico (figures 1 and 2).
- Fingerprint impressions are utilized as a proxy for gender. • Corrugated wares are utilized in this study due to their prevalence of fingerprint impressions on their exterior

surfaces.



Figure 1: Overview of Study Area with MRG archaeological districts. Classic Period sites discussed in this study are marked with filled stars.

POTTERY MOUND (LA416)

Situated on low-rise above the Rio Puerco west of present day Los Lunas, NM (figure

Moderate sized adobe pueblo (ca. 400-600 rooms)

Evidence of Western Pueblo influence

Occupied ca. A.D. 1350—1500 Known for ceramic production and kiva

murals (figure 4). Well-known producer of early Rio Grande

Glazeware





THE CLASSIC PERIOD IN THE MIDDLE RIO GRANDE A.D. 1350-1600

- Period of massive sociocultural change marked by: —Population growth both from increased childbirth and immigration,
- —Rapid accumulation of people in large multi room block pueblos,
- —Adoption of new religious and ceremonial practice
- —Expansion of trade and exchange networks over a wide geographic area —Introduction of new technological innovations
- and artistic expression (e.g. glazeware).



Figure 2: Overview of Study Area with contemporary language groups. Classic Period sites discussed in this study are marked with filled stars.

TONQUE PUEBLO (LA240)

Situated on north bank of Tonque Arroyo

Large E-shaped pueblo consisting of 1500-2000 rooms

Occupied ca. A.D. 1350 until late— 1500s Well developed ceramics industry,

widespread distribution of Glazeware (figure 5).

Hypothesized nutrional stress led to ceramic specialization (Warren 1969).

Figure 3 (left): Location overview of Pottery Mound

Figure 4 (bottom left): detail of Pottery Mound Kiva Mural (from Schaafsma 2007). Figure 5 (bottom): detail of Espinoso Glaze-onyellow ware produced at Tonque Pueblo.

Figure 6 (bottom right): Location overview of Tijeras Pueblo.





TIJERAS PUEBLO (LA581)

Situated in a mountain pass between the Manzano and Sandia Mountains separating the Rio Grande from the Great Plains (figure 6).

Smaller pueblo (ca. 200-250 rooms). Occupied ca. A.D. 1300-1425.

Some local ceramic production, though not as extensive as found at

Pottery Mound or Tonque Pueblo.

Exploring Gendered Ceramic Production: A Case Study from three Classic Period Sites (ca. A.D. 1350—1600) in the Middle Rio Grande, New Mexico

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GENDERED LABOR IN THE MRG

Sex vs Gender

- Sex is defined by biological traits (Kelley and Ardren 2016).
- Gender is the cultural interpretation of these traits in a broader framework (Kelley and Ardren 2016) (table 1).

Task Segmentation

- Multi-authored" manufacturing process
- Household or communal manufacture
- Ranked tasks (Kelley and Heidke 2016) *Higher skill tasks – traditional or master crafters Lower skill tasks – novices or non-traditional practitioners*
- Ethnographic and historic examples Spousal ceramic production teams – Zuni and Acoma (Mills 1995)
 - Home construction at Kuaua and other historic pueblos (Castañdea 1904)





METHODS

- Fingerprint Analysis
 - —Sexual Dimorphism (Mundorff et al. 2014).
 - -Male ridges wider and less dense
 - -Female ridges narrower and more dense
 - -Children ridges extremely dense and narrow
- Based upon data aggregated from numerous previous studies on ridge breadth, a threshold of 0.505 mm was established to separate between likely male and female fingerprints
- Visual inspection for fingerprints
- Microscopic photography utilizing Dinolite Edge digital microscope
- Ridge Breadth Measured in using DinoCapture Software (figure 7 and 8)
- Collection of artifact attributes for comparative analysis (Table 2)
- Statistical analysis using R studio and PAST3 software



Acknowledgements: I would like to thank the Maxwell Museum of Anthropology and the Albuquerque Archaeological Society for graciously allowing me to conduct this research. Additional thanks to the Arizona Archaeological and Historical Society, the Archaeological Society of New Mexico, and the Paleowest Foundation for their generous financial support.

Table 1. Components of Gender Identity Bolded components are addressed directly in this study. <u>Components</u> <u>Category</u> Male, Female Sex Gender

Age

Sexual Orientation

Occupation

Male, Female, Cross-gender, Binary/fluid Infant, Child, Adolescent, Adult, Elderly Heterosexual, Homosexual. Bisexual, Asexual

Variable, frequently tied to above components

MATERIALS

- Data is drawn from corrugated ware sherds recovered from the following contexts: **Pottery Mound**
 - 38,000 sherds from Cordell 5 x 5 meter test excavation (excavated 1979)

<u>Tijeras</u>

2,500 sherds from Cordell excavations (excavated 1970s)

Tonque

- 2,500 sherds from AAS excavations (excavated 1960s-1970s)
- 100 fingerprint impressions documented from each

Figure 7 (top left): Sample of corrugated ware from Tijeras Pueblo (LA 581).

Figure 8 (bottom left): Microscopic photograph of a corrugated sherd from Pottery Mound (LA 416) featuring several partial fingerprints.

Figure 9 (below): Closeup of two sample fingerprints illustrating methods for measuring fingerprint ridge breadth (bottom center) and fingerprint ridge density (bottom left).





 Table 2: Attributes to be collected

Accession Number Artifact Type Spatial Context **Temporal Context** Location of Fingerprints

Ridge Breadth (mm) Ridge Density (ridges/mm²)

Sex Estimate

- Tijeras Pueblo sample were most likely male (figures 10-12).
- and 14).

Fingerprint Ridge Breadth at Tonque (mm)



Fingerprint Ridge Breadth at Pottery Mound (mm)



Comparison of Fingerprint Ridge Breadths (mm)



DISCUSSION AND CONCLUSIONS

- While the vast majority of corrugated vessels appear to be made by female potters, a small but significant number of vessels appear to have been made by males
- Suggests a more nuanced view of gendered ceramic production Classic Period in the MRG.
- Future research to investigate patterns of gendered ceramic production during the Coalition Period (A.D. 1000–1350) to assess changes in gendered ceramic production in the MRG.



RESULTS

• Overall, the vast majority of fingerprint impressions found on pot sherds were from females. Between 83-90% of fingerprint impressions documented in this study were most likely female.

• However, a small, but significant percentage of fingerprint impressions documented in the sample were male ranging from 10% (10/100) at Tonque Pueblo to 17% (17/100) at Pottery Mound. 12% (12/100) fingerprint impressions from the

• There is no statistically significant difference in mean fingerprint ridge breadth values between the three sites (figure 13



Figure 10 (top left): Histogram of fingerprint ridge breadth from corrugated ceramic sherds recovered from Tonque Pueblo (LA 240). The blue line represents the male-female threshold value of 0.505 mm.

Figure 11 (top right): Histogram of fingerprint ridge breadth from corrugated ceramic sherds recovered from Tijeras Pueblo (LA 581). The blue line represents the male-female threshold value of 0.505 mm.

Figure 12 (left): Histogram of fingerprint ridge breadth from corrugated ceramic sherds recovered from Pottery Mound (LA 416). The blue line represents the malefemale threshold value of 0.505 mm.

Figure 13 (bottom left): Boxplot comparing fingerprint ridge breadths from corrugated ceramic sherds analyzed in this study. The red line represents the malefemale threshold value of 0.505 mm.

Figure 14 (bottom right): Results from ANOVA test of equal means values of fingerprint ridge breadths in this study.

p (same) Mean square 0.08233 Between groups: 0.0572491).0286246 Permutation p (n=99999) 3.37608 0.0113673 3,43333 0.08257 Components of variance (only for random effects): ICC: 0.0149545 Var(group): 0.000172573 Var(error): 0.0113673 evene's test for homogeneity of variance, from means Levene's test, from medians) (same) Welch F test in the case of unequal variances: F=3.66, df=190.8, p=0.02757

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The Tewa Community at Tsama Pueblo (LA908): Artifacts from the 1970 Excavations Kaitlyn Davis and Scott Ortman, Department of Anthropology, University of Colorado, Boulder



Introduction and Research Objectives

Tsama Pueblo (LA908) is an ancestral Tewa community in the Northern Rio Grande region of New Mexico (Fig. 10). The village was excavated by Florence Hawley Ellis and students in 1970 as part of a University of New Mexico archaeological field school. The resulting artifact assemblage, however, remained uncatalogued and unanalyzed until the 2000s. This poster presents summary analyses and contextual information for the artifact assemblage.

This poster displays background information on Tsama Pueblo, tabular presentations and images of the artifact data organized by type and location, and comparisons with other sites in the Northern Rio Grande and Northern San Juan. This poster is a summary of a more detailed report on the Tsama excavations and material culture that is forthcoming in the Maxwell Museum Technical **Series**. The report is intended to make information from

Tsama more widely available, to contribute new data for regional comparisons, and to consider the artifact assemblage in light of current trends in archaeological interpretation of ancestral sites in the Northern Rio Grande.



Figure 10. View of the midwinter sunrise from Kiva M-1, facing southeast. The illuminated ridges in the foreground are the crests of the East Plaza room blocks. The horned peak to the north of the sun is K'uusehnp'ing, the Tewa east mountain. Photograph by Scott Ortman



Figure 1. Location of Tsama Pueblo in the Chama Valley. Map courtesy of Samuel Duwe.



Figure A.11. Nearly complete Biscuit B bowl.



Background

- Tsama: Tsama Pueblo (in Tewa, Tsáma?ówîngeh) is in the northwestern Tewa Basin, in the Chama Valley of northern New Mexico (Fig. 1). Tsama consists of 3 plazas and was inhabited from the 1200s to the 1600s, thus providing important information about change in Pueblo communities over time (Fig. 3). Currently, Kiva W-4 and the associated West Plaza represent the earliest known tree-ring-dated occupation in the Chama District.
- Excavations: Tsama was excavated as part of a University of New Mexico field school in 1970. About 7 percent of the site was excavated, including 36 rooms, six kivas, and an exploratory trench (Windes and McKenna 2006:233). The reports and notes from the TAs, including Windes and McKenna, helped us contextualize our artifact analyses and site report.

The Collection

- The artifacts collected from Tsama include utility (storage and cooking) ceramics, serving ceramics (Fig. A.11), chipped stone tools, ground stone tools, faunal and vegetal remains and tools, and an unusually high concentration of ornaments (selenite pendants).
- The excavated deposits were not screened. Instead, students excavated with hand tools and collected all artifacts they noticed. It is likely that this practice led to the under-representation of small artifacts that would normally be caught in a quarter-inch mesh screen. This likely reduced the total count of recovered artifacts by volume.
- Today, the collection from Ellis' 1970 excavations at Tsama is curated at the Maxwell Museum of Anthropology, University of New Mexico.

Methods

- All objects were classified into stone, bone, pottery, vegetal, and other categories defined in the Crow Canyon Archaeological Center Laboratory Manual, and pottery was classified following Wilson's (2006) guide to identification of Northern Rio Grande pottery types.
- The Crow Canyon laboratory removed the excavated materials from their original field bags, used the information recorded on the bags to determine the proveniences of materials to the extent possible, and repackaged the collection in archival materials. As the collection was repackaged, handwritten labels on the paper field bags were cut out and included with the field bag contents in the new packaging. The laboratory crew also re-numbered the collection and documented correspondences between the original field documentation and the new database
- In the report we summarize the artifact data across a series of groups based on spatial location, vertical position, and ceramic chronology. These divisions allow us to make temporal and spatial comparisons. including similarities and differences between Coalition period assemblages in the west village versus the east village and between the Coalition and Classic period occupations.
- We grouped the artifact assemblages into four components: (1) the Coalition period occupation (the West Plaza); (2) the Coalition period East occupation (a smaller occupation revealed in the lower levels of excavated rooms in the East Plaza); (3) the Classic period occupation (which includes all other deposits in the East Plaza); and (4) a "general site" component for materials that either lack provenience information or were labeled as general site collections on the original field bags.

Data and Results

Pottery

- Type distributions support the overall dating of the site from the Late Coalition period through the Classic period. The data suggest that the West Plaza was inhabited into the Early Classic period, based on the large amounts of Wiyo Black-on-white and Biscuit A (Fig. A.7). The absence of pottery that predates Santa Fe Black-on-White suggests Tsama was founded during the AD 1200s. Also, the substantial amount of Tsankawi Black-on-cream, with only trace amounts of Kapo Black and Tewa Red, establishes an end date for the occupation of about AD1600.
- Trade wares such as Galisteo Black-on-white, Taos Black-on-white, and Jemez Black-on-white are rare.
- · Glaze wares, which were produced primarily in the Galisteo Basin some 80 km to the south are also rare, but later glaze types are more frequent than earlier ones.



for the vessels.



Figure 14. Fired clay bell.



0 5 2



Bone Tools & Ornaments

- Decrease in the frequency of bone awls from the Coalition period to the Classic period
- Few shell objects
- High concentration of selenite pendants (including blanks, suggesting manufacture site) (Fig. 19).
- Less dense fauna through time but species (deer and turkey) consistent



Figure 19. Sample of selenite pendants found together in Kiva M-1.

Stone Tools

- The number (and density) of chipped stone tools, including projectile points, declined through time, while the number (and density) of cores was more or less consistent.
- The most common materials are varieties of Jemez Mountain obsidian (El Rechuelos obsidian was distinguished visually from other Jemez obsidian) and Pedernal Chert (Fig. 15).
- No ground stone tools were recovered from the Coalition East component and surprisingly few such tools were recovered from the Classic Period component. It appears that many pieces of ground stone either were not collected or were lost between 1970 and 2008. A tabulation by Windes and McKenna (2006, Table 1) suggests that 67 manos were found in contexts we assign to the Coalition component, and that nine were found in contexts we assign to the Classic component.
- Representation of pecked and polished tools is more consistent across components than is the case for ground stone tools, and they do not appear to be as under-represented as ground stone tools. In addition, there is a large number of polishing stones in the assemblage (Fig. 16).





Figure 15. Selected bifacially flaked tools from Tsama Pueblo.



Spatial Distribution

- There is a change in the relative abundance of the most common categories, with cooking potsherds being relatively less frequent and whiteware bowl and jar sherds being relatively more frequent in Classic Period structures (Fig. 27).
- Increasing specialization (spatial structuring of activities) based on artifact distributions over time.



Figure 27. Quantitative summary of change at Tsama Pueblo.

 Economic Change: -The observed pattern suggests that the Tsama population produced more pottery, personal adornments, and chipped stone tools per capita over time, and that households maintained larger inventories of these goods (Fig. 20, 21). -This interpretation is reinforced by the increasing size of domestic rooms, from an average of about 6 square meters to about 10 square meters, over time. The average household at Tsama thus had about 40 percent more roofed space in the 1400s than in the 1200s.

• Demographic Change: -Several lines of architectural, ceramic, and ecological evidence together suggest that Tsama grew from a village of a few hundred people at AD 1300 to a town of more than 1,000 people by AD 1500—an average annual growth rate of about 0.8 percent over two centuries. Population growth at Tsama was part of a regional process of coalescence of a roughly stable population into fewer, larger settlements (as opposed to general growth of the regional population)

-The population history reconstructed for Tsama, based on its pottery assemblage, implies that individuals and households were relatively free to move between Tsama and other communities in the region.

• Institutional Change: -The increased openness of Tsama to visitors is indicated by the fact that plaza space increased faster than population over time. The functional diversification of kivas over time indicates expanded social integration. -Expansion of ritual practice (pendant cache)

-Connections to Tewa oral tradition (architecture and orientation)

Tewa continuation and change:

Tewa integration:

7, 25, 26).

Report highlights:

- Compilation and synthesis of existing information from field notes and subsequent field crew reports.
- In context of Chama region. • In context of Tewa oral tradition and life wavs.

The Maxwell Museum, Dave Phillips, Tom Windes, Peter McKenna, Crow Canyon Archaeological Center and staff, Steve Wolverton and the University of North Texas faunal lab, the Pueblo of Ohkay Owingeh, New Mexico Archaeological Council, Mike Adler, Nick Kessler

Change Over Time





Figure 21. Room-by-room composition of assemblages from the Classic Period.

Regional Comparisons

• Tsama had less violence, more varied diet, more communal/social architecture (eg plaza space), more craft specialization, and more inter and intra-regional trade than Sand Canyon. This pattern is more apparent through time as well from the Coalition to Classic areas of Tsama.

 Elements of Tsama, such as its orientation and its material culture (eg the pendants), reflect aspects of Tewa society, such as moiety organization (Fig.

information on Tsama Pueblo: Includes results of Crow Canyon artifact analyses, University of North Texas faunal analyses,

Available through the Maxwell Museum **Technical Series late 2021/early 2022.**



Figure 7. View through the southwest opening of the East Plaza at Tsama. Looking west through the West Plaza toward Tsip'ing. Photograph by Scott Ortman.

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Introduction

Artificially modified faunal remains – i.e., faunal remains intentionally modified by humans in the context of osseous tool and/or craft production – are an understudied artifact category in the North American Southwest. This study investigates the intra-site distribution of bone artifacts at Tijeras Pueblo (LA 581) to assess evidence for activity areas associated with craft production involving bone artifacts. This spatial analysis employs global and local methods of spatial autocorrelation analysis (Moran's I and Hot Spot analysis, respectively) to identify statistically significant clustering of specific bone artifact categories within the site.

Tijeras is a Pueblo IV period site located east of Albuquerque, NM, nestled between the Sandia and Manzano Mountains (Map 1). The village was inhabited during the 13th and 14th centuries CE and was comprised of an estimated 250 rooms (Cordell 1980). The Pueblo IV period is characterized by larger settlement sizes and population aggregation compared to the prior Pueblo III period, as well as by increased craft specialization, export and trade between sites (e.g., Eckert 2008; Schleher 2010). Osseous artifacts might prove useful to investigate these processes at an intra– and inter-site level, since they are (a) the result of craft production that leaves archaeological traces in form of debris, and (b) the finished osseous implements, such as awls, are themselves used in the context of other craft production. Their distribution within a site can provide information on the spatial organization of labor and potential workshop areas.

Research Question and Hypotheses

RESEARCH QUESTION

How was osseous craft production and the use of osseous crafts spatially organized at Tijeras Pueblo?

The question is addressed based on the spatial distribution of osseous artifacts within the site using spatial statistics in ArcGIS (ESRI).

HYPOTHESES

H₀: Artificially modified bone is distributed dispersed or randomly in space. H_A: Artificially modified bone is distributed in a statistically significant clustered pattern. Rejection of H₀ indicates the presence of special foci of osseous craft production and/or use at Tijeras Pueblo, possibly related to craft workshop areas.

Materials and Maps

DATA SOURCES

- Maxwell Museum of Anthropology catalogue of Tijeras Pueblo Artifacts recorded by volunteers • Tijeras faunal analysis data from an ongoing project provided by Dr. Emily Jones, collected by
- trained zooarchaeology students, including the author, under Dr. Jones' supervision. • I systematically searched these data sheets for all bone, antler, or tooth items described as
- "worked" or "modified", or that received a specific artifact designation (e.g. "awl", "hammer", "bead", "flute", etc.), as well as cross-referenced both data sets to avoid double entries.
- I verified a subset (13%) of the osseous artifacts listed in the Maxwell catalogue in the Museum's magazine, targeting specifically those most vaguely described as "worked"/"modified" to exclude bones erroneously recorded as osseous artifacts, while in fact being unmodified or non-osseous.
- Table 1 shows the resulting data set of 438 osseous artifacts provenienced to the level of excavation unit. Artifact categories shown in bold were individually analyzed via spatial statistics. Shown here are only the categories of awls and debris (indicative of osseous craft production).

DIGITIZATION

- A paper map on file at the Maxwell Museum was digitized by hand in ArcMap and georeferenced to produced a digital map of Tijeras Pueblo excavation units from the 1970s UNM field schools. Excavation areas from other projects are not included.
- The resulting map file consists of 208 polygons representing excavation units (Map 2)
- 135 structures (rooms and kivas)
- 73 extramural units
- 115 Polygons contain modified faunal bone in quantities ranging from 1 to 26 objects (Map 3)
- I linked these Polygons with attributes on the number of different artefact types found within.

Spatial Statistics

• Spatial autocorrelation analyses are used to assess the pattern of distribution – usually classified as random (no spatial autocorrelation), dispersed (negative spatial autocorrelation), or clustered (positive spatial autocorrelation) – of items on a landscape (Wu and Kemp 2019).

- MORAN'S I GLOBAL AUTOCORRELATION
- Global autocorrelation measures identify the overall distribution pattern of a phenomenon associated with a measure of statistical confidence, but they do not indicate the precise location of any potential clusters on the landscape (Griffith 2017; Wu and Kemp 2019). Here, Moran's I analysis serves to confirm overall artifact clustering, lending support to local autocorrelation measures. HOT SPOT ANALYSIS - LOCAL AUTOCORRELATION
- Local autocorrelation analyses visually represent the location of statistically significant clusters if present – on a map (Griffith 2017; Wu and Kemp 2019). I used *Hot Spot* analysis to detect areas of significant high or low occurrences (hot or cold spots, respectively) of osseous artifacts—overall and by specific artifact types (see Table 1, bold categories were individually spatially analyzed).

THE SPATIAL DISTRIBUTION OF ARTIFICIALLY MODIFIED FAUNAL REMAINS **AT TIJERAS PUEBLO (LA 581)**

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The Road Continues: New Chacoan Roads Research Using Old Data

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OVERVIEW

- Our project (Weiner's Ph.D. research) explores the history, use, and meaning of monumental roads in the Chaco World through new fieldwork that builds on pioneering efforts and legacy data of the Bureau of Land Management Chaco Roads Project (Kincaid 1983; Nials et al. 1987) and others (Marshall 1997)
- In a larger sense, we ask how monumental roads were implicated in the rise of social inequality and regional organization in the Chaco World.

METHODS & THEORY

- Light Detection and Ranging (LiDAR)
- Drone-based Structure from Motion Photogrammetry (SfM)
- GIS analysis of LiDAR / SfM digital elevation models (DEMs)
- In-field GPS mapping and artifact analysis
- Navajo and Pueblo oral traditions and perspectives on roads & landscape; site visits with Native colleagues
- Cross-cultural comparison of ritual roadways

CONCLUSIONS

- Monumental roads pre- and post-date Great House architecture in Chaco and may begin in Basketmaker III
- Our fieldwork bolsters previous findings that Chacoan roads connected to revered landforms, astronomy, and older sites
- We suggest processions and races were two uses of roads

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www.PosterPresentations.com



Original site documentation for Llave de la Mano and Roadcut Ruin (Nials et al. 1987:173, 181)





Slope shaded SfM photogrammetry DEM of Llave de la Mano platform terracing on platform (by Richard

Key Findings

- Ceramic assemblage of Llave de la Mano platform is overwhelmingly Basketmaker III.
- "Road Cut" Ruin does not appear to be an earlier Basketmaker site cut by the South Road as originally proposed. It consists of two slab boxes and a small earthwork with Basketmaker III artifacts that seem to intentionally flank the roadbed.
- The portion of the South Road connecting Llave de la Mano and Kin Ya'a (with a Basketmaker III Great Kiva) may therefore date to the Basketmaker III period.

and associated herradura. Note Friedman)

Robert S. Weiner¹, Richard A. Friedman², and John R. Stein³

LiDAR DEM showing the South Road's articulation with Roadcut Ruin and Llave de la Mano Platform (by Richard Friedman)

CHAMBERS & TAYLOR SPRINGS ca. AD 950-1300







Previously undocumented staircase beneath Taylor Springs Big House.



SfM photogrammetry DEM of Chambers Great House landscape (by Richard Friedman)

Key Findings

- Our fieldwork revealed that Taylor Springs Big House was appended onto the southeastern margin of the Chambers road rather than being located directly on the road alignment as shown in the original map.
- This suggests the road predates Taylor Spring Big House and, while a "time bridge" (Fowler and Stein 1992), was likely originally constructed to connect Chambers Great House with Taylor Spring, which is called Asdzáán Tááh Ííyá ("Woman Went into Water") in Navajo and is described in oral traditions of the Ánaasází era.
- We also documented a previously unknown stairway on the road below Taylor Spring Big House leading to Asdzáán Tááh Ííyá.



Possible roads at Kin Nizhoni identified by the BLM in 1987 (Nials et al 1987:Map 47)



Roads identified at Kin Nizhoni through LiDAR and groundtruthing.





KIN NIZHONI ca. AD 900-1150



Tsoodził / Kaweshtima

Key Findings



Round Butte

We documented 8 roads (compared to 5 identified in previous BLM documentation).

• All road segments align towards prominent peaks.

The segment connecting Upper and Lower Kin Nizhoni Great Houses is a time bridge and also algns to Tsoodził / Kaweshtima.

Gate, box, and shrine features are present on roads at Upper and Lower Kin Nizhoni, which have monumental precedents in Chaco Canyon.

Carlsbad Field Office



A Permian Basin Programmatic Agreement Investigation Pueblo on the Plains: The 2019 Investigations at the Merchant Site of Southeastern New Mexico

INTRODUCTION: The Merchant site is a 14th and early 15th century pueblo settlement located near Grama Ridge, a prominent escarpment near the boundary where the basin-and-range region merges with the southern Plains of southeastern New Mexico. The Merchant site is representative of the Ochoa phase, a poorly understood time period of southeastern New Mexico dating from A.D. 1300 to 1450. The Ochoa phase was contemporaneous with the Pueblo IV period of the greater Southwest, the Antelope Creek phase of the southern Plains, and the Toyah phase of central Texas. As such, Merchant and other Ochoa phase settlements were part of the widespread patterns of population aggregation, migrations, changing hunting practices, and accompanying developments in social and ritual organization that occurred throughout the Southwest, northern Mexico, and southern Plains during the fourteenth and early fifteenth centuries.

The first investigations took place between 1959 and 1965 but the only description of the site was a brief paper published by Robert Leslie in 1965. To remedy this situation, the Carlsbad Field Office (CFO) of the Bureau of Land Management developed a task order under the Permian Basin Programmatic Agreement to fund a remedial mitigation and investigation in 2015. Versar, Inc. mapped the site and re-excavated some of the areas dug by the LCAS. The results of that work confirmed that the site retained significant research potential. The CFO funded a second season of fieldwork and laboratory analysis in 2018. The work included additional excavations of domestic rooms, midden deposits, extramural areas, and agricultural fields. A 1,257-acre parcel around the site was intensively surveyed to search for Ochoa phase pueblos or villages of other time periods,

HISTORY OF INVESTIGATION. The Merchant site has been the subject of archaeological interest since the late 1950s. Unfortunately, it was also of interest to looters and arrowhead collectors and suffered considerable damage from uncontrolled excavations beginning with its discovery in the late 1950s. Robert "Bus" Leslie, an enthusiastic and dedicated avocational, first visited the Merchant site in 1959. He was guided to the site by two members of the newly formed Lea County Archaeological Society. Upon viewing the destruction and disorder caused by looting, Leslie attempted to impose some organization and archaeological structure at the site, organizing numerous weekend excursions to excavate the more prominent and significant features. Excavations continued through 1965, at which point it was felt that a majority of the major features had been excavated and most of the midden deposits and other contexts had been looted. Leslie and the LCAS did a commendable job of conducting controlled archaeological excavations that were equal in quality to many professional projects of the time.

The Merchant Village Site

Robert Leslie and the LCAS recorded 23 surface domestic rooms at the Merchant site and excavated a sample of seven rooms. An additional thirteen possible rooms were mapped during the 2015 fieldwork. Most of the rooms were arranged within two roomblocks that formed an "L-shaped" pueblo. Trash disposal areas were present at the sides of the roomblocks and to the south around the two large civic-ceremonial structures.

The overall size of the settlement, the number of room blocks, and numbers of rooms have increased considerably as a result of the 2019 excavations. A previously unsuspected room block of 15 to 20 rooms was discovered along the eastern edge of the site between Pit Structures 1 and 2. This area had been extensively strip-looted in the 1960s and only two partial rooms were thought to remain intact. Additional rooms were identified along the edge of the escarpment to the south for a distance of 60 meters. Room 7, once thought to be an isolated room at the southern edge of the site, is now known to be part of another series of contiguous rooms forming a southern room block.

An important aspect of the eastern rooms is that they were added during several construction episodes rather than a single, planned event as would have taken place during a migration of a large group of people. Some rooms do share common foundation walls or have walls that do not align with the walls of adjacent rooms or have slightly different orientations. One of the critical questions is whether the people or lineage groups inhabiting the western, northern, and eastern rooms were specifically associated with either of the two ceremonial structures. No differences in ceramic types or projectile points were found between the eastern rooms and those to the north and west.



Ochoa Indented Corrugated sherds from the Merchant site. Ochoa ware was a multifunctional ceramic that served as cooking pots, storage vessels, and perhaps for water transport and pot-watering corn plants in the agricultural fields.



THE OCHOA CERAMIC TRADITION. Ochoa ware pottery is the signature and diagnostic trait of Ochoa phase villages. Very little was known about the pottery-how and where it was made, what it was used for, and how far and wide it was traded

A sample of sherds was submitted for neutron activation analysis (NAA) to measure the concentrations of various elements in the clay and temper. The analysis found that Ochoa pottery is very distinct from any other pottery made in southern New Mexico and west Texas. Three chemical groups were defined. One identifies pottery made by the Merchant villagers. Two other groups may be from Ochoa Phase villages in far west-central Texas, like the Salt Cedar site in Andrews County. A surprising finding is that very little pottery was traded among Ochoa villages or with groups residing at other villages in the region, a truly very rare occurrence in the prehistoric Southwest and southern Plains.

Ochoa sherds were coated in soot, showing they came from vessels that had been used as cooking pots, while other sherds had not soot or evidence of burning and were probably used to store foods and transport water.

Soot, soil, and residues sticking to the surfaces of Ochoa sherds were collected and examined by specialists. Corn pollen was found on several sherds and remnants of mesquite and hackberry were also found. These plant remains were found on 1 out of every 3 sherds examined, showing that Ochoa pottery was used to cook and store several types of food.





The Ochoa Main group was made at the Merchant pueblo site. Ochoa 3 and 4 were probably made in far west-central Texas. Ochoa 2 is not yet a fully defined group.



Excavations in the Eastern Rooms

One of the most surprising and significant discovery of the 2019 fieldwork was that the intact remains of architecture existed in areas of the site that were thought to have been mostly destroyed by looting and erosion. Room 6 had been probed by the LCAS in 1963 and the partial walls could be seen on the ground surface of the site in 2019. Room 13 was another room that appeared to be partially intact. Excavations started with that room and discovered that Room 13 was attached to two rooms to the south (Room 25) and north (Room 26). Excavation of those rooms found that additional rooms were present that joined with Room 6. Ultimately, an entire series of rooms were defined along the eastern side of the pueblo.

Rooms 6, 13, 25, 26, 27, 28 and 29 were completely excavated. Small segments of walls were found leading from these seven rooms, showing that more rooms are present to the east and west. It is estimated that 15 to 20 rooms are present along the eastern side of the pueblo. The excavations revealed much about this important village and its architecture. The Merchant site is a pueblo village, but the rooms were made of *jacal*—a form of waddle and daub or mud and stick wall construction—rather than using masonry or layers of adobe or adobe bricks. It is estimated that 60 to 80 rooms were represent at the peak of occupation. The rooms are arranged in "\" shape, with additional rooms to the south. The eastern rooms are located between the two ceremonial rooms, Pit Structures 1 and 2. A trash disposal area, Midden B, is present to the east of the rooms.

Each room had a central floor hearth. Few rooms had primary support postholes and the primary roof supports were probably positioned at the corners. It is likely that roofs were thin constructions of thatching, branches, and a thin coating of clay or adobe mud. Few artifacts were found on the floors, indicating that people moved away from the village in a planned and orderly manner.



The Southern Room Block

Robert Leslie and the LCAS mapped a single room 70 meters to the south of the main pueblo. It was designated Room 7 and Leslie removed a few cm of the upper fill. During the 2015 project, a ground-penetrating radar (GPR) survey determined that that additional houses and perhaps storage pits were present around Room 7.

Room 7 was excavated during the 2019 project. The excavation confirmed what the GPR survey had found, that another small room block is present to the south of the main pueblo. Room 7 and adjacent Room 24 were excavated. The southern rooms had escaped the attention of the looters and the Rooms 7 and 24 were two of the best-preserved rooms at the site. A small area of trash disposal was found along the eastern walls. The remnants of the clay-adobe walls could be seen along the lines of stones marking the wall foundations. In the picture to the left, the clay-adobe is a slightly orange-tinted soil that follows the wall outlines. A stone-lined hearth was present in the floor of Room 24.



Aerial view of the southern room block

Agricultural Fields

During the 2015 investigations, several areas of linear patterns of caliche cobbles were noted along the margins of a shallow swale, 75 meters north of the pueblo. These areas were mapped and two locations were investigated with backhoe trenches and small excavation units. The preliminary interpretation was that the caliche patterns were agricultural fields. This interpretation was controversial and few researchers accepted the conclusions. Additional fieldwork was undertaken in 2019 to resolve the issue.

Feature 82 is a large agricultural grid garden that was excavated during the 2019 fieldwork. A 20 by 15 meter area was cleared of vegetation and a few inches of sand was brushed and scraped from the cobbles. The linear patterns of caliche bordering the gridded fields can be seen in the aerial image and plan map below.



Several lines of evidence were used to confirm that these features were a type of gridded agricultural field. Linear patterns of caliche cobbles do not occur naturally. The features were placed along the highest elevations on the sides of the swale, the best locations in the vicinity of the village to capture runoff rainfall. A series of check dams were found crossing the arroyo.

The size and arrangement of the fields match those found in prehistoric fields throughout New Mexico and Arizona. Soil samples were also examined for diatoms, small organisms that thrive in wet environments. The numbers of diatoms were much higher in soil samples from the gridded fields and check dams compared to samples from houses and trash areas at the pueblo. This indicates that the fields held water after rains for growing corn and other crops.

The most convincing evidence is that corn pollen was found in two locations. A soil sample from field Feature 82 had corn pollen and pollen was found in another sample from a check dam.

Check dams along the shallow drainage below the gridded fields



Excavation area Pollen and Phytolith sampling locations

What the Merchant Site Means

The Merchant site is an Ochoa Phase (A.D. 1300–1450) pueblo settlement on the plains of southeastern New Mexico. The presence of such a site gives rise to several research questions involving multiple scales ranging from human adaptations to the local environment of southeast New Mexico to the nature of the social groups that inhabited the site and their relationships to broad patterns of social and economic interaction that took place across the southern Southwest and southern Plains during the 14th and 15th centuries. There appears to be a distinctive blend of Plains and Southwest material culture, technology, and social organization at the Merchant site, but there are several aspects that do not fit the conventional understanding of how past people adapted to marginal environments.

The unique settlement, subsistence, and technological aspects of the Merchant site reflect a unique way of adapting to the environment – both natural and social – of the southern Plains during the Late Prehistoric period. It is part of a mosaic of such cultural developments that took place across the interface of the Southwest, the southern Plains, and central Texas, where new ways of living and interacting created new expressions of ethnicity and identity. These are important and fascinating topics for investigation. The Merchant site and other Ochoa phase settlements of southeastern New Mexico and west Texas have much to offer for such research in the future.

<u>Citation</u>

Myles R. Miller, Tim B. Graves, Charles Frederick, Mark Willis, John Speth, J. Phil Dering, Susan J. Smith, Crystal Dozier, John G Jones, Jeremy Loven, Genevieve Woodhead, Jeff Ferguson, and Mary Ownby (2021). Pueblo on the Plains: The Second Seaso of Investigations at the Merchant Site in Southeastern New Mexico. Bureau of Land Management, Carlsbad Field Office, Carlsbad, New Mexico and Versar, Inc., El Paso, Texas.

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Research such as this requires the long-term dedication and assistance of many individuals. First and foremost, the second season of field and laborator research at the Merchant site would not have been possible without the existence of the Permian Basin Programmatic Agreement. We are grateful to all who worked to see that visionary agreement come to fruition. John Speth offered counsel and assistance during the project. Mark Willis and Chet Walker conducted the remote sensing studies and Mark created the exemplary aerial images and artist reconstructions of the pueblo. Phil Dering, Susan Smit Crystal Dozier, and John Jones analyzed subsistence samples. Ceramic studies were reported by Genevieve Woodhead, Jeff Ferguson, and Mary Ownb harles Frederick completed the geomorphological studies. Lillian Ponce supervised the laboratory. Amanda Maldonado drafted the site and feature mag Kit Jones completed the GIS mapping and site maps. The 2015 fieldwork could not have been completed in such an exemplary manner without the supervision of Tim Graves and assistance of Juan Arias. Trevor Lea. Scott Kachelries, and Tabor Vess. Peter Condon assisted with management duties out of the El Paso office. Finally, a note of commendation and appreciation is due to Robert Leslie and the LCAS crews who excavated and documented the site Without their dedication and attention to detail, the knowledge of the Merchant site would have been lost. M.R. Miller August 2021





Carlsbad Field Office Bureau of Land Management



A Permian Basin Programmatic Agreement Investigation Documentation and Interpretation of 21 Rock Art Sites in Southeastern New Mexico

INTRODUCTION: Rock art is a means of visual expression practiced by humans since at least the Old World Upper Paleolithic Period of 40,000 years ago. It is an expression of past beliefs and ways of engaging the social, natural, and spiritual worlds – although some theories suggest that the social, natural, and spiritual cannot be separated. As such, rock art sites were an intrinsic part of the manner in which past peoples engaged with and mediated their experience with the world around them.

Rock art sites in the Guadalupe Mountains and Carlsbad region of southeastern New Mexico have been recorded and studied since the 1930s, but the research has been sporadic and often remained unpublished. To remedy this situation, the Carlsbad Field Office of the BLM developed a task order under the Permian Basin Programmatic Agreement that dedicated funding to the documentation and study of 21 prehistoric and historic rock art sites. Totals of 168 rock art panels and 1,045 individual elements were drawn, photographed, and described at the 21 sites. Both prehistoric cultures and historic Native American tribes (most likely Apache, Comanche, and Kiowa) created the rock art at the 21 sites. However, it is noted here that the term "deep history" is gaining traction as a way of avoiding the artificial dichotomy of history and "pre" history, particularly when it comes to rock art that often represents a symbolic and metaphorical narrative account of past beliefs and experiences, or what Carolyn Boyd in *The White Shaman Mural* has called the earliest "books" in North America.

In addition to the rock art panels and symbols, the surrounding natural and cultural terrain was surveyed and documented. Shrine features, cairns, and psychotropic or medicinal plants were identified, adding a broader dimension to understanding the ways in which past people engaged with the natural and spiritual world through rock art.

Abstract Rock Art

Abstract elements are by far the most common type of image recorded at the 21 sites. Abstract motifs account for over 95% of the pictographs and petroglyphs Zigzags, parallel zigzags, lines and connected lines, dots, nets, circles, and complex line designs were painted on rockshelter walls and cliff faces



Abstract style of rock art to interpret. Wavy lines may represent lightning, parallel lines may and some abstract designs celestial phenomena Some abstract art may have been create during periods of altered states consciousness. It is important to note that although such images may indecipherable to us, they were part of a logical belie system to the creators of the rock art.



Cacti Canyon (LA 71992)

Cacti Canyon is named for the dense mass of cacti that grow around and above the site. It is among the more important and significant rock art sites in ne Guadalupe Mountains-Carlsbad region.

acti Canyon is a complex site of 30 rock art panels with nearby habitation reas, burned rock middens, and possible shrines and cairn features on the idge above the site. The rock art panels have pictographs and petroglyphs oth incised and pecked, that portray images of horned anthropomorphs nasks, zoomorphs, and dynamic scenes of people, horses, and dogs. Some epresentations of horses and riders at Cacti Canyon may be among the arliest in the southern Southwest.



Panels 10 and 11 display a complex history of painted and pecked images, ncluding a horned figure, multicolored sun image, abstract elements, a cowboy boot, and scenes of horses, people, and dogs. The majority of the images are attributed to the historic Apache or Comanche.

he scene at the upper right Panel 11 is one of the most ignificant at Cacti Canyon. shows a horse and rider panish features and three do ittacking several unmount storical account between Spanisł encounter explorers and a local Native merican tribe.

Closer examination using 3-D mage enhancements discovered that the scene was superimposed later time by a turtle image urtles are an Apache symbol c strength and the image may have een intended to negate the "power" of the earlier image.







The cactus element of Panel 30 xidation radiocarbon method at 670 ± 60 vears B.P. (A.D. 1250-1420). The age of the panel and its image of a horned of horned Mexico

Panel 23 has abstract painted elements superimposed by a finely-pecked scene of three horses with riders bearing shields and feathered lances. They are shown as attacking two unmounted, running igures, one who seems to have been speared with a lance. It probably recounts an historic event by a Kiowa, Apache, or Comanche group.

Panoramic panel drawing of Kee's Painted Rockshelter Drawing by Laurie White of Sacred Sites Research



Caves, Cliffs, Shrines, and Plants







Plant communities were documented at the 21 rock art sites, with special attention paid to identifying plants with psychotropic and medicinal qualities. The Native American field consultants were of great assistance in locating and identifying plants of special significance. Medicinal or hallucinogenic plants identified at the sites include wild or desert tobacco (*Nicotiana* spp.), datura (Jimson weed; Datura spp.), Texas Mountain Laurel (mescal bean; Sophora secundiflora), Lindenmeir's morning glory (lopmoea lindheimeri), and marigold (Tagetes spp.). At least one of these five plants was identified at 16 of the 21 sites.

Each of these plants has well-documented psychotropic qualities and were known to have been used to achieve altered states of consciousness. The widespread and specific association of the plants with rock art localities indicates they were used as part of rituals performed during the creation of, and revisits to, the rock art localities by religious specialists or groups seeking communal experiences.



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The rear wall of Kee's Painted Shelter is covered by abstract polychrome paintings measuring. The paintings were probably the result of dreams or visions during altered states of Kee's Painted Rockshelter (LA 81502) ⁴⁰ feet in length that form one of the most dynamic and unusual rock art paintings in New Mexico. Abstract figures, insects (at far left), plant-like imagery, wavy lines, concentric circles, portray the colorful evidence of the dream. It is important to remember the images are only and lines of dots flow and weave across the rear wall. A date of 1735 ± 30 years B.P. (A.D. 200- abstract to us as modern viewers. The individuals who made the figures recognized them 400) places the creation of the panel at the Archaic-Ceramic period transition.

as representing some object or entity from their natural or spiritual worlds.

the rock art, there is other evidence of past human nteraction with the landscapes of southeastern New Mexico. The rock art panels are surrounded by shrine features, cairns, rock walls, house structures, and agave baking pits. Most of the rock art with distinctive natural features such as caves, outcrops. When considered ogether, the rock art, shrines, striking vistas, and dynamic settings ovide profound insights into the ways in which the past inhabitants the canyons and mountains of the Guadalupe Mountains engaged with the natural and spiritual world.



Morning glory growing at the Dark Canyon #1 site

Goodbar Cave (LA 190489)

Goodbar Cave is located in an eroding sandstone outcrop bordering the Pecos River valley to the south of Carlsbad. As seen at the Cacti Canyon site, several panels in Goodbar Cave have representations of horses, humans, bison (or cattle), and other animals dating to the historic period. Based on certain features of the horses and their accessories, the rock art is thought to have been made by the Comanche.



Robert's Rockshelter Site (LA 14288)

Robert's Rockshelter site was one o interesting of the 21 sites. The site is located in a striking scenic setting (see the photograph to the left) of cliffs near water, and has two rockshelters, shrines and cairns, agave baking pits, and 31 rock art panels. Midden deposits in front of Rockshelter #2 were excavated in 1968 and 1971 (Applegarth 1976). Rockshelter #1 had several unusual rock art panels and features.



Acknowledgements

Citations Miller, Myles R., Lawrence L. Loendorf, Tim E Graves, and Mark Willis (2019) Landscapes of Pair and Stone: Documentation and Analysis of 21 Rock Art Sites in Southeastern New Mexico. Bureau o Land Management, Carlsbad Field Office, Carlsbad New Mexico and Versar, Inc., El Paso, Texas.

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eral members of the Versar. Inc. El Paso staff contributed to the project. The fieldwork could not have been completed in such an exemplary manner without the supervision an lination of Tim Graves. Juan Arias assisted Mr. Graves with site surveys. Katherine Jones completed the GIS mapping and site maps. Peter Condon assisted with management dutie ut of the El Paso office. Lillian Ponce supervised curation and documents. Finally, a note of commendation and appreciation is extended to the earlier generation of avocational an ofessional rock art recorders who first brought these sites to the attention of the rock art community A.R. Miller (Versar. Inc.) October 2019



VERSAR





Panels 1, 2, 3. and 5 within Rockshelter #1 had a few painted abstract elements, but the most interesting "art' of the panels were the dozens of grooves worn into, and the 300 to 400 holes drilled into, the sides of the rockshelter. The function of these features is uncertain. They may have een used to shape and sharpen the wooden components of arrows and spears

research presented in this poster required the long-term dedication and assistance of many individuals. First and foremost, the research at the 21 rock art sites would not have be ossible without the existence of the Permian Basin Programmatic Agreement (PBPA). We are grateful to all who worked to see that visionary agreement come to fruition. The Carlsbad eld Office. Bureau of Land Management, and Martin Stein, PBPA Program Manager, provided support and encouragement during the project. The superlative documentation of the roc art at the 21 sites was conducted by Lawrence Loendorf, Laurie White, Greg White, David Kaiser, and Terry Moody of Sacred Sites Research, often under difficult circumstances. Ti eptional archive of land and aerial photographic images was provided by Mark Willis. Karen Steelman of Shumla Archaeological and Educational Research Center supervised th action of paint samples for radiocarbon dating. One of the more welcome aspects of the project involved the invaluable field consultations provid el Nicholas of the Hopi Tribe of Arizona and Arden Comanche and James Kunestis of the Mescalero Tribe of New Mexico. We also thank the Cox Family for allowing access to the Cac