POTTERY SOUTHWEST

Volume 36, No. 1-2 AUGUST 2020
SPRING-SUMMER ISSN 0738-8020

MISSION STATEMENT

Pottery Southwest, a scholarly journal devoted to the prehistoric and historic pottery of the Greater Southwest (*https://potterysouthwest.unm.edu*), provides a venue for student, professional, and avocational archaeologists in which to publish scholarly articles, as well as providing an opportunity to share questions and answers. Published by the Albuquerque Archaeological Society since 1974, *Pottery Southwest* is available free of charge on its website which is hosted by the Maxwell Museum of the University of New Mexico.

CONTENTS

Pottery Southwest is a non-profit journal of the Albuquerque Archaeological Society

Theodore R. Frisbie 1937-2020

Ted Frisbie had a long and storied career as a professor of archaeology at Southern Illinois University and was renowned, among other things, for his dogged and eloquent reminders of the strong Mesoamerican connections and influence on the developments in Chaco Canyon, New Mexico. A fuller account of Ted's life and contributions can be found in his festschrift (Wiseman et al. 2006). Ted developed the first paper on the pottery of Sapawe (LA 306) and was an active discussant on the subject with the late Dr. Florence Hawley Ellis. *Pottery Southwest* fondly remembers and recognizes Ted for his early contributions to the development of *PSW*, including his regular "Regional" reports from the Midwest, and in particular for promoting and contributing to the discussion of early Developmental ceramics in the Middle Rio Grande Valley both in the pages of PSW and in his Master's Thesis on the Artificial Leg sites. Thank you Ted, and vaya con dios.

Ted at Guadalupe Ruin, NM 2018

Frisbie, Theodore R.

1967 The Whole and Restorable Vessels from Sapawe, 1960-1966. Ms on file, Florence H. Ellis Papers, Box 103 Folder 6, Maxwell Museum of Anthropology, University of New Mexico, Albuquerque.

1967 *The Excavation and Interpretation of the Artificial Leg Basketmaker III-Pueblo I Sites near Corrales, New Mexico.* MA thesis, Department of Anthropology, University of New Mexico, Albuquerque.

1975 On the Validity of Tamaya Red. *Pottery Southwest* (1):4.

1975 Query: San Marcial Black-on-white. *Pottery Southwest* 2(1):4.

1975 The Art of Ceramic Restoration. *Pottery Southwest* 2(2):8-9.

1975 The Art of Ceramic Restoration (Conclusion). *Pottery Southwest* 2(4):7-8.

1976 Standards of Description and Analytical Procedures: Stirrup-Spouted Vessels. *Pottery Southwest* 3(2):4-7.

1976 Open Forum: Ceramic Typology. *Pottery Southwest* 3: Special Supplement.

1984 San Marcial Black-on-white: The Paste Thickens. *Pottery Southwest* 11(4):1-3.

Wiseman, Regge N, Thomas C. O'Laughlin, and Cordelia T. Snow (editors)

2006 *Southwestern Interludes: Papers in Honor of Charlotte J. and Theodore R. Frisbie.* Papers of the Archaeological Society of New Mexico Vol. 32. Archaeological Society of New Mexico, Albuquerque.

Dorothy Louise Luhrs

Deborah Ellis, Coronado State Historic Site Volunteer

Dorothy Luhrs in 1932. Photo courtesy of Molly Hollenbach.

As a volunteer researcher at Coronado State Historic Site for several years, I have been interested in the history of archaeological research at the Classic period pueblo of Kuaua. One of the individuals who figured prominently in the early history of excavations at the site was Dorothy Luhrs. In 1938, as a junior foreman with the Works Progress Administration (WPA) Kuaua Project, she led a WPA crew in excavations of a portion of the site. Unfortunately, with the closing of the WPA Kuaua Project on January 14, 1939, the ceramics were not analyzed. Since then, the large collection of pottery recovered at the time has been stored at the Museum of New Mexico in Santa Fe. More recently, in 2018, Hayward Franklin, Research Associate at the Maxwell Museum, University of New Mexico, recruited a team of volunteers to help analyze the Luhrs collection. As a member of the newly formed pottery crew, I was curious to learn more about Dorothy Luhrs. Thus, I started on a journey of two years searching for clues in the literature, archives, and correspondence from her time in New Mexico.

Dorothy Louise Luhrs was born in Gardnerville, Nevada on November 24, 1910. Or was she? As I continued my research, I discovered conflicting dates for the year of Dorothy's birth. David Browman's *Cultural Negotiations: The Role of Women in the Founding of Americanist Archaeology* (2013) lists it as 1910, though her headstone in Forest Lawn Memorial Park, Glendale, California says 1911.

Dorothy probably arrived in New Mexico in the early 1930s to attend the University of New Mexico. She spent the next eight years in New Mexico as a student and a researcher. Dorothy earned both her BA and MA at UNM. These were difficult times for women entering the male-dominated field of archaeology. However, Dr. Edgar Lee Hewett was known as an advocate for women in archaeology. Hewett was already an influential figure in New Mexico archaeology. He, along with James Zimmerman, founded the Department of Anthropology at UNM; he chaired the Department of Anthropology from 1928 to 1936; and he served simultaneously as head of both the

Museum of New Mexico and the School of American Research for close to forty years. Not only did he mentor students while at the University, but he later helped further their careers by aiding them in finding jobs with the University, New Mexico's museums, and the federal government. Dr. Hewett mentored Dorothy while a student and later aided in her search for employment through the years. After she moved to California, Dorothy wrote to Hewett asking for a recommendation letter. In the letter, dated November 6, 1940, she called him "an older and a trusted friend."

Her association with Kuaua Pueblo began when she was an undergraduate. During 1934, Dorothy participated as a student archaeologist in the excavation of the pueblo. As a graduate student, she helped prepare the material excavated from Kuaua and Puaray pueblos during the 1934-1935 season. Following her student years, Dorothy returned to Kuaua where she was employed as a junior foreman and eventually the supervisor of the Kuaua WPA project. Kuaua Pueblo seems to have played a pivotal role in her education and training.

While an undergraduate, Dorothy developed friendships with fellow students Bertha Dutton and Marion Hollenbach. All three were involved with the WPA Kuaua Project. It was by a fortunate turn of events that I recently met Molly Hollenbach, Marion Hollenbach's niece, at a Coronado Historic Site event. Molly was researching her aunt's friendship with Paul Goodbear, a Native American artist. One of the projects I was working on at the time was Paul Goodbear's role during the WPA project at Kuaua Pueblo. Molly and I have kept in touch, sharing progress on our research projects. I mentioned that another of my projects dealt with Dorothy Luhrs, and Molly graciously offered to share a couple of her aunt's photos of Dorothy, reproduced here.

Left to right: Bertha Dutton, Dorothy Luhrs, Marion Hollenbach,
and John T. Linkins at UNM in 1932. Photo Courtesy of Molly Hollenbach.

After receiving her BA in 1935, Dorothy enrolled in graduate school at UNM. Marjorie Tichy (later Lambert), an instructor of archaeology and supervisor of the project to prepare the material excavated from Kuaua and Puaray in 1934-35, wrote a preliminary report in *El Palacio* on the preparation of the excavated materials. Dorothy was listed as one of six graduate assistants working with Tichy. She was responsible for the skeletal remains. In addition, Dorothy was to make a study of the animal bones and bone artifacts. UNM held two archaeological field schools in 1935 and Dorothy attended both, one at Chaco Canyon and one at Jemez. According to the 1935 *Directory of Jemez Field School*, the field school ran from August 4th through August 31st.

Dorothy received her degree of Master of Arts from the Department of Anthropology in June of 1937. Her MA thesis is entitled *The Identification and Distribution of the Ceramic Types in the Rio Puerco Area, Central New Mexico*. According to Browman (2013), Dorothy was discouraged from working toward a PhD in Archaeology by the department staff at UNM. Unfortunately, this was not an uncommon attitude toward women wanting to pursue advanced degrees. The summer of 1937 found Dorothy assisting with the excavations in Chaco Canyon and on September 19, 1937, Dorothy left for a two-month expedition to Guatemala. The School of American Research conducted the 1937 research session as part of its Middle American studies, with Dr. Hewett as the director. The party of eleven included Mrs. Hewett and Bertha Dutton. In today's world of jet travel, I found the description of their journey to Guatemala fascinating. The group left Santa Fe by motor coach for New Orleans, where they took the United Fruit liner Tivives bound for Puerto Barrios, Guatemala. A highlight of the expedition was an airplane trip to the ruins of Copan. Other ruins and living towns of the highlands were also visited. Each student had a special study project.

The 1937 Guatemala Group. Standing, left to right: Carol Bloom, Barbara Moore, Mary R. Van Stone, John Corbett, Mrs. Hewett, Dr. Hewett, Edwin Ferdon. Kneeling: Dorothy Luhrs, Hubla Hobbs, Bertha Dutton, and Neola Eyer. Photo *by Bertha Dutton* from El Palacio 1938.

Dorothy was back at Kuaua Pueblo in 1938. According to a WPA document, she was approved for employment as a Junior Foreman with the Kuaua Ruin Project with a start date of February 21, 1938. Dorothy co-authored an *El Palacio* article with Albert G. Ely who was the senior foreman with the Kuaua project. The article, "Burial Customs at Kuaua," discussed the 100 burials removed from North Plaza ground floor rooms from February to September 1938.

During the excavation of Kuaua Pueblo in 1938, Dorothy performed a series of stratigraphic tests in the North Plaza. Her preliminary report, "Stratigraphy Tests in the North Plaza," dated September 21, 1938, detailed what was found at each level for the nine units dug. The objective of the stratigraphic tests "was to obtain material for a chronological pottery analysis and to determine the extent or depth of the deposition made." From reading her report, it seems likely that the deposition was an accumulation of sand, dirt, ash, and kitchen refuse, in other words a refuse deposit. It is this large collection of sherds, obtained principally from her stratigraphic test in the North Plaza of Kuaua Pueblo, that our team is helping analyze.

At the end of November 1938, Dorothy was promoted to project supervisor. In a letter dated December 16, 1938 from Dorothy to Dr. Reginald Fisher, associate director at the School of American Research, she informed Fisher that "a very comfortable office had been established in Kiva III." Imagine having an office in the reconstructed kiva! In all, 1938 was a busy and productive year for Dorothy. Unfortunately, on January 14, 1939 the WPA closed the Kuaua Project and Luhrs was terminated as project supervisor. The January issue of *El Palacio* announced Dorothy was "appointed supervisor of Personnel and of Visual Education on the Museum Extension Project." On the 1940 census, Dorothy listed her occupation as Personnel Supervisor with the WPA Museum Project.

Dorothy's trail seemed to go cold until Gail Stephens, a fellow researcher, and I went to the Fray Angelico Chavez History Library in Santa Fe to look through the papers of Dr. Edgar L. Hewett. In the Hewett Collection was a letter from Dorothy to Hewett dated April 10, 1940. Referring to an unspecified falling-out, she states that she is disgusted with the WPA and under no circumstances would she ever work on another WPA project. Unfortunately, her letter does not detail what her WPA difficulties were. Although it is not obvious what the nature of the problem was, at least she and Hewett had developed a close relationship. In fact, a letter ends with Dorothy writing that she was driving to the coast from Santa Fe in a week and that she hoped to see Hewett when he was in Los Angeles. After moving to California, Dorothy asked Hewett for a recommendation letter as she was applying for a position at the University of California. She wrote that several job leads had failed to materialize, and she wondered if it was futile to continue to search for employment in her chosen field. This must have been a very discouraging time for Dorothy.

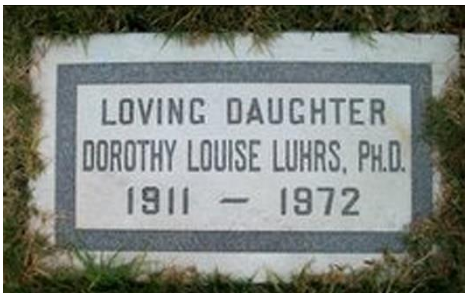
According to Browman (2013), Dorothy secured a position as a research associate in Anthropology at the University of Southern California in 1941. This began her association with USC. In 1944 Dorothy received her PhD in Social Anthropology from USC. Her dissertation was entitled *An Anthropological Study of the Sources of Maladjustment among Eastern Pueblo Adolescents*.

Evidently Dorothy and Marjorie Tichy had kept in contact through the years. In fact, an article in *The Santa Fe New Mexican* dated September 17,1950 stated that Dorothy had been a house guest of Marjorie while on her way to Mexico for ethnological research. Marjorie wrote several articles for *El Palacio* concerning Dorothy. In the December 1945 issue of *El Palacio,* Marjorie reviewed Dorothy's dissertation. According to Tichy, Dorothy had spent seven or more years in New Mexico as both a student and researcher. During this time, Tichy wrote, Dorothy became knowledgeable with both the archaeological and ethnological background of the Eastern Pueblo Indians and developed a deep interest in their welfare.

After being awarded her PhD, Dorothy joined the Allan Hancock Foundation of the University of Southern California and taught part-time. Through the 1940s Dorothy continued to teach and conduct social anthropological research with the Hancock Foundation. Although Dorothy participated in several Southwest archaeological projects after receiving her PhD, it seems her focus shifted to social anthropological research.

Dorothy resigned from the Hancock Foundation at USC in 1950 to conduct ethnological research in Mexico. An article in the October 1950 *El Palacio* stated that Dr. Dorothy Luhrs and Miss Roberta Joughin had set up headquarters in La Ventosa, Mexico where they were to spend eight months engaged in ethnological research. Marjorie Tichy Lambert wrote in the April 1953 issue of *El Palacio,* "Dr. Dorothy L. Luhrs now heads the Department of Anthropology, Los Angeles (California) State College. She is developing a program of field work and anthropology courses." Whatever her WPA difficulties in New Mexico had been, Dorothy seems to have put those behind her and led a productive life in her chosen field of study.

Dorothy died September 16, 1972 and was buried in Forest Lawn Memorial Park, Glendale, Los Angeles County, California. Her marker reads:



The present-day analysis of the Luhrs collection, some eighty years later, may finally accomplish Dorothy's goal for her stratigraphic tests in North Plaza at Kuaua Pueblo, that of a chronological pottery analysis. Our ceramic analysis crew, led by Hayward Franklin, has been conducting basic ceramic research on collections from Kuaua for two years. The Luhrs collection, stored at the Museum of Arts and Culture in Santa Fe, was the logical choice. A large amount of pottery was collected by the Luhrs crew, 20 large boxes of sherds. Although apparently not obtained through screening, the excavation crew did save all obvious pieces of pottery, placed in paper

sacks with provenience data. Although the collection methods were not ideal by today's standards, and pencil scrawling on paper bags may be difficult to read, this large Luhrs collection remains as potentially one of the most informative sources of data. In addition, at a site with no obvious exterior midden of continuously deposited trash, Luhrs' stratigraphic test of the North Plaza offers the possibility of viewing a time-series of ceramics.

During our work with the Luhrs collection, a new testing project was undertaken in 2017 in order to determine the lateral and vertical extent of deposits at the outside perimeter of the site (Franklin 2019). Better knowledge of the distribution of artifacts would be necessary for site management. A series of tests, in and around the site, yielded over 2,000 pieces of pottery, which were analyzed by our ceramics crew. The results included a much more complete chronological ceramic history, including evidence of Rio Grande glazeware types from Glaze A through F, produced over a span of more than 300 years. This study also confirmed the general sequence of occupation of the roomblocks and plazas at Kuaua as expected from the limited absolute dates. The details of this successful 2017 project are given by Hayward Franklin in *Pottery Southwest* (2019).

At the present time, the Coronado State Historic Site is closed due to the COVID-19 pandemic, but we look forward to resuming our analyses of the Luhrs pottery collection from the North Plaza, including the important stratigraphic profile, carefully excavated under her direction. Clearly, Dorothy Luhrs has left a rich legacy of archaeological work at Kuaua that we are finally beginning to appreciate.

References Cited

Browman, David L.
2013 *Cultural Negotiations: The Role of Women in the Founding of Americanist Archaeology*. University of Nebraska Press, Lincoln.

Dutton, Bertha P.
1938 The Guatemala Session. *El Palacio* 44(3-4):19-28.

El Palacio
1937 Guatemala Expedition Underway. *El Palacio* 43(16-18):105.
1938 Roster of Members, Guatemala Session, 1937. *El Palacio* 44(3-4):39-40.
1939 Branch Museum News. *El Palacio* 46(1):19.
1950 Dr. Luhrs Has Headquarters in Mexico. *El Palacio* 57(10):331.

Franklin, Hayward H.
2019 Ceramic Analysis at Kuaua (LA 187): 2017 Site Testing and Chronology. *Pottery Southwest* 35(1-2):7-28.

Herskovits, Melville J., and Barbara Ames, eds.
1950 *International Directory of Anthropologists*. Edwards Brothers, Ann Arbor.

Luhrs, Dorothy L.
1937 *The Identification and Distribution of the Ceramic Types in the Rio Puerco Area, Central New Mexico*. MA thesis, Department of Anthropology, University of New Mexico, Albuquerque.
1937 Observations on the Rio Puerco of the East. *El Palacio* 42(22-26):126-134.
1938 Stratigraphy Tests in the North Plaza. Report on file (NMCRIS #130093), Laboratory of Anthropology, Santa Fe.
1944 *An Anthropological Study of the Sources of Maladjustment among Eastern Pueblo Adolescents*. PhD dissertation, Department of Anthropology, University of Southern California, Los Angeles.

Luhrs, Dorothy L., and Albert G. Ely
1939 Burial Customs at Kuaua. *El Palacio* 46(2):27-32.

Tichy Lambert, Marjorie Ferguson (Marjorie Tichy married E. V. Lambert in October 1950)
1935 The Material from Kuaua: A Preliminary Report on the Preparations of the Excavated Material from the Tiguex Towns of Kuaua and Puaray. *El Palacio* 38(21-22-23):119-122.
1945 Luhrs' Study of Pueblo Adolescents. *El Palacio* 52(12):262-264.
1953 Luhrs Heads Los Angeles State College Anthropology Department. *El Palacio* 60(4):153.

ASSESSEMENT OF UNDECORATED POTTERY PRODUCTION AT NUVAKWEWTAQA (CHAVEZ PASS RUIN, AZ O:4:1 [ASU])

Christopher R. Caseldine, Arleyn W. Simon, and Sarah Striker
School of Human Evolution and Social Change, Arizona State University

Introduction

By the mid-1970s, intensive looting at the thirteenth to fourteenth century Sinagua site of Nuvakwewtaqa (Chavez Pass Ruin, AZ O:4:1 [ASU]) prompted Coconino National Forest staff to assess the damage and stabilize disturbed locations (see Simon et al., *in press*). At the request of the USDA Forest Service, between 1976 and 1982, the Department of Anthropology at Arizona State University (ASU) conducted excavations at the Chavez Pass Ruin, located on Anderson Mesa in the Coconino National Forest, southwest of the modern city of Winslow, Arizona (Figure 1). The ASU project data contributed to an edited volume (Brown 1990) and many dissertations, theses, and publications. Chavez Pass Project excavation documents included field inventories of materials, field notes, and summary reports for each project year, but a full project synthesis report was never completed.

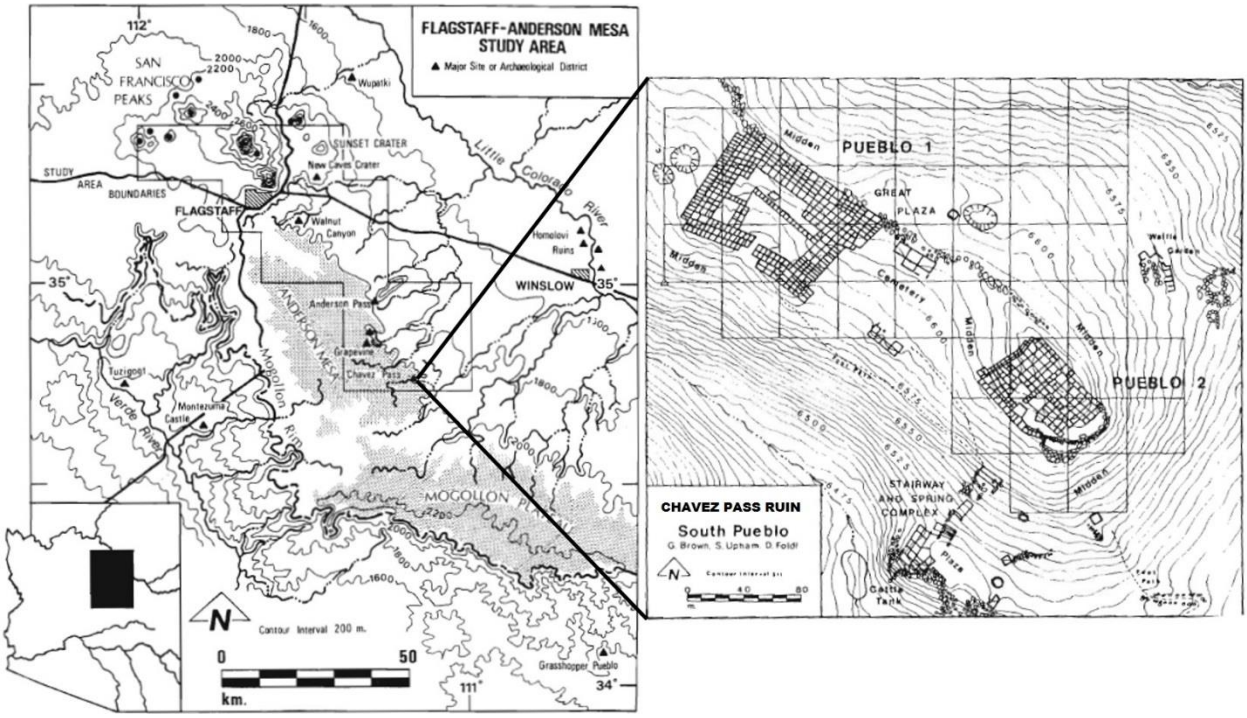


Figure 1. Location of Chavez Pass Ruin and site map of Pueblo 1 and Pueblo 2 (modified from Brown 1990: Figures 2.3 and 6.1). The undecorated pottery assemblage discussed in this article was recovered from these two pueblos.

Under the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA), the Archaeological Research Institute at ASU conducted a multi-year project (2010-2014) to repatriate individuals and associated funerary objects recovered during the Chavez Pass Project (see Simon et al., *in press*), funded by the USDA Forest Service. The Chavez Pass Project artifact collection was made from extensive surface collections and from excavations, many of which were in looter-disturbed midden areas. One part of this NAGPRA effort was the documentation of ceramic artifacts from possible funerary contexts, in preparation for the final associated funerary object determinations. The ceramic documentation inventoried nearly 11,000 artifacts from Chavez Pass Ruins Pueblos 1 and 2, which were largely contemporaneous (Figure 1; Brown 1990). Of those, 8,900 items were undecorated plain, red, and corrugated sherds. This article focuses on the undecorated pottery.

As discussed below, ceramic documentation occurred in two stages. The first stage documented general pottery information, whereas the second stage included detailed information such as assigning a pottery type to each ceramic vessel fragment or sherd. It was quickly realized that the Chavez Pass Project ceramic assemblage did not fit well with published pottery type descriptions for Alameda Brown Ware, the ware associated with the Anderson Mesa area. We therefore conducted a re-evaluation of the Alameda Brown Ware types of Chavez Brown and Kinnikinnick Brown to describe the collection properly. Chavez Brown and Kinnikinnick Brown are both used here as general terms that include the smudged, red, and red smudged variants of those types.

In this article, we present the results from the Chavez Pass Project undecorated pottery documentation during the ASU NAGPRA repatriation process. The article focus then turns to the significance of angular fragments as a tempering material in Alameda Brown Ware and 16 defined temper groups. The temper groups were defined to assist in the re-evaluation of Chavez Brown and Kinnikinnick Brown found at Chavez Pass Ruin. That re-evaluation led to the refining of the Chavez Brown and Kinnikinnick Brown type descriptions, and the defining of a new type, Chavez A. Our discussion concludes with an assessment of pottery production at Chavez Pass Ruin. Although the insights we provide need to be tested further, our results suggest that pottery was produced at Chavez Pass Ruin, including Chavez Brown, Kinnikinnick Brown, and Chavez A.

Documentation Methodology

The documentation of the Chavez Pass Project undecorated pottery assemblage occurred in two stages. The multi-step approach, which derived from the Roosevelt Platform Mound Study ceramic analysis methodology (Simon 1994a, 1994b), is ideally suited for the documentation of large-scale undecorated pottery collections. This approach allowed for the training of university students with minimal pottery analysis experience to produce consistent and replicable results. The use of distinct and clearly defined ceramic attributes established the reliability of the methodology (see Tables 1 and 2).

Table 1. Variables Used in the Stage 1 Pottery Analysis.*

Ceramic Class and Surface Treatment		**Vessel Part**	
Undecorated	*Decorated*	Rim	Foot
Red/Plain	Brown/Decorated	Neck	Pinch Pot
Red/Smudged	Buff/Decorated	Shoulder	Worked Sherd
Plain/Smudged	Gray/Decorated	Base	Figurine
Plain/Plain	Red/Decorated	Body	
Corrugated	Orange/Decorated		
Plain Corrugated	White/Decorated	**Luster**	**Count**
Plain Corrugated Smudged	Yellow/Decorated	Present/Absent	Number of Sherds
White Corrugated			

*Modified from Simon (1994a: Table 18.1)

Table 2. Variables Used in the Stage 2 Pottery Analysis.*

Vessel Manufacture Characteristics	**Tempering Material Characteristics**
Surface Treatment - The general type (undecorated, decorated, or corrugated) a pottery piece is associated with (e.g., plain/plain, red/smudged, yellowware)	*Temper Material* - Aplastic materials derived from natural and anthropogenic sources added to the clay matrix
Construction - How the vessel was formed (paddle-and-anvil, coil-and-scrape, pinch pot)	*Temper Shape* - The shape of the tempering materials (rounded, angular, or both)
Finishing Technique - Alterations to the surface that may affect the form of the vessel, only the surface, or both	*Texture* - The size and density of temper in the clay matrix
Firing - Degree of oxidization during firing	**Decoration**
Wall Thickness - Average thickness of pottery piece	*Paint* - Composition of paint applied to vessel surface (mineral or carbon)
Wall Strength - Strength of pottery piece against breakage	*Paint Color* - Color of each paint applied to the vessel surface
Wall Fracture - The cross-section appearance of a break	**Count** Number of sherds
Ceramic Paste Characteristics	**Weight**
Surface Color - Color of the interior and exterior of a pottery piece	Weight of sherds in grams
Core Color - Color of the inner portion of pottery cross-section	

* Modified from Lindauer (1990).

The first documentation stage (Stage 1) provided cursory information about the Chavez Pass Project's undecorated pottery collection. This stage included recording the number of sherds recovered from each context, the kinds of surface treatments, and item weights (Table 1). Surface treatment, defined here as the interior and exterior appearance of a ceramic piece,

provided the means for separating the undecorated pottery into broad groups. Table 3 presents the five undecorated surface treatments and their defining characteristics. In total, 8,900 undecorated sherds were recorded during Phase 1 (Table 4). Plain/Smudged (50%) and Plain/Plain (43%) were the most common.

Table 3. Undecorated Pottery Surface Treatment Definitions.

Plain/Plain	Self-slipped or non-slipped pottery that is free of interior blackening or the blackening was the result of use.
Plain/Smudged	Self-slipped or non-slipped pottery that has an intentionally blackened interior (e.g., not the result of carbonization during cooking).
Red/Plain	Pottery that has a red slip or wash on the exterior and is plain or red in the interior.
Red/Smudged	Pottery that has a red slip or wash on the exterior and intentionally blackened interior.
Corrugated Plain	Pottery with corrugation on the exterior and scraping, polishing, smudging, or a combination of the three on the interior. Pottery will likely exhibit evidence of coil-and-scrape construction.

Table 4. Relative Proportions of Undecorated Surface Treatments among the Chavez Pass Pottery Assemblage.

	Plain/ Plain	Plain/ Smudged	Red/ Plain	Red/ Smudged	Corrugated Plain	Total
Stage 1	3,812	4,408	205	261	214	8,900
	43%	*50%*	*2%*	*3%*	*2%*	*100%*
Stage 2	336	777	26	44	14	1,197
	28%	*65%*	*2%*	*4%*	*1%*	*100%*

The second documentation stage (Stage 2) gathered data on vessel manufacturing characteristics, ceramic paste characteristics, and tempering material characteristics (see Table 2). The focus of this article on Alameda Brown Ware, both refining existing types and defining new types, precludes a discussion of all recorded attributes. Full details about the documentation project can be found in the undecorated pottery chapter (Caseldine 2016) prepared for the planned ASU Chavez Pass NAGPRA repatriation project report. In total, slightly fewer than 1,200 sherds were recorded during Phase 2. Paralleling the Phase 1 results, Plain/Smudged (65%) and Plain/Plain (28%) were the most frequent surface treatments (see Table 4).

Temper Group Identification

The refinement of existing pottery types and the definition of new pottery types within Alameda Brown Ware is a significant result of the distinct temper groups identified during the Phase 2

documentation. Fourteen different aplastic tempering materials were recorded through low power magnification, including 10X hand lenses and binocular microscopes (Table 5). The two most common tempering materials were feldspar and muscovite mica. The ubiquitous presence of these materials in pottery from central Arizona rendered their usefulness in group formation nearly meaningless at low power magnification. The landscape of central Arizona is dominated by evidence for its volcanic past. As such, feldspars and muscovite mica are natural inclusions within the basaltic clays found across central Arizona. Therefore, they are not useful for determining the loci of pottery production and are not discussed further below, except in reference to their relationship to defining tempering materials.

Table 5. Temper Material within Documented Chavez Pass Undecorated Pottery.

Tempering Material	Frequency	Description	Tempering Material	Frequency	Description
Feldspar	21%	orthoclase (pink) and/or plagioclase (white), opaque, angular, fractures cause cleavage	Quartz	3%	clear or "milky" in color, often rounded, fracture does not cause cleavage
Muscovite Mica	20%	Silver or white in color, translucent, thin, flat platelets, high luster, glitters in light	Diabase	3%	dark gray in color, medium-grained squarish pyroxene and feldspar crystals, "salt and pepper" appearance
Porphyritic Basalt	14%	light to dark gray in color, large square to rectangular pyroxene and feldspar crystals, olivine phenocrysts may be present, occasionally may appear diabase-like	Metamorphic Basalt	1%	light to dark gray in color, large square to rectangular pyroxene and feldspar crystals, olivine phenocrysts may be present, high luster, differs from porphyritic basalt in that it has a metallic-like light reflection
Angular Fragment	13%	brown (BAF), gray (GAF), red (RAF), or white (WAF) in color, opaque, angular, relatively hard but may break apart when scratched, likely crushed sherd	Biotite Mica	1%	color ranges from dark brown, green, to gold/copper, light tan, flat platelets, high luster, glitters in light
Olivine	10%	can be olive-green, yellow, reddish brown, or brown in color, transparent to translucent, hard	Sandstone	<0.5%	brown, tan, white, and/or red in color, cemented sand grains, crumbles when scratched by metal
Limestone	6%	light gray in color, opaque, rounded, easily scratched by metal, may appear to be a worn angular fragment before being scratched	Phyllite Schist	<0.5%	gray to purple in color, dull to some luster, thin, flat platelets, completely opaque
Fine-Grain Basalt	5%	black in color, typically rounded, pyroxene crystals free of accessories (e.g., feldspar)	Hardened Clay		may account for some angular fragments, may be naturally dried (soluble in water, easily broken) or fire hardened (similar hardness as clay matrix), inclusions usually well sorted as compared to crushed sherds
Calcium Carbonate/Tuff	3%	white and/or pale yellow in color, nodular, rounded, hard, insoluble in water			

Porphyritic basalt, angular fragments, and olivine were the three most common meaningful tempering materials recorded during the documentation. The defining characteristic of these materials for the Chavez Pass pottery assemblage is their commonness around the settlement. Chavez Pass Ruin is located just west of a cinder cone volcano—Chavez Mountain. The basaltic formation that the settlement sits upon contains large rectangular pyroxene and feldspar crystals, and olivine phenocrysts. Parent outcrops would have been easily accessible to the residents of the pueblos, as observed by the authors during a site visit in 2014. This visit was vital for the Chavez Pass pottery documentation because notes were made of where parent temper and clay sources may have been located and samples were collected (further discussion below).

The relatively high frequency of angular fragments in documented undecorated pottery was surprising. Angular fragments, which are likely crushed sherds, have been recorded within some Alameda Brown Ware pottery types (Colton 1958; Henderson 1979, 1990; Wilson 1969; Wood 1987). The frequency of angular fragments within Chavez Pass Project undecorated pottery diverged from established type descriptions for Alameda Brown Ware. Two aspects differentiated the Chavez Pass ceramic assemblage from previous pottery type descriptions.

First, sherds were found to contain multiple colors of angular fragments in the same sherd, rather than a single color as observed in established descriptions. Wilson (1969) suggested that the color of angular fragments was a defining characteristic of some Alameda Brown Ware pottery types. He argued that the inclusion of white sherd temper (Diablo Brown Yaeger Variety) predated the use of brown sherd temper (Diablo Brown) (Wilson 1969:317). Most of the Chavez Pass Project undecorated pottery assemblage containing angular fragments could be sorted by a single color (74%, n=663), but gray angular fragments dominated all other single colors (56%), and sherds containing two or more colors accounted for 26% of the angular fragment tempered pottery assemblage (Table 6).

Second, basalt almost always accompanied angular fragments. Wood (1987:58) suggested that Alameda Brown Ware may contain both angular fragments and porphyritic basalt; however, most descriptions identify quartz, volcanic cinders, or both as the primary tempering materials accompanying angular fragments (e.g., Colton 1958; Wilson 1969). Countering this expectation, the Chavez Pass Project pottery with angular fragments contained little to no quartz and no cinders.

Alameda Brown Ware Refinements and New Types

The results discussed here are preliminary, but methodologically sound. Pottery sourcing studies in central Arizona have demonstrated that macroscopic temper identification provides meaningful results that are supported by petrographic analyses (e.g., Abbott 2000; Heidke 2017; Miksa 2001; Miksa and Heidke 2001). The volcanic and tectonic history of central Arizona allows for the characterization of multiple petrofacies in the same bounded area, such as the Phoenix and Tonto basins. Petrofacies have yet to be established for the Anderson Mesa area, but the Chavez Pass Project ceramic assemblage and previous Alameda Brown Ware pottery type descriptions lend support to the potential definition of distinct petrofacies surrounding Chavez Pass Ruin. Petrofacies studies therefore must be conducted to assess the extent of local sources of the ceramic type descriptions given here.

Table 6. Frequencies of Angular Fragment Types by Undecorated Treatment.*

Temper*	Red/Plain	Red/Smudged	Plain/Smudged	Plain/Plain	Corrugated_Plain	Row Total	Row Percent
BAF	0	1	36	12	0	49	*7*
GAF	6	17	272	75	2	372	*56*
RAF	3	0	3	11	0	17	*3*
WAF	0	1	39	11	2	53	*8*
BAF, GAF	3	0	56	14	0	73	*11*
BAF, RAF	0	0	3	4	0	7	*1*
GAF, RAF	1	3	13	9	0	26	*4*
GAF, WAF	1	0	22	5	0	28	*4*
RAF, WAF	1	0	8	1	1	11	*2*
BAF, GAF, RAF	0	2	11	2	1	16	*2*
BAF, GAF, WAF	0	0	2	1	0	3	*0*
BAF, RAF, WAF	0	0	1	1	0	2	*0*
GAF, RAF, WAF	2	0	2	1	0	5	*1*
BAF, GAF, RAF, WAF	0	0	1	0	0	1	*0*
Column Total	17	24	469	147	6	663	*100*
Column Percent	*3*	*4*	*71*	*22*	*1*	*100*	

*Key: BAF - Brown Angular Fragment, GAF - Gray Angular Fragment, RAF - Red Angular Fragment, WAF - White Angular Fragment

Sixteen distinct temper groups were identified, excluding temper groups with less than 25 sherds. A threshold of 25 sherds was selected because groups with less than 25 sherds contributed noise to pattern identification. Most of the temper groups crosscut all undecorated surface treatments. Each temper group was named after its two most common tempering materials, except groups containing limestone. Grapevine Brown was previously defined by having limestone fragments, so limestone was listed first for temper groups that included it.

The identification and characterization of the 16 temper groups was a crucial step before the assignment of Chavez Pass Project pottery to ceramic types. In total, 39 pottery types were identified (Table 7). We defined five new pottery types and 15 new pottery type varieties, as shown in Table 7. The addition of new types and varieties provided a refinement of Chavez Brown, Kinnikinnick Brown, and Grapevine Brown.

The descriptions for many Alameda Brown Ware types are vague and caused identification difficulty during the Chavez Pass Project pottery documentation. Caseldine, therefore, consulted the Harold Colton Type Collection housed at the Museum of Northern Arizona in late 2014. A comparison of published Alameda Brown Ware type descriptions and the type sherds referenced

Table 7. Identified Plainware Types and Associated Temper Groups by Surface Treatment.

Surface Treatment	Type	Temper Group(s)
Plain/Plain	Chavez Brown	PBOTG1, LM25PBG10
	Chavez Brown, Youngs Variety	LM50FBG7
	Chavez A Brown†	PBAFG1, PBQZG1
	Chavez A Brown, Grapevine Variety†	LM75PBG6
	Chavez A Brown, Kinnikinnick Variety†	PBAFG2
	Kinnikinnick Brown	PBOVG2, LM25PBG8, DBOVG2
	Kinnikinnick Brown, Youngs Variety†	See Caseldine (2016)
	Jack's Brown	QZAFG1
	Clear Creek, Lino 1, and Lino II Brown	QZOTG1
Plain/Smudged	Chavez Smudged	PBOTG1, LM25PBG10
	Chavez Smudged, Youngs Variety†	LM50FBG7
	Chavez A Smudged†	PBAFG1, PBQZG1
	Chavez A Smudged, Chavez Variety†	FBAFG3, FBQZG1, LM25FBG5
	Chavez A Smudged, Grapevine Variety†	LM75PBG6
	Chavez A Smudged, Kinnikinnick Variety†	PBAFG2
	Kinnikinnick Smudged	PBOVG1, PBOVG2, LM25PBG8, DBOVG2
	Kinnikinnick Smudged, Youngs Variety†	See Caseldine (2016)
	Jack's Smudged	QZAFG1
	Clear Creek, Lino 1, and Lino II Smudged	QZOTG1
Red/Plain	Chavez Red	LM25PB10
	Chavez A Red†	PBAFG1
	Chavez A Red, Chavez Variety†	FBQZG1, FBAFG3, LM25FBG5
	Chavez A Red, Kinnikinnick Variety†	PBAFG2
	Kinnikinnick Red	LM25PBG8, DBOVG2
Red/Smudged	Chavez Red Smudged	PBOTG1, LM25PBG10
	Chavez Red Smudged, Chavez Variety†	LM25FBG7
	Chavez Red Smudged, Youngs Variety†	LM50FBG7
	Chavez A Red Smudged†	PBAFG1, LM25PBG6, PBQZG1
	Chavez A Red Smudged, Chavez Variety†	FBAFG3, LM25FBG5
	Chavez A Red Smudged, Kinnikinnick Variety†	PBAFG2
	Kinnikinnick Red Smudged	PBOVG2
Corrugated Plain	Chavez Corrugated, Youngs Variety†	See Caseldine (2016)
	Chavez A Corrugated†	PBAFG1
	Clear Creek Corrugated	QZOTG1
	Diablo Corrugated, Yaeger Variety	QZAFG1
	Jeddito Corrugated	QZAFG1
	Kiet Siel Gray	QZAFG1
	Moenkopi Corrugated	QZOTG1
	Tusayan Corrugated	See Caseldine (2016)

† Newly defined type or type variety

by Colton (1958) showed that undecorated pottery thought to have been manufactured around the Chavez Pass area had a greater temper variety than Colton described. Most notably, some type examples for Chavez Brown and Kinninnick Brown in the Colton collection contained angular fragments and little to no quartz and no volcanic cinders. Although angular fragments were visible under low microscopic magnification (Figure 2), Colton's type descriptions for those two types did not list angular fragments.

The presence of angular fragments within Harold Colton Type Collection sherds and the relatively high frequency of Chavez Pass Project undecorated pottery with both basaltic material and angular fragments gave validity to reassessing Alameda Brown Ware ceramic types. Descriptions for refined Alameda Brown Ware pottery types and varieties are provided in Tables 7 and 8.

Figure 2. Example of a Chavez Brown sherd (AT18705) housed in the Harold Colton Type Collection at the Museum of Northern Arizona. The arrows denote examples of angular fragments identified in the sherd.

Pottery Production at Chavez Pass Ruin

Undecorated pottery is often thought to have been locally made for local use (e.g., Arnold 1985; Rice 1987:177-180). The relatively high occurrence of angular fragments in undecorated pottery recovered from Chavez Pass Ruin may suggest that pottery with those inclusions was manufactured at or near the pueblos. Two lines of evidence indicate that the center of production for Chavez A, Chavez Brown, and Kinnikinnick Brown was the Chavez Pass area.

First, raw materials comprising Chavez A, Chavez Brown, and Kinnikinnick Brown were likely readily available to the inhabitants of the settlement. One possible location was a large depression just east of Chavez Pass Pueblo 1 and 2 that was previously identified as a ballcourt by Colton in the 1940s (Wilcox and Sternberg 1983:108). During the final year of the ASU Chavez Pass Project, excavation units were placed in the depressions to test if it was a ballcourt. The excavations revealed that the depression was not a ballcourt, but a large clay borrow pit (Wilcox and Sternberg 1983:108). The extent of the clay borrow pit's use in pottery production is unknown. The pit's location near the top of the ridge that the two pueblos were built upon would have restricted re-sedimentation.

The primary sources of clay may have been located below the Chavez Pass pueblos. One such location was the southern hillslopes of the ridge. Although samples were not analytically tested by the authors, in-the-field observations revealed erosional clay formation from the Chavez Mountain basaltic formations and underlying carbonaceous deposits. The hillsides appeared to be locations of active clay formation, assuming observed weathering is similar to that which occurred prehistorically. The hillsides therefore provide a location for future research to assess if they are a clay source for the Chavez Pass Project undecorated pottery assemblage.

The second line of evidence for where Chavez A, Chavez Brown, and Kinnikinnick Brown pottery were produced is the distribution of tempering material sources around Chavez Pass Ruins. The primary tempering material found in Chavez Pass Project undecorated pottery was basaltic, and often porphyritic basalt. When other tempering materials accompanied basalt, most

Table 8. Detailed Descriptions for New and Refined Alameda Brown Ware Types

Type	Brief Description	Defining Characteristics
Chavez Brown	Angular basaltic material is the main tempering material	(1) self-slipped or non-slipped on the interior and exterior (2) crushed porphyritic basalt, diabase, or metamorphic basalt (3) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded quartz, and rounded sandstone
Chavez A Brown	A variety of Chavez Brown, as defined by Wood (1987:58–59), containing angular fragments	(1) self-slipped or non-slipped on the interior and exterior (2) crushed porphyritic basalt, diabase, or metamorphic basalt (3) angular fragments (can include brown, gray, red, white, or a combination of fragment colors) (4) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded quartz, and rounded sandstone
Chavez A Brown, Grapevine Variety	A variant of Chavez A Brown with limestone constituting approximately 75% of the tempering material (Peter Pilles, personal communication 2014)	(1) self-slipped or non-slipped on the interior and exterior (2) crushed porphyritic basalt, diabase, metamorphic basalt, or fine-grain basalt (3) angular fragments (can include brown, gray, red, white, or a combination of fragment colors) (4) approximately 75% of tempering material is limestone (5) may contain a minor presence (≤25% of temper materials) of rounded quartz and rounded sandstone
Chavez A Brown, Kinnikinnick Variety	Chavez A Brown with the presence of olivine	(1) self-slipped or non-slipped on the interior and exterior (2) crushed porphyritic basalt, diabase, or metamorphic basalt (3) angular fragments (can include brown, gray, red, white, or a combination of fragment colors) (4) olivine attached to basaltic material, unattached, or both (5) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded quartz, and rounded sandstone
Chavez A Smudged	Smudged variant of Chavez A Brown	*See Chavez A Brown*
Chavez A Smudged, Grapevine Variety	Smudged variant of Chavez A Brown, Grapevine Variety	*See Chavez A Brown, Grapevine Variety*
Chavez A Smudged, Kinnikinnick Variety	Smudged variant of Chavez A Brown, Kinnikinnick Variety	*See Chavez A Brown, Kinnikinnick Variety*
Chavez A Red	Red slipped variety of Chavez A Brown	(1) a red slip or wash on the exterior and plain or red in the interior (2) crushed porphyritic basalt, diabase, or metamorphic basalt (3) angular fragments (can include brown, gray, red, white, or a combination of fragment colors) (4) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded quartz, rounded calcium carbonate/tuff, and rounded sandstone
Chavez A Red, Chavez Variety	Chavez A Red with rounded fine-grain basalt grains as the primary tempering material	(1) rounded fine-grain basalt grains (2) may contain rounded quartz (3) angular fragments (can include brown, gray, red, white, or a combination of fragment colors) (4) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded quartz, and rounded sandstone
Chavez A Red Smudged	Smudged variant of Chavez A Red	*See Chavez A Red*
Chavez A Red Smudged, Chavez Variety	Smudged variant of Chavez A Red, Chavez Variety	*See Chavez A Red, Chavez Variety*
Chavez A Red Smudged, Kinnikinnick Variety	Red slipped variant of Chavez A Smudged, Kinnikinnick Variety	*See Chavez A Smudged, Kinnikinnick Variety*
Grapevine Brown	Refinement of Colton (1958:Ware 14–Type17). Refinement derived from Pilles (personal communication 2014)	(1) approximately 75% of the tempering material is limestone (2) porphyritic basalt, diabase, or metamorphic basalt present (3) may contain a minor presence (≤25% of temper materials) of rounded sandstone
Kinnikinnick Brown	Refinement of Colton (1958:Ware 14–Type14)	(1) primarily tempered with angular porphyritic basalt, diabase, or metamorphic basalt (2) olivine may be attached to basaltic material, unattached, or both (3) may contain a minor presence (≤25% of temper materials) of rounded limestone, rounded sandstone, and calcium carbonate/tuff

common were olivine and angular fragments as secondary tempering material, with trace amounts of limestone, sandstone, quartz, or calcium carbonate/tuff. The tempering materials available in the area surrounding Chavez Pass Ruin were analyzed through the collection of wash sediments and basaltic outcrop samples. A grain-size sorting analysis of wash sediments through graduated screen sizes showed that limestone, sandstone, quartz, and calcium carbonate/tuff were present in each grain size group and were water-worn. The temper composition and angularity within Chavez A, Chavez Brown, and Kinnikinnick Brown indicates that those pottery types rarely used wash derived material, and instead contained processed temper from parent sources.

The basaltic outcrop samples were obtained about half a kilometer from Chavez Pass Pueblos 1 and 2. Low power magnification revealed that the outcrop was comprised of porphyritic basalt with attached olivine crystals. The basalt was found to be very structurally weak. Grain sizes recorded in Chavez A, Chavez Brown, and Kinnikinnick Brown were easily produced by striking two samples together. Further study of the Chavez Pass basaltic outcrops and undecorated pottery are needed to assess if the outcrops were a primary temper source.

Although not analytically tested beyond low magnification, we infer that clay and tempering materials used in Chavez A, Chavez Brown, and Kinnikinnick Brown production were locally available to the residents of Chavez Pass Ruin. The Chavez Pass Project did not identify any pottery production loci, but those locations have often eluded Southwestern archaeologists. Excavations in residential locations were limited during the Chavez Pass Project. However, pottery tools were recovered in some pueblo rooms during the Chavez Pass Project, and locally available clays and tempering materials in the pottery attest to the presence of local potters.

Conclusion

In this article, we presented the results of the documentation of undecorated pottery from the Chavez Pass Project. Two important results arise from our work. First, our documentation revealed that the established definitions for Chavez Brown and Kinnikinnick Brown were insufficient to describe the Chavez Pass undecorated pottery assemblage. As a result, several Alameda Brown Ware pottery types were refined and defined. The frequency of pottery with angular fragments led to the defining of Chavez A as distinct from both Chavez Brown and Kinnikinnick Brown. Second, pottery production may have taken place at Chavez Pass Ruin. Although currently an inference based on field samples and low magnification studies, we contend that clay and temper in Chavez Pass pottery may have originated from parent sources surrounding the settlement.

To test our results, we suggest three avenues for future research.

1. A petrofacies map should be created for the Chavez Pass area of Anderson Mesa.
2. Natural clay deposits around Chavez Pass Ruin need to be systematically located and tested for comparison to Chavez Pass undecorated pottery.
3. Basaltic outcrops near Chavez Pass Ruin need to be petrographically or chemically assayed for comparison to temper in Chavez Pass undecorated pottery.

Acknowledgements. The authors would like to thank ASB 484 interns for their assistance with the pottery documentation project.

References Cited

Abbott, David R.
2000 *Ceramics and Community Organization among the Hohokam*. University of Arizona Press, Tucson.

Arnold, Dean E.
1985 *Ceramic Theory and Cultural Process.* Cambridge University Press, Cambridge.

Brown, Gary M. (editor)
1990 *Technological Change in the Chavez Pass Region, North-Central Arizona*. Anthropological Research Papers 41. Arizona State University, Tempe.

Caseldine, Christopher R.
2016 Plain and Complex: An Analysis of Non-Decorated Pottery from Chavez Pass Ruin. Manuscript on file, Center for Archaeology and Society, School of Human Evolution and Social Change, Arizona State University, Tempe.

Colton, Harold S. (editor)
1958 *Pottery Types of the Southwest: Wares 14, 15, 16, 17, and 18.* Northern Arizona Society of Science and Art, Inc., Flagstaff, Arizona.

Heidke, James M.
2017 Plain Brown Ware Production and Distribution in the Northeastern Hohokam Periphery and Arizona Transition Zone: Temper Provenance Data and Economic Implications. *Pottery Southwest* 33:12-30.

Henderson, T. Kathleen
1979 Site Aggregation and Settlement System at Chavez Pass, Arizona. Paper presented at the 44th Annual Meeting of the Society for American Archaeology, Vancouver.
1990 Developing Time and Space Frameworks in the Chavez Pass Region. In *Technological Change in the Chavez Pass Region, North-Central Arizona*, edited by Gary M. Brown, pp. 73-96. Anthropological Research Papers 41. Arizona State University, Tempe.

Lindauer, Owen
1990 Ceramic Analysis. In *Roosevelt Platform Mound Study: A Laboratory Plan for Salado Research*, pp. 3-1-3-46. Office of Cultural Resource Management, Department of Anthroplogy, Arizona State University, Tempe.

Miksa, Elizabeth J.
2001 Temper Provenance Studies. In *The Grewe Archaeological Research Project: Vol. 2 Material Culture, Pt. 1 Ceramic Studies*, edited by David R. Abbott, pp. 7-46. Anthropological Papers 99-1. Northland Research, Flagstaff, Arizona.

Miksa, Elizabeth J., and James M. Heidke
2001 It All Comes Out in the Wash: Actualistic Petrofacies Modeling of Temper Provenance, Tonto Basin, Arizona, USA. *Geoarchaeology: An International Journal* 16:177-222.

Rice, Prudence M.
1987 *Pottery Analysis: A Source Book.* University of Chicago Press, Chicago.

Simon, Arleyn W.
1994a Analysis of Plain Ware Ceramic Assemblages. In *Archaeology of the Salado in the Livingston Area of Tonto, Roosevelt Platform Mound Study: Report on the Livingston Management Group, Pinto Creek Complex, Pt. 2*, edited by David Jacobs, pp. 635-647. Office of Cultural Resource Management, Tempe.
1994b Compositional Analysis of the Livingston Ceramic Assemblage. In *Archaeology of the Salado in the Livingston Area of Tonto, Roosevelt Platform Mound Study: Report on the Livingston Management Group, Pinto Creek Complex, Pt. 2*, edited by David Jacobs, pp. 647-662. Office of Cultural Resource Management, Department of Anthroplogy, Arizona State University, Tempe.

Simon, Arleyn W., Christopher R. Caseldine, Sarah Striker, Christopher Grivas, Neysa Grider-Potter, and Darsita R. North
In press Reassessing the Burial Assemblages of Nuvakwewtaqa, Chavez Pass, Arizona. In *Engaged Archaeology in the Southwest/Northwest: Interdisciplinary Perspectives*, edited by Kelley Hays-Gilpin, Sarah A. Herr, and Patrick D. Lyons. University of Colorado Press, Boulder.

Wilcox, David R., and Charles Sternberg
1983 *Hohokam Ballcourts and Their Interpretations*. Archaeological Series 160. Arizona State Museum, University of Arizona, Tucson.

Wilson, John P.
1969 The Sinagua and Their Neighbors. Harvard University, Cambridge.

Wood, J. Scott
1987 *Checklist of Pottery Types for the Tonto National Forest: An Introduction to the Archaeologcial Ceramics of Central Arizona.* Arizona Archaeological Society, Phoenix.

FOLKS AND FORKS: CONSIDERATIONS, ISSUES, AND PATHS FORWARD IN MIMBRES-CASAS GRANDES RELATIONSHIPS

Thatcher A. Rogers, Department of Anthropology, University of New Mexico

Introduction

Over the past two decades, investigations into the movement of prehispanic people in the American Southwest represent some of the most significant contributions to archaeological narratives of the past. Ceramic artifacts represent some of the most important accessible data and are commonly employed within many investigations, particularly those in the Ancestral Pueblo Northern Southwest. Examples of this include the ongoing debate surrounding multiple migrations of Mesa Verde and Colorado Plateau groups into the Northern Rio Grande Valley (Boyer et al. 2010; Ortman 2012; Schillaci et al. 2020); the identification of possible Mesa Verde migrant groups in west-central New Mexico (Davis 1964; Ferguson et al. 2016; Lekson et al. 2002); the movement of Kayenta and Tusayan groups into the Tonto Basin, onto the Mogollon Rim, and along the Lower San Pedro River and Safford valleys (Clark 2001; Clark and Lyons 2012; Haury 1958). In all three cases, the following lines of ceramic data were germane: unusual or diagnostic vessel forms or painted motifs (Lyons 2003; Lyons and Lindsay 2006); profiles of ware types (Clark and Lyons 2012), paint composition, and decorative layout (Lekson et al. 2002); and provenience data (Ferguson et al. 2016). Construction techniques visible in corrugation and rim forms are also a means to assess the movement of individuals. Interestingly, firing technology and clay processing techniques have not been given enough consideration by Southwest archaeologists in studies of migration (e.g., lack of discussion regarding Colorado Plateau trench kilns as compared to Northern Rio Grande kilns, Eric Blinman, personal communication, 2020). While this may partially be due to historically difficult identification of ceramic firing features on the landscape, particularly in the Mogollon culture area, it remains a key component to be explored as some temporal overlap in technology should exist.

Two key uses of ceramic data to investigate the movement of prehispanic people solely within the Southern Southwest include the results of the Eastern Mimbres Archaeological Project (Nelson 1999) and suggestions for a shared heritage between Mimbres and Casas Grandes potters (Brody 1977; LeBlanc 1983, 1989, 2018; Moulard 2005; Phillips 2012). It is the latter I focus on in this paper. In this paper, I discuss and evaluate proposed lines of evidence for an ancestral relationship between Mimbres and Casas Grandes groups, comment on the current evidence, and suggest potentially fruitful lines of inquiry.

History of Previous Research

Hypotheses for strong genetic relationships between Mimbres and Casas Grandes populations have a lengthy history in Southwest archaeology. Kidder (1916, 1924) noted similarities in the artistic traditions between the two cultures and argued there existed some type of connection between Casas Grandes and areas to the north. The most significant limiting factor to early

efforts to link Mimbres and Casas Grandes traditions was the lack of a chronological sequence for the Mimbres Valley, northern Chihuahua, and the area in between.

A hurdle in those early hypotheses, the lack of robust archaeological data from Chihuahua, was partially resolved by Charles Di Peso's excavations at Paquimé, and perhaps more importantly at the Reyes and Convento sites. Di Peso's (1974) excavations uncovered an architectural progression from small, semi-subterranean round structures to above ground adobe rooms, i.e., the pithouse-to-pueblo transition. Additional work within the Mimbres Valley itself by the Mimbres Foundation expanded our knowledge of the Mimbres Classic Period and, importantly, contributed to our understanding of the Late Pithouse and Postclassic periods (Anyon and LeBlanc 1984; Gilman and LeBlanc 2017; Nelson and LeBlanc 1986, amongst others; Figure 1). For purposes of this paper, the survey results reported by Blake and colleagues (1986), excavations at Black Mountain and Cliff Phase sites reported by Nelson and LeBlanc (1986), Ravesloot's MA thesis (1979), and work by Putsavage and Taliaferro (2018) are pertinent (Figure 2).

<table>
<tr><th>Dates (A.D.)</th><th colspan="2">Southwest New Mexico (Anyon et al. 2017)</th><th>International Four Corners (Rogers 2019)</th><th>Northwest Chihuahua (Minnis and Whalen 2015)</th></tr>
<tr><td>1450</td><td rowspan="3">Late Postclassic Period</td><td rowspan="3">Cliff Phase</td><td rowspan="3">Animas Phase</td><td rowspan="3">Late Medio Period</td></tr>
<tr><td>1400</td></tr>
<tr><td>1300</td></tr>
<tr><td>1200</td><td rowspan="3">Early Postclassic Period</td><td rowspan="3">Black Mountain Phase</td><td rowspan="6">San Luis Phase</td><td rowspan="2">Early Medio Period</td></tr>
<tr><td>1150</td></tr>
<tr><td>1130</td><td rowspan="2">Late Viejo Period</td></tr>
<tr><td>1000</td><td>Mimbres Classic Period</td><td>--</td></tr>
<tr><td>900</td><td rowspan="5">Late Pithouse Period</td><td rowspan="3">Three Circle Phase</td><td rowspan="5">Early Viejo Period</td></tr>
<tr><td>850</td></tr>
<tr><td>750</td></tr>
<tr><td>650</td><td rowspan="2">San Francisco Phase</td></tr>
<tr><td>550</td><td>Georgetown Phase</td></tr>
</table>

Figure 1. Relevant chronologies for the Mimbres and Casas Grandes areas.

That is because, as noted by Lekson (2011), the largest issue is chronological in connecting the origins of Paquimé to events that happened north of the current border. The Black Mountain Phase represents the "missing century" between A.D. 1130 and the ascension of Paquimé sometime in the late thirteenth century. Until recent investigations, summarized by Putsavage and Taliaferro (2018), and more recent dating of sites excavated by the Mimbres Foundation (Patricia Gilman, personal communication, 2020), it was unclear what happened in the late twelfth and early thirteenth century in southwestern New Mexico. The absence of substantial archaeological deposits at the few sites in the Mimbres Valley, alongside material variability seemingly from one valley to the next, led to suggestions for cycles of occupation and

depopulation for each valley (Nelson and Anyon 1996). Building upon these were suggestions that populations relocated southward. LeBlanc (1989, 2018), Lekson (2009, 2011, 2015), and Larkin (2006:293-299) represent some of the recent arguments for the movement of Mimbres populations southward into Chihuahua sometime in the Early Postclassic Period. Unfortunately, as noted by Lekson (2011:9), supporting data are sparse, although enough to muster arguments to account for the baseline population that constructed Paquimé (Lekson 2015; but see Whalen and Minnis 2003).

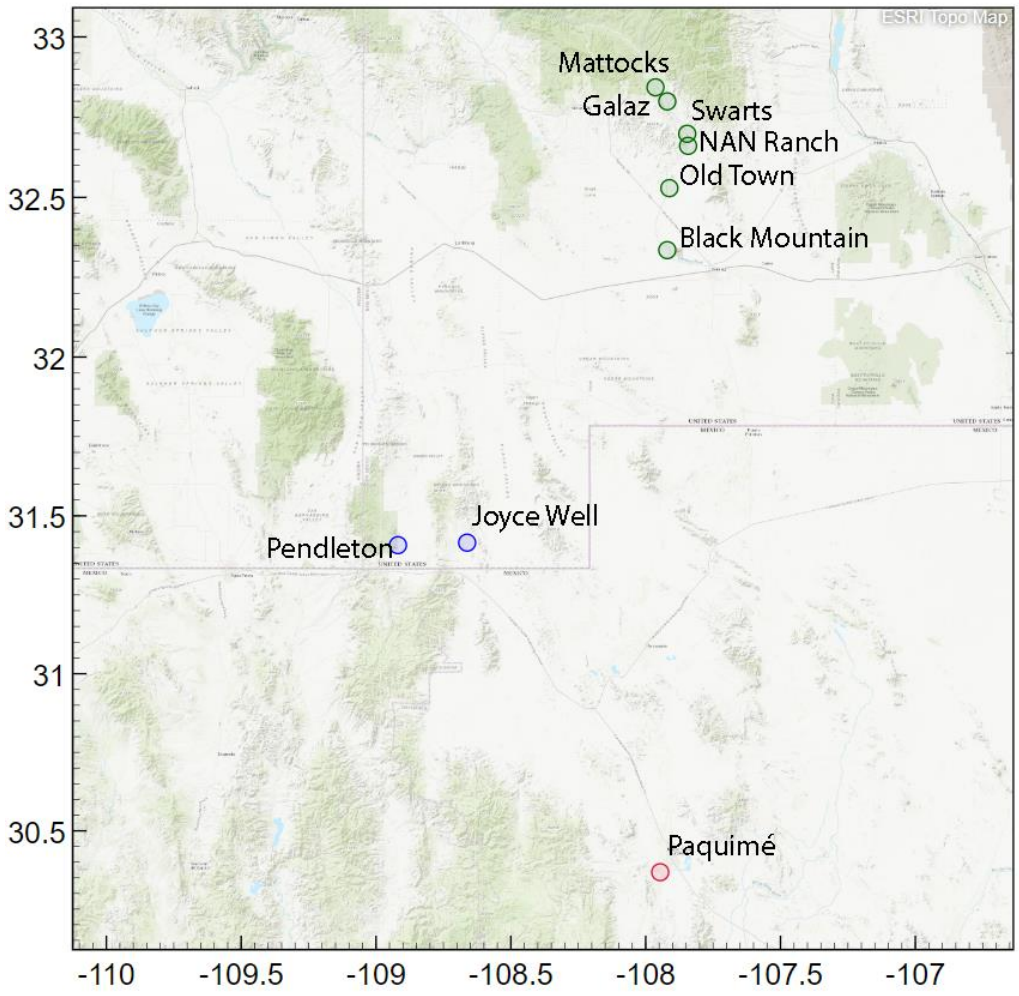


Figure 2. Key Classic Mimbres communities in the Mimbres Valley, Animas Phase sites, and Paquimé.

Data and Commentary

Given these robust hypotheses, and often assumptions, regarding a direct, strong genetic relationship between Mimbres populations and later Casas Grandes populations, archaeologists should expect a glut of supporting, and complementary, independent lines of evidence. I

summarize and provide general comments regarding two main types of data: population estimates and biometric and mortuary data. I focus instead on establishing what existing ceramic data suggest regarding the movement of Mimbres people into the Casas Grandes area.

Demographic, Genomic, and Mortuary Data

Diachronic population estimates for the Mimbres Valley form the basis for many arguments for the movement of Mimbres people south, perhaps into the Casas Grandes Valley (Hegmon et al. 1999; Lekson 2009; Nelson and Anyon 1996). These researchers argue, based on the limited population reconstructions from northern Chihuahua, that a substantial population influx must have occurred in the mid-to-late-twelfth or early thirteenth century. Yet other Mimbres scholars suggest that any significant depopulation bordering on partial abandonment of the Mimbres Valley in the Early Postclassic Period is a problematic assumption, instead investigating processes of continuity (Creel 1999; Putsavage and Taliaferro 2018). This is a topic for future investigations, however; additional survey data are required to address it.

The second line of evidence cited in support of a strong integration of Mimbres populations into the Medio Period Casas Grandes culture includes genomic, biometric, and mortuary data. Two studies employed mitochondrial DNA to assess ancestry for Mimbres and Casas Grandes individuals. Snow and colleagues (2011) examined ancestral mitochondrial DNA from 46 Mimbres individuals dating to the Late Pithouse through Mimbres Classic periods from six sites (NAN Ranch Ruin [19], Swarts Ruin [9], Harris Site [8], Cameron Creek [6], Treasure Hill [1], and unknown provenience [3]). Results indicated that although Mimbres samples stood out compared to archaeological and ethnographic Southwestern and Mesoamerican/Mexican samples, they generally fit with a Southwestern origin. Furthermore, there were two individuals from NAN Ranch Ruin that showed some Mesoamerican DNA, suggesting that some very slight, but significant gene flow occurred between populations. Morales-Arce and others (2017) reported the results from 14 samples from Paquimé compared to existing data. Results cluster Paquimé samples to those from other sites in the Southwest as opposed to the Basin of Mexico and relatively closely with those from the Mimbres Valley. Unfortunately, data are limited from sites throughout northern and western Mexico to improve comparisons.

In contrast, an earlier assessment of tooth morphology from sites throughout the Greater Southwest suggested long-term and robust gene flow between populations in northwest Mexico (based on samples from Paquimé) and those in the Mimbres Valley and Sinaloa (Turner 1999; Turner and Turner 1999). Interestingly, while we know Salado-affiliated groups and Paquimé also shared an interesting relationship, Turner found limited evidence for any genetic flow between the two (Di Peso et al. 1974; Lekson 2002). LeBlanc and colleagues (2008) followed a similar methodology of scoring dental traits and examined 204 Mimbres individuals from Cameron Creek, Harris Site, NAN Ranch Ruin (and adjacent areas), Swarts Ruin, and Treasure Hill, as well as 111 individuals from Paquimé. Results, interestingly, contradict those of Turner by demonstrating closer genetic affinity to Zuni populations (e.g., Hawikuh), supporting those who argue strongly for a Mimbres-Zuni ancestry (Gregory and Wilcox 2007). Casas Grandes dental traits did not correlate well to any other Southwestern group, and showed only slightly

closer affinity to other northwest Mexico and Hohokam populations. Nevertheless, LeBlanc and colleagues (2008) and Morales-Arce and colleagues (2017) suggest the possibility there may have been a direct, genetic relationship between the founders of Paquimé and Mimbres individuals. I find that the reported genetic and phenotypic data present an ambiguous case for extensive Mimbres integration into Casas Grandes communities and instead see gene flow as likely a product of intermarriage and smaller migration events; consequently, a related dataset in the form of mortuary practices is assessed.

Mimbres human burials are well known for an otherwise uncommon Southwestern practice—flexed interment within structures and under floors (Anyon and LeBlanc 1984; Cosgrove and Cosgrove 1932; Kidder 1924). Most other prehispanic Southwest archaeological cultures, excepting Pre-Classic Period Hohokam, Patayan, and the occasional Mimbres, buried the deceased as flexed or extended inhumations primarily located outside of structures. Even Viejo Period communities in northern Chihuahua buried the deceased as flexed to one side within shallow pits in extramural space (Di Peso et al. 1974). Yet subfloor, flexed inhumations have been recovered from one other area—Medio Period communities (Di Peso et al. 1974). While excavations at Paquimé recovered several cremated individuals, and few Medio Period burials outside of Di Peso's excavations have been reported, the standard Medio Period burial practice was interment within sealed subfloor pits in domestic structures, followed by burial in extramural space and within the fill or on the floors of abandoned structures (Rakita 2009). There have also been several partially cremated and flexed inhumations with Classic Mimbres "killed" bowls reported from northern Chihuahua; however, many Viejo Period burials show continuity in practice, but not status, into the Medio Period (Douglas 2000; Rakita 2009; Rogers 2019). None, however, came from Medio Period sites and all were reported from salvage excavations or unprovenienced collections.

Ceramic Data

The first line of ceramic data comes in the form of discussions of Mimbres Black-on-white sherds in northern Chihuahua and their supposed ubiquity. Contrary to claims and unverified anecdotes of Mimbres Black-on-white sherds atop sites throughout the Sierra Madre Occidental, published and unpublished survey and excavation data do not support vast quantities of Mimbres sherds in Chihuahua (Rogers 2019). A prior synthesis of Mimbres sherds in Chihuahua suggested that sherds are not equally distributed throughout northern Chihuahua (Rogers 2019). Furthermore, there is no evidence for the production of Mimbres pottery in Chihuahua as the few Mimbres Black-on-white sherds recovered from Chihuahua and sourced likely were produced at Swarts Ruin (Kelley and Larkin 2017). Consequently, arguments for a robust movement of Mimbres groups into northern Chihuahua in the late twelfth and early thirteenth are untenable without additional data, which I discuss below. Steve Lekson (2018) has recently suggested that some Mimbres groups may have been seasonally mobile in the same way that Tchinene Apache were historically, that is by traversing into the Sierra Madres during the winter months. This would, according to Lekson, account for some of the Mimbres sherds in northwestern Chihuahua and resolve the anecdotal reports of Mimbres sherds in the mountains. Future investigations are required to evaluate that hypothesis, but limited excavations at several sites and valley-wide

surveys on the Sonoran side reported only two Mimbres sherds (Douglas and Quijada 2000; Douglas et al. 2003; Quijada and Douglas 2003).

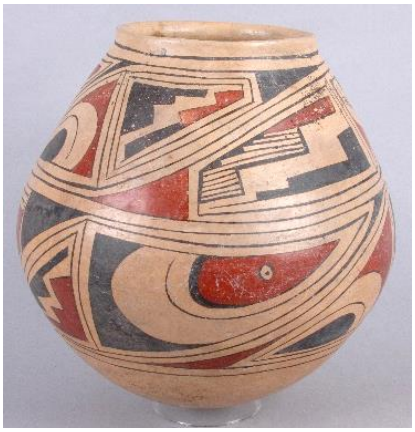
The second line of ceramic data employed is broad similarities in ceramic iconography between Mimbres Black-on-white and the later Casas Grandes polychrome tradition (Figure 3). Both ceramic traditions are renowned for artistic depictions including anthropomorphic and zoomorphic figures (Brody 1977; Cosgrove and Cosgrove 1932; VanPool and VanPool 2007). This baseline comparison, however, fails to identify several key differences, including time in the case of Brody (1977), which was published when archaeologists thought the two traditions were contemporaneous. First, few Casas Grandes ceramic vessels could be argued to overtly depict scenery or tell an oral tradition in the same way as do Mimbres bowls (Gilman et al. 2014; Thompson et al. 2014; VanPool and VanPool 2007). Second, depictions on Casas Grandes vessels are not comparable to the sheer variety of animals, humans, and naturalistic events depicted on Mimbres bowls (for examples, see Anyon and LeBlanc 1984; Brody 1977; Cosgrove and Cosgrove 1932; Gilman and LeBlanc 2017). Kidder (1916:268) noted this in his assessment that while there seemed to be a shared heritage, Mimbres artistic expression was local and was "neither parent to nor derived from the more limited naturalism of Casas Grandes." In fact, most Casas Grandes vessels that arguably depict specific animals or the "Casas Grandes shamans" are shaped as effigies and figurines (Figure 3e), with far fewer instances of animals depicted in the way found on Mimbres bowls. While cluster-based analyses of horned serpent iconography suggest a relationship between Mimbres and Casas Grandes artistic traditions, there are alternative explanations that should be tested before assuming genetic exchange as the cause (Leonard 2001; see Crown 1994 for how she addressed that issue in Salado). Third, there exist several key differences between how Mimbres artists painted their designs and those visible on Casas Grandes polychrome vessel, suggesting that they represent related, but hardly close familial artistic traditions (as compared to, for example, the broad similarities between Salado polychrome types and White Mountain Redware; Carlson 1970; Crown 1994; Lindsay and Jennings 1968). These differences, based on a preliminary study, include the way human and supernatural eyes are depicted, what animals are incorporated into figurative depictions, and the types of scenery present. For instance, humans in Mimbres figurative depictions have diamond-shaped eyes—no analog is readily apparent in Casas Grandes figurative depictions (Figures 3c, 3e). Furthermore, while Casas Grandes "shamans" are depicted with macaws and horned/plumed serpents, imagery of humans hunting, gardening, weaving, etc., all found on Mimbres pottery, are absent (see VanPool and VanPool 2007 for descriptions of Casas Grandes figurative motifs). As stated, this remains a preliminary study between the two and a more synthetic study is being undertaken currently. It is hoped that study may evaluate many of the remarks by Moulard (2005) suggesting additional motif similarities.

A third suggested line of ceramic evidence is the relationship proposed by Phillips (2012:39-40) between Mimbres Polychrome (Figure 3c) and the Viejo Period Chihuahua ceramic type Santa Ana Polychrome or other early Casas Grandes polychromatic types. Santa Ana Polychrome, not to be confused with the Historic Period type that shares the name and was produced at Santa Ana Pueblo in central New Mexico, is a Viejo Period polychrome type characterized by red and black parallel lines painted in chevrons atop a plain tan background (Kelley and Larkin 2017:106; Phillips 2012:39). Phillips argues that it is probable that some Viejo Period villagers visited

a

b

c



d

e

Figure 3. Mimbres Black-on-white, Mimbres Polychrome, and Ramos Polychrome vessels. a) Mimbres Black-on-white bowl [Catalogue No. 72.43.21]; b) Mimbres Black-on-white jar [Catalogue No. 89.48.6]; c) Mimbres Polychrome bowl with a central figurative design of a frog/human (notice the diamond-shaped eyes, a common motif in Mimbres depictions of humans, humans dressed as animals, or supernatural animals [Catalogue No. 40.4.94]; d) Ramos Polychrome jar with stylized macaw depictions [Catalogue No. 67.4.1]; and e) Ramos Polychrome seated "shaman" effigy (notice the coffee bean/ovoid eyes that depict humans in Casas Grandes vessels) [Catalogue No. 68.13.1]. All images courtesy of the Maxwell Museum of Anthropology, University of New Mexico.

Mimbres communities for ceremonial practices; however, limited analyses of Mimbres pottery in Chihuahua suggests most pottery came from the Gila River Valley (Creel 2014; Rogers 2019; cf. Kelley and Larkin 2017). An additional similarity between Mimbres Black-on-white and Ramos Polychrome is noted by LeBlanc (2018:269) who describes a shared artistic use of negative painting for the depiction of figurative elements (previously noted by Kidder 1924:296). While I find Phillips' argument intriguing and the broad similarities pointed out by LeBlanc and Kidder notable, there are several issues that should be addressed before we assume the two ceramic traditions were ancestrally related (see Heckman et al. 2000 for a similar issue and response).

Regardless of these connections, paint composition, color selection, firing regime, etc. all stand in contrast between the two traditions. Starkly, ceramic vessel forms are juxtaposed—nearly all Mimbres Black-on-white vessels are bowls, while most Casas Grandes polychrome vessels are jars. This difference is significant both in terms of function, but also in terms of visibility of motifs (e.g., Mills 2002). There is also an absence of paddle-and-anvil produced pottery in Medio Period pottery, but these are encountered in, mostly earlier, Mimbres assemblages.

Discussion, Issues, and Paths Forward

As summarized, most reconstructions of prehispanic migrations in the Southwest heavily incorporate ceramic data to establish links between terminal and inferred source locations. The absence of these studies in analyses of Casas Grandes ceramic assemblages and vessels means that arguments for a substantial movement of Mimbres populations into northern Chihuahua rest on other lines of evidence. Those lines of evidence, as presented, are tentative, but are not conclusive even though the genomic evidence supports some long-term gene-flow. There exist several issues such as debates over population estimates and how to identify migrant groups in northern Chihuahua (see Whalen and Minnis 2001, 2003), as well as questions regarding what languages likely were spoken by ancestral populations in southwestern New Mexico and northern Chihuahua (likely Uto-Aztecan). Another question is when did interaction between Mimbres and Casas Grandes groups initiate and was it continuous between A.D. 1000 and A.D. 1300 (the onset of the Late Medio Period when Paquimé likely ascended to what is visible presently)? A recent review of Mimbres sherds in far southwestern New Mexico and northwestern Chihuahua determined that, while patchy, there is a slight distributional cluster of Mimbres Black-on-white sherds within the Middle Casas Grandes River Valley (Rogers 2019).

Lastly, there are also issues within the ceramic data. Prior analysis of Mimbres sherds located from southeastern Arizona to east of the Mimbres Valley demonstrate that, with few exceptions, most were produced in the Upper Gila Valley (Creel 2014). Congruent data exist for the few complete Mimbres objects in Chihuahua and far southwestern New Mexico that display Upper Gila iconographic style (Patricia Gilman, personal communication, 2019; although I note a few probable Mimbres Valley bowls in Rogers 2019:196). The stark contrast in vessel form, something not demonstrable in other Southwestern migration studies, requires consideration. Equally stark is the absence of a white slip in the Casas Grandes polychrome tradition (Villa Ahumada Polychrome and Huerigos Polychrome being the exceptions). Other locations where Mimbres populations relocated retained white-slipped pottery and moderate production of

painted bowls that show direct geometric design similarities with Mimbres Black-on-white (e.g., Reserve Black-on-white, Chupadero Black-on-white). While some well-regarded Mimbres scholars (e.g., LeBlanc 2018:268-269) see small Mimbres Black-on-white jars as the link to Casas Grandes polychrome jars, suggestions of similarities in vessel form and design layout are exceedingly difficult to demonstrate given the limited study of Mimbres jars available currently (something LeBlanc notes). As LeBlanc (2018:269; see Figure 3b) states, there are five or so of these jars known to archaeologists with LeBlanc hypothesizing a relatively direct relationship between those vessels and the Ramos Polychrome olla form. I suggest a more fruitful investigation will focus on a comparison of these Mimbres jars to early Babicora Polychrome and Santa Ana Polychrome jars to see how many similarities are apparent. I suggest this investigative course as Santa Ana Polychrome is a late Viejo period ceramic type and was produced contemporaneously to Mimbres Polychrome. Furthermore, Phillips (2012) suggests that Santa Ana Polychrome may have inspired Mimbres Polychrome as Santa Ana Polychrome likely developed in early tenth century. Early Babicora Polychrome jars share several geometric similarities to Mimbres designs and both Babicora Polychrome and Santa Ana Polychrome share the ovoid jar shape that LeBlanc denotes for small Mimbres jars. This is a topic ripe for future investigation, as the absence of a detailed study in communities of practice in the production of Casas Grandes pottery and Mimbres jars results in poorly supportable linkages between the two traditions. Until studies explore the entire production sequence of these traditions, from clay and temper material acquisition and processing, to paint production and firing, we will remain limited in our use of the ceramic data to explore if and how Mimbres groups impacted or integrated into Casas Grandes sites.

A final ceramic-based line of evidence to consider, besides sourcing, is other shared ceramic traditions between Mimbres and Casas Grandes. In particular, both share red-slipped and smudged types. I see the transition from exquisite figurative paintings in Mimbres bowls to a smudged surface as representing a fundamental attempt to erase or disconnect from whatever was the central aspect of Mimbres ceremonialism (see Gilman et al. 2014; Sedig 2015 for ideas). While production of Mimbres Black-on-white terminates around A.D. 1130, redware and smudged types show remarkable continuity throughout the two key Mimbres transitions and continue throughout the entirety of the Postclassic Period. They are also found in a variety of forms in Chihuahua, including the premier smudged type—Ramos Black. Investigations that focus on these pottery traditions may find far more robust evidence for exchange in low visibility attributes by employing practice-based approaches as opposed to relying on more easily replicated high visibility attributes such as decorative style.

While I find it likely some small Mimbres groups moved into northern Chihuahua prior to the construction of Paquimé (or at least prior to the Paquimé we see currently), there exists limited robust evidence for a sizeable movement during the Early Postclassic Period. Consequently, assumptions for strong Mimbres-Casas Grandes relationships require additional data and theorization as any broad similarities between the two archaeological cultures could have developed through other means. One potential hypothesis is one already well known, but often unintentionally disregarded by Southwestern archaeologists deterred by an artificial, modern border; namely, that northern Chihuahua was part of a larger shared *Présence* Mogollon (see

Graves 2017). Similar discussions are needed desperately for other areas, particularly the maligned Jornada Mogollon. A second hypothesis is that any inferred substantial demographic and cultural contributions to the Early Medio Period could have developed instead over a long-term and persistent genetic and cultural exchange between the two areas. The last hypothesis I suggest is that, just as the termination of the Great Kivas in the late 900s signaled a transition in many Mimbres practices (although continuity is seen in some ceramic practices; Gilman et al. 2014; Sedig 2015), so too did the termination of the Mimbres Classic result in significant changes (Creel 1999; Putsavage and Taliaferro 2018; Shafer 1999, 2003). While many groups may have stayed in the Mimbres Valley or adjacent areas and changed their lifeways and technology (i.e., the Black Mountain Phase), others may have left behind most or all of their previous practices and instead integrated generalized, but key aspects into Casas Grandes pottery (e.g., zoomorphic/anthropomorphic depictions). A similar process occurred with the movement of people from the Mesa Verde and Kayenta regions, which are often related to the interplay of increased violence and decreased environmental conditions (Glowacki 2010; Kuckelman 2010; Ortman 2012). The latter is also suggested to have held a significant role in the termination of the Mimbres culture (Minnis 1985).

As it stands currently, how would I answer the question where the Mimbres went? They likely went everywhere—some headed south into Chihuahua; others potentially stopped halfway between, in the International Four Corners (Rogers 2019); more likely headed north into the Reserve and Upper Gila areas or further along to one of their likely descendant communities, the Zuni (Gregory and Wilcox 2007); many certainly moved east into the Rio Abajo and along the Rio Grande or further into the Jornada Mogollon (Nelson 1999; Kurota et al. 2019); and lastly, many stayed (Putsavage and Taliaferro 2018). The incorporation of ceramic data into our discussions of where the Mimbres moved will significantly improve our understanding of what happened during the Early Postclassic and Medio periods. But for that, we need to first reexamine existing archaeological collections, collect new data, and reconsider alternative hypotheses for relationships between the Mimbres and Casas Grandes cultures.

To bookend this short essay, I call attention to two more contemporary linkages between Mimbres and Casas Grandes ceramic traditions. Both traditions share historically extensive removal of vessels out of archaeological contexts and the consequent loss of nearly all provenience data. They also share high scholarly interest in their elaborate painted or, as more common in Casas Grandes, shaped depictions of animals, humans, and supernatural entities and, contrastingly, low scholarly interest in their technology. While investigations into Mimbres technology have vastly improved through the course of many master's theses under the advisement of, in particular, Pat Gilman, few studies of Casas Grandes ceramic technology exist. The Mimbres Pottery Images Digital Database, as well as existing museum collections, were instrumental to those studies. It is likely similar models of research employing a variety of Casas Grandes vessels will be equally successful, especially with some bright scholars already pursuing this important work (Bomkamp 2020; Lee 2013).

Acknowledgements. I sincerely thank Steve LeBlanc and Stephen Lekson for their continued contributions to our understanding of prehispanic southwestern New Mexico and northern Mexico and their willingness to propose often

controversial claims for future researchers, such as myself, to evaluate and test. I also thank Pat Gilman, Roger Anyon, Darrell Creel, and Paul Minnis for their key ideas, publications, and conversations. It is probable that many, if not all, of these individuals may disagree with my assessment in this paper; however, I hope it will improve our grasp of existing research and provide productive insights for future research in the region. My lengthy References Cited is purposefully done to aid in that respect and to demonstrate the tremendous legacy data left to future archaeologists courtesy of the Mimbres Foundation. Vessel images are reproduced with the permission of the Maxwell Museum of Anthropology and Steve LeBlanc.

References Cited

Anyon, Roger, Darrell Creel, Patricia A. Gilman, Steven A. LeBlanc, Myles R. Miller, Stephen E. Nash, Margaret C. Nelson, Kathryn J. Putsavage, Barbara J. Roth, Karen G. Schollmeyer, Jakob W. Sedig, and Christopher A. Turnbow
2017 Re-evaluating the Mimbres Region Prehispanic Chronometric Record. *Kiva* 83(3):316-343.

Anyon, Roger, and Steven A. LeBlanc
1984 *The Galaz Ruin: A Prehistoric Mimbres Village in Southwestern New Mexico*. University of New Mexico Press, Albuquerque.

Blake, Michael, Steven A. LeBlanc, and Paul E. Minnis
1986 Changing Settlement and Population in the Mimbres Valley, SW New Mexico. *Journal of Field Archaeology* 13(4):439-464.

Bomkamp, Samantha A.
2020 Typological and Iconographic Analyses of Casas Grandes Pottery at the Milwaukee Public Museum. Master's thesis, Department of Anthropology, University of Wisconsin-Milwaukee, Milwaukee.

Boyer, Jeffrey L., James L. Moore, Steven A. Lakatos, Nancy J. Akins, C. Dean Wilson, and Eric Blinman
2010 Remodeling Immigrants: A Northern Rio Grande Perspective on Depopulation, Migration, and Donation-Side Models. In *Leaving Mesa Verde: Peril and Change in the Thirteenth-Century Southwest*, edited by Timothy A. Kohler, Mark D. Varien, and Aaron M. Wright, pp. 285-323. University of Arizona Press, Tucson.

Brody, J. J.
1977 *Mimbres Painted Pottery*. School of American Research Press, Santa Fe.

Carlson, Roy L.
1970 *White Mountain Redware: A Pottery Tradition of East-Central Arizona and Western New Mexico*. Anthropological Papers No. 19. University of Arizona Press, Tucson.

Clark, Jeffery J.
2001 *Tracking Prehistoric Migrations: Pueblo Settlers among the Tonto Basin Hohokam*. Anthropological Papers No. 65. University of Arizona Press, Tucson.

Clark, Jeffery J., and Patrick D. Lyons
2012 *Migrants and Mounds: Classic Period Archaeology of the Lower San Pedro Valley*. Anthropological Papers No. 45. Archaeology Southwest, Tucson.

Cosgrove, Hattie S., and C. Burton Cosgrove
1932 *The Swarts Ruin, A Typical Mimbres Site in Southwestern New Mexico*. Papers of the Peabody Museum of Archaeology and Ethnology Vol. 15(1). Harvard University, Cambridge.

Creel, Darrell
1999 The Black Mountain Phase in the Mimbres Area. In *The Casas Grandes World*, edited by Curtis F. Schaafsma and Carroll L. Riley, pp. 106-120. University of Utah Press, Salt Lake City.
2014 The Hohokam, The Mimbres, and The Land Between: A Mimbres Perspective. In *Between Mimbres and Hohokam: Exploring the Archaeology and History of Southeastern Arizona and Southwestern New Mexico*, edited by Henry D. Wallace, pp. 535-550. Archaeology Southwest, Tucson.

Crown, Patricia L.
1994 *Ceramics and Ideology: Salado Polychrome Pottery*. University of New Mexico Press, Albuquerque.

Davis, Emma L.
1964 Anasazi Mobility and Mesa Verde Migrations. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

Di Peso, Charles C.
1974 *Casas Grandes: A Fallen Trading Center of the Gran Chichimeca*, Vols. 1-3. Amerind Foundation Series No. 9. Amerind Foundation, Dragoon, Arizona and Northland Press, Flagstaff, Arizona.

Di Peso, Charles C., John B. Rinaldo, and Gloria J. Fenner
1974 *Casas Grandes: A Fallen Trading Center of the Gran Chichimeca*, Vols. 4-8. Amerind Foundation Series No. 9. Amerind Foundation, Dragoon, Arizona and Northland Press, Flagstaff, Arizona.

Douglas, John E.
2000 Exchanges, Assumption, and Mortuary Goods in Pre-Paquimé, Chihuahua. In *The Archaeology of Regional Interaction*, edited by Michelle Hegmon, pp. 189-209. University Press of Colorado, Boulder.

Douglas, John E., and César A. Quijada
2000 *Reconocimiento Arqueológico en los Valles de Bavispe y San Bernardino, Sonora*. Technical report for Centro INAH Sonora, Hermosillo. Report on file with the Instituto Nacional de Antropologia e Historia, Mexico City.

Douglas, John E., César A. Quijada, and Júpiter Martinez
2003 *Período Cerámico Excavaciones Arqueológicas en los Valles de Bavispe y Huachineras, Sonora, Mexico*. Technical report for Centro INAH Sonora, Hermosillo. Report on file with the Instituto Nacional de Antropologia e Historia, Mexico City.

Ferguson, Jeffrey R., Karl W. Laumbach, Stephen H. Lekson, Margaret C. Nelson, Karen G. Schollmeyer, Toni S. Laumbach, and Myles Miller
2016 Implications for Migration and Social Connections in South-Central New Mexico through Chemical Characterization of Carbon-Painted Ceramics and Obsidian. *Kiva* 82(1):22-50.

Gilman, Patricia A. and Steven A. LeBlanc
2017 *Mimbres Life and Society: The Mattocks Site of Southwestern New Mexico*. University of Arizona Press, Tucson.

Gilman, Patricia A., Marc Thompson, and Kristina C. Wyckoff
2014 Ritual Change and the Distant: Mesoamerican Iconography, Scarlet Macaws, and Great Kivas in the Mimbres Region of Southwestern New Mexico. *American Antiquity* 79(1):90-107.

Glowacki, Donna M
2010 The Social and Cultural Contexts of the Central Mesa Verde Region during the Thirteenth-Century Migrations. In *Leaving Mesa Verde: Peril and Change in the Thirteenth-Century Southwest*, edited by Timothy A. Kohler, Mark D. Varien, and Aaron M. Wright, pp. 200-221. University of Arizona Press, Tucson.

Graves, William M.
2017 "Identity as Being, Identity as Becoming": Salinas Cultural Identities from the 700s through the 1600s. In *Landscapes of Social Transformation in the Salinas Province and the Eastern Pueblo World*, edited by Katherine A. Spielmann, pp. 134-150. University of Arizona Press, Tucson.

Gregory, David A. and David R. Wilcox (editors)
2007 *Zuni Origins: Toward a New Synthesis of Southwestern Archaeology*. University of Arizona Press, Tucson.

Haury, Emil W.
1958 Evidence at Point of Pines for a Prehistoric Migration from Northern Arizona. In *Migrations in New World Culture History*, edited by R. H. Thompson. University of Arizona Bulletin 29(2). Social Science Bulletin 27:1-8.

Heckman, Robert A., Barbara K. Montgomery, and Stephanie M. Whittlesey
2000 *Prehistoric Painted Pottery of Southeastern Arizona*. Technical Series No. 77. Statistical Research Inc., Tucson.

Hegmon, Michelle, Margaret C. Nelson, Roger Anyon, Darrell Creel, Steven A. LeBlanc, and Harry J. Shafer
1999 Scale and Time-Space Systematics in the Post-A.D. 1100 Mimbres Region of the North American Southwest. *Kiva* 65(2):143-166.

Kelley, Jane H., and Karin B. Larkin
2017 Pottery Studies. In *Not So Far from Paquimé: Essays on the Archaeology of Chihuahua, Mexico*, edited by Jane Holden Kelley and David A. Phillips, Jr., pp. 99-119. University of Utah Press, Salt Lake City.

Kidder, Alfred V.
1916 The Pottery of the Casas Grandes District, Chihuahua. In *Holmes Anniversary Volume*, pp. 253-268. Privately published, Washington, D.C.
1924 *An Introduction to the Study of Southwestern Archaeology*. Yale University Press, Andover, Massachusetts.

Kuckelman, Kristin A.
2010 Catalysts of the Thirteenth-Century Depopulation of Sand Canyon Pueblo and the Central Mesa Verde Region. In *Leaving Mesa Verde: Peril and Change in the Thirteenth-Century Southwest*, edited by Timothy A. Kohler, Mark D. Varien, and Aaron M. Wright, pp. 180-199. University of Arizona Press, Tucson.

Kurota, Alexander, Thatcher A. Rogers, and Evan S. Sternberg
2019 Evidence for Possible Mimbres Migration into the Jornada: Introducing the Eastern Mimbres San Andres Aspect. In *Collected Papers of the 20th Biennial Mogollon Archaeology Conference*, edited by Lonnie C. Ludeman, pp. 135-157. Friends of Mogollon Archaeology, Las Cruces, New Mexico.

Larkin, Karin B.
2006 Community Reorganization in the Southern Zone of the Casas Grandes Culture Area of Chihuahua, Mexico. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

LeBlanc, Steven A.
1983 *The Mimbres People: Ancient Pueblo Painters of the American Southwest*. Thames and Hudson, London.
1989 Cultural Dynamics in the Southern Mogollon Area. In *Dynamics of Southwest Prehistory*, edited by Linda S. Cordell and George J. Gumerman, pp. 179-208. Smithsonian Institution Press, Washington, D.C.
2018 Thoughts on Mimbres Archaeology. In *New Perspectives on Mimbres Archaeology: Three Millennia of Human Occupation in the North American Southwest*, edited by Barbara J. Roth, Patricia A. Gilman, and Roger Anyon, pp. 261-272. University of Arizona Press, Tucson.

LeBlanc, Steven A., Christy G. Turner II, and Michèle E. Morgan
2008 Genetic Relationships Based on Discrete Dental Traits: Basketmaker II and Mimbres. *International Journal of Osteoarchaeology* 18:109-130.

Lee, M. Patricia
2013 Analysis of the Carl Lumholtz Collection of Casas Grandes Ceramic Artifacts at the American Museum of Natural History. Ph.D. dissertation, City University of New York, New York City.

Lekson, Stephen H.
2002 *Salado Archaeology of the Upper Gila, New Mexico*. Anthropological Papers No. 67. University of Arizona Press, Tucson.
2009 *A History of the Ancient Southwest*. School for American Research Press, Santa Fe.
2011 Black Mountain and Paquimé: Dating the Medio Period of Casas Grandes. Electronic document, https://stevelekson.files.wordpress.com/2011/07/black-mountain-and-paquime.pdf, accessed May 26, 2020.

2015 *The Chaco Meridian: One Thousand Years of Political and Religious Power in the Ancient Southwest*. Rowman and Littlefield, Lanham, Maryland.
2018 Ethnohistory and Mimbres Subsistence. Paper presented at the 20th Biennial Mogollon Archaeology Conference, Las Cruces, New Mexico.

Lekson, Stephen H., Curtis P. Nepstad-Thornberry, Brian E. Yunker, Toni S. Laumbach, David P. Cain, and Karl W. Laumbach
2002 Migrations in the Southwest: Pinnacle Ruin, Southern New Mexico. *Kiva* 68(2):73-101.

Lindsay, Alexander J., Jr., and Calvin H. Jennings
1968 *Salado Red Ware Conference, Ninth Ceramic Seminar*. Ceramic Series No. 4. Museum of Northern Arizona, Flagstaff.

Leonard, Robert D.
2001 Evolutionary Archaeology. In *Archaeological Theory Today*, edited by Ian Hodder, pp. 65-97. Polity Press, Cambridge.

Lyons, Patrick D.
2003 *Ancestral Hopi Migrations*. Anthropological Papers No. 68. University of Arizona Press, Tucson.

Lyons, Patrick D., and Alexander J. Lindsay, Jr.
2006 Perforated Plates and the Salado Phenomenon. *Kiva* 72(1):5-54.

Mills, Barbara J.
2002 Acts of Resistance: Zuni Ceramics, Social Identity, and the Pueblo Revolt. In *Archaeologies of the Pueblo Revolt: Identity, Meaning, and Renewal in the Pueblo World*, edited by Robert W. Preucel, pp. 85-98. University of New Mexico Press, Albuquerque.

Minnis, Paul E.
1985 *Social Adaptation to Food Stress: A Prehistoric Southwestern Example*. University of Chicago Press, Chicago.

Minnis, Paul E. and Michael E. Whalen (editors)
2015 *Ancient Paquimé and the Casas Grandes World*. University of Arizona Press, Tucson.

Morales-Arce, Ana Y., Meradeth H. Snow, Jane H. Kelley
2017 Ancient Mitochondrial DNA and Ancestry of Paquimé Inhabitants, Casas Grandes (A.D. 1200-1450). *American Journal of Physical Anthropology* 163(3):616-626.

Moulard, Barbara
2005 Archaism and Emulation in Casas Grandes Painted Pottery. In *Casas Grandes and the Ceramic Art of the Ancient Southwest*, edited by Richard F. Townsend, pp. 66-97. Art Institute of Chicago and Yale University Press, New Haven, Connecticut.

Nelson, Ben A., and Roger Anyon
1996 Fallow Valleys: Asynchronous Occupations in Southwestern New Mexico. *Kiva* 61(3):275-294.

Nelson, Ben A., and Steven A. LeBlanc
1986 *Short-Term Sedentism in the American Southwest: The Mimbres Valley Salado*. University of New Mexico Press, Albuquerque.

Nelson, Margaret C.
1999 *Mimbres During the Twelfth Century: Abandonment, Continuity, and Reorganization*. University of Arizona Press, Tucson.

Ortman, Scott G.
2012 *Winds from the North: Tewa Origins and Historical Anthropology*. University of Utah Press, Salt Lake City.

Phillips, David A., Jr.
2012 The Northwest Mexico Polychrome Traditions. In *Potters and Communities of Practice: Glaze Paint and Polychrome Pottery in the American Southwest, A.D. 1250-1700*, edited by Linda S. Cordell and Judith A. Habicht-Mauche, pp. 34-44. Anthropological Papers No. 75. University of Arizona Press, Tucson.

Putsavage, Kathryn, and Matthew Taliaferro
2018 Continuity and Change in the Early Postclassic (A.D. 1130 to 1300) in the Mimbres Valley. In *New Perspectives on Mimbres Archaeology: Three Millennia of Human Occupation in the North American Southwest*, edited by Barbara J. Roth, Patricia A. Gilman, and Roger Anyon, pp. 203-231. University of Arizona Press, Tucson.

Quijada, César A., and John E. Douglas
2003 El Valle Bavispe, entre las Culturas del Río Sonora y Casas Grandes. *Noroeste de Mexico* 14:17-26.

Rakita, Gordon F. M.
2009 *Ancestors and Elites: Emergent Complexity and Ritual Practices in the Casas Grandes Polity*. AltaMira Press, Lanham, Maryland.

Ravesloot, John
1979 The Animas Phase: The Post-Classic Mimbres Occupation of the Mimbres Valley, New Mexico. Master's thesis, Department of Anthropology, Southern Illinois University, Carbondale.

Rogers, Thatcher A.
2019 Mimbres Pottery in the New Mexico Bootheel and Chihuahua. In *Collected Papers from the 20th Biennial Mogollon Conference*, edited by Lonnie C. Ludeman, pp. 193-200. Friends of Mogollon Archaeology, Las Cruces, New Mexico.

Schillaci, Michael A., Steven A. Lakatos, Jeffrey R. Ferguson, and C. Dean Wilson
2020 Analysis of Ceramic Compositional Data from Late Developmental Period Sites in the Tewa Basin, New Mexico. *Kiva* 86(1):70-107.

Shafer, Harry
1999 The Mimbres Classic and Postclassic: A Case for Discontinuity. In *The Casas Grandes World*, edited by Curtis F. Schaafsma and Carroll L. Riley, pp. 121-133. University of Utah Press, Salt Lake City.
2003 *Mimbres Archaeology at the NAN Ranch Ruin*. University of New Mexico Press, Albuquerque.

Sedig, Jakob W.
2015 The Mimbres Transitional Phase: Examining Social, Demographic, and Environmental Resilience and Vulnerability from A.D. 900-1000 in Southwest New Mexico. Ph.D. dissertation, Department of Anthropology, University of Colorado, Boulder.

Snow, Meradeth H., Harry Shafer, and David G. Smith
2011 The Relationship of the Mimbres to other Southwestern and Mexican Populations. *Journal of Archaeological Science* 38:3122-3133.

Thompson, Marc, Patricia A. Gilman, and Kristina C. Wyckoff
2014 The Hero Twins in the Mimbres Region: Representations of the Mesoamerican Creation Saga Are Seen on Mimbres Pottery. *American Archaeology* Summer 2014:38-43.

Turner, Christy G., II
1999 The Dentition of Casas Grandes with Suggestions on Epigenetic Relationships among Mexican and U.S. Populations. In *The Casas Grandes World*, edited by Curtis F. Schaafsma and Carroll L. Riley, pp. 229-233. University of Utah Press, Salt Lake City.

Turner, Christy G., II, and Jacqueline A. Turner
1999 *Man Corn: Cannibalism and Violence in the Prehistoric American Southwest*. University of Utah Press, Salt Lake City.

VanPool, Christine S., and Todd L. VanPool
2007 *Signs of the Casas Grandes Shamans*. University of Utah Press, Salt Lake City.

Whalen, Michael E., and Paul E. Minnis
2001 *Casas Grandes and Its Hinterland: Prehistoric Regional Organization in Northwest Mexico*. University of Arizona Press, Tucson.
2003 The Local and the Distant in the Origin of Casas Grandes, Chihuahua, Mexico. *American Antiquity* 68(2):314-332.

CIRCLES IN MOTION: A CONSIDERATION OF PAINTED DESIGN ELEMENTS AS IDENTITY MARKERS AND MEMORY CORRELATES

Lori Stephens Reed
Aztec Ruins National Monument and Chaco Culture National Historical Park

Introduction

Over the many years working at and analyzing pottery from Pueblo I Rosa phase sites and later Pueblo II/III great houses along the Animas River Valley and areas to the east and west in the Upper and Middle San Juan regions (Figure 1), I have often contemplated ancestral connections among the people who settled this area over the course of some 500 years between A.D. 700 and 1290. Technologically, there are similarities in the clay, temper, paints, and firing regimes of pottery produced in this region which are closely related to the available materials and also to long standing tradition. There are, however, certain painted design motifs that seem to reoccur through time in varying contexts that may be related to reestablishing power or legitimizing power through cultural and ancestral memory. In this paper, I offer some observations regarding similarities in painted pottery designs from the Pueblo I Rosa tradition and late Pueblo II-III pottery, most specifically McElmo Black-on-white, from the Aztec and Salmon great houses that may represent a revival of symbolism related to identity and ancestral memory.

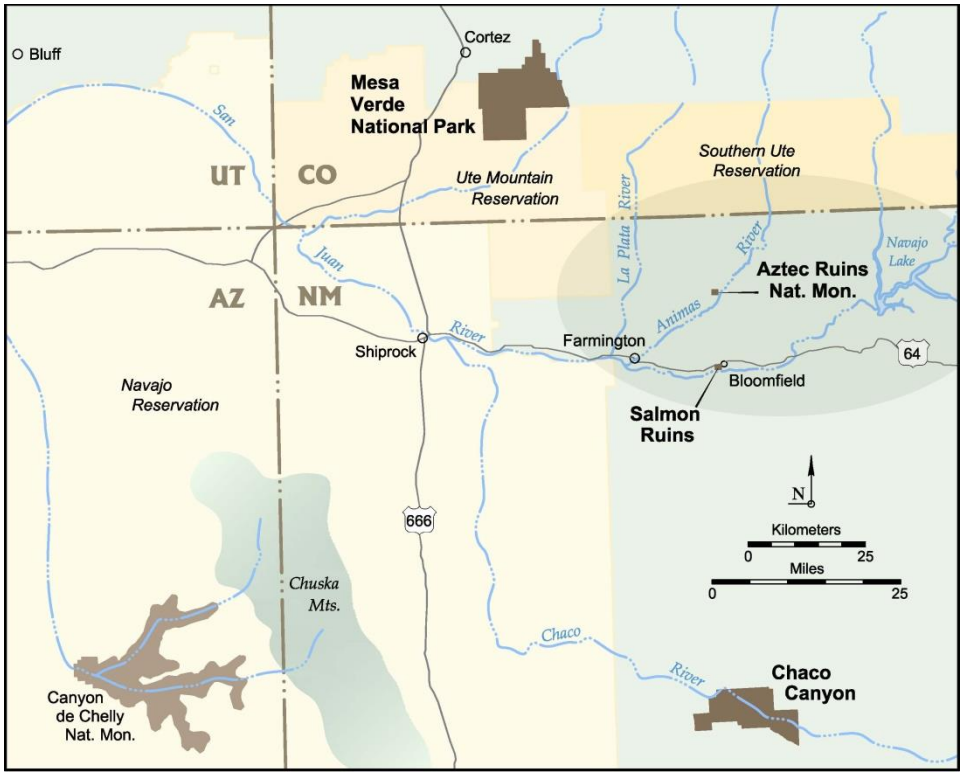


Figure 1. Map showing extent of the La Plata, Animas, and San Juan River Drainages comprising the Upper and Middle San Juan (Totah) Regions.

Over the last couple of decades, archaeologists have taken a much closer look at the concepts of identity, memory, and agency in regard to how material items hold power or are symbols of power, identity, or history for an individual or group (e.g., Mills 2008; Van Dyke 2008, 2009). Rather than identity being a static or fixed aspect of who an individual or group represents, we now see identity as a fluid state through which people personify themselves depending upon the situation or circumstance. Iconography and symbolism, including pottery designs, are media through which identity may be conveyed, power may be exerted, or memory may be recollected.

Pueblo I Rosa Pottery Designs

The Upper and Middle San Juan region (also known as the Eastern Mesa Verde and including what has been termed the Totah region) as highlighted in Figure 1 has a long and complex history with evidence for multi-lingual and multi-ethnic migrations (Potter et al. 2012; Wilshusen and Ortman 1999). Emerging from a rich and deeply rooted Basketmaker II-III culture, Ancestral Pueblo populations grew by the mid-A.D. 700s to establish substantial communities in the upper reaches of the Animas Valley, east into the Navajo Reservoir area, and west into the La Plata Valley (e.g., Dykeman and Langenfeld 1987; Eddy 1966; Potter and Chuipka 2007; Potter et al. 2012; Wilshusen 1995; Wilshusen and Wilson 1995). Ceramic evidence has played a key role in identifying these diverse populations through technological and painted design styles (Allison 1995, 2010; Reed 2003; Wilshusen and Wilson 1995; Wilson and Blinman 1993).

Rosa Black-on-white pottery from sites dating between A.D. 750 and 850 in the La Plata and Animas valleys and the Navajo Reservoir District is unique in being the first glaze-painted pottery in the Southwest. A recent sourcing study of the lead glaze pigment on Rosa pottery suggests that potters were obtaining lead ore (galena) from preferred sources in the western San Juan Mountains of Colorado (Santarelli et al. 2019). Not only is the use of lead glaze a unique characteristic of this pottery, but there are also several unique design elements that are common on Rosa pottery, further setting it apart from contemporary types in the Four Corners region.

Utilizing these galena sources, potters in the larger Upper San Juan region began producing an organic and glaze painted whiteware known as Rosa Black-on-white in the early A.D. 700s. This pottery is distinctive with its unpolished and unslipped surfaces, and designs painted in greenish glaze with an organic binder. Often, the green glaze is only visible microscopically on top of the organic binder due to flaking of the glaze. Rosa Black-on-white designs are consistently thick lined and the design elements tend to be consistent and limited. Wilson's description of Rosa Black-on-white identifies circles either lacking embellishment or including ticks or flags as a common motif in the bottom of bowls or floating along bowl walls (Wilson 2012; Wilson and Blinman 1993). Along with abundant circle elements, Rosa bowls may have designs comprised of triangles, dots, thick lines, curved lines, crossed lines, and bent lines. Wilson (2012) notes that Rosa may contain combinations of designs often seen on Chapin and Piedra Black-on-white, but Rosa is also unique with its layout and elements. For example, design elements deriving from basketry stitch patterns seen on Chapin Black-on-white are extremely rare on Rosa pottery. Possibly the most common and iconic design element on Rosa

pottery is a walking circle element consisting of an open thick-lined circle with long tick or leg-like embellishment. In many examples the long tick appendages have short line attachments possibly representing a circle rotation or movement. Allison's (1995, 2010) analysis and illustrations of pottery from the Durango area also show the consistent use of circle designs on Rosa Black-on-white vessels. Isolated dots and dots used as filler in ribbon elements are also common on Rosa Black-on-white.

Figures 2 through 4 show examples of circles without embellishment, circles with long tick and flag embellishments, and the use of dots as filler elements. These examples illustrate the quite common Rosa style designs that employ circles and dots. The circles and walking circles are commonly seen painted in the bottom center interior of bowls or as isolated elements on the interior upper body of bowls. They clearly represent the most common design element on Rosa decorated pottery. Also shown in Figures 2 through 4 are solid dots that are either isolated elements in rows (Figure 3, center left and bottom left) or function as filler inside larger motifs (Figure 4, bottom right). Dots are common on Rosa bowls and continue as a fairly common element on later pottery types in the region, including Bancos Black-on-white, Mancos Black-on-white, and McElmo Black-on-white.

Figure 2. Examples of Rosa Black-on-white sherds with embellished circles and dot fill patterns (from Reed and Goff 2007:Figure 9).

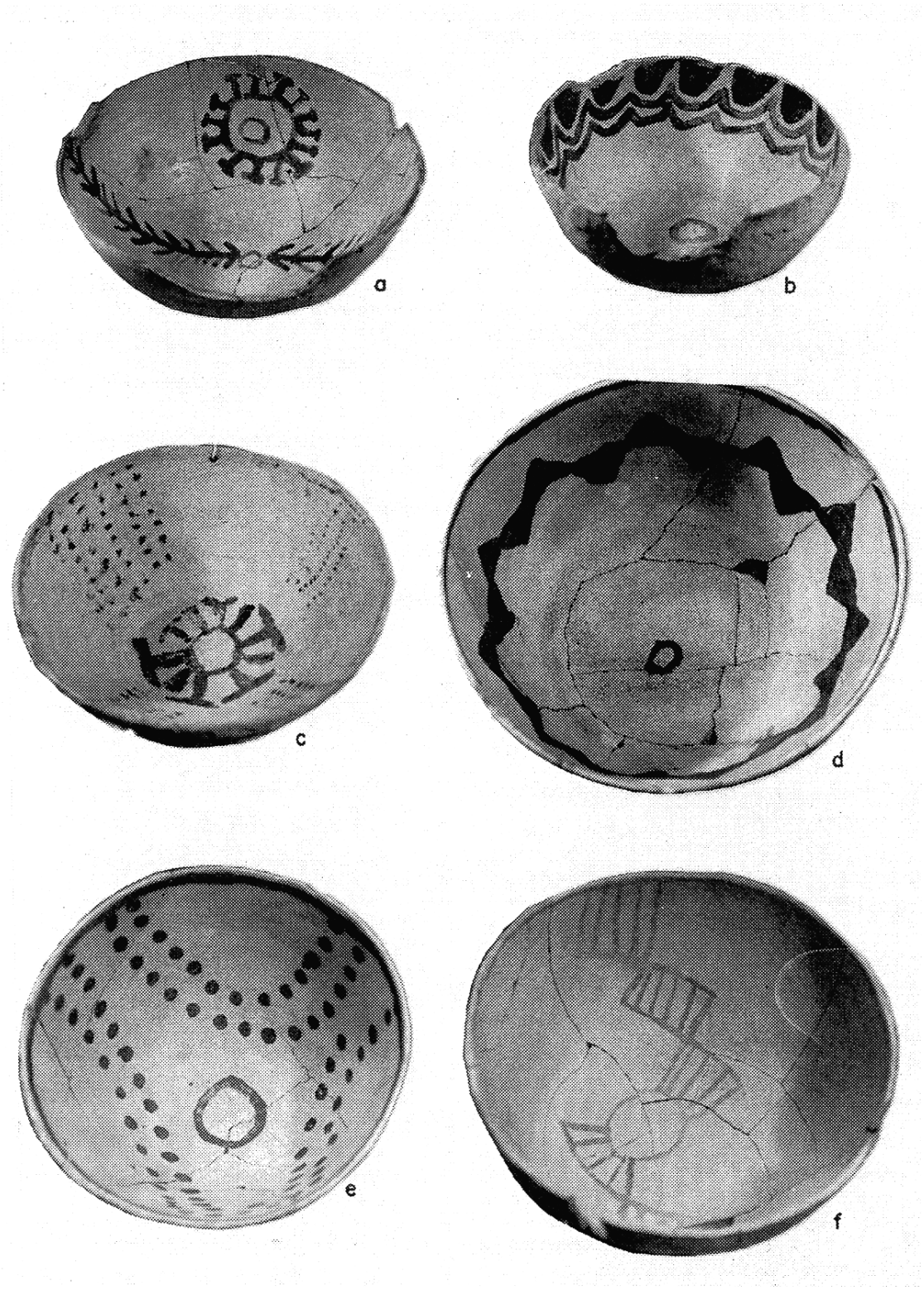


Figure 3. Examples of walking circles and dot elements on Rosa Black-on-white (from Wilson and Blinman 1993:Figure 5).

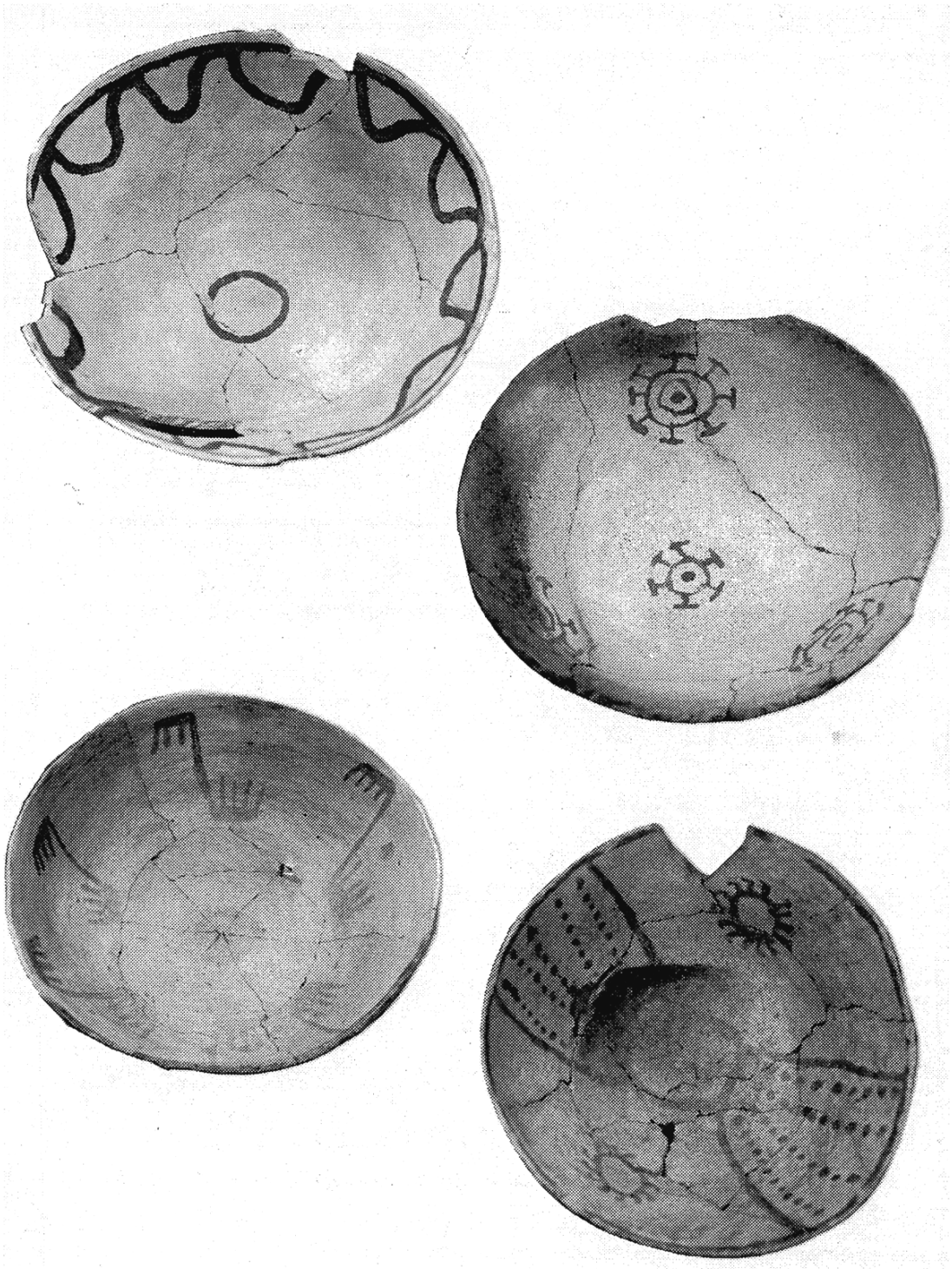


Figure 4. Examples of unembellished circles, walking circles, and dot filler on Rosa Black-on-white (from Wilson and Blinman 1993:Figure 7)

With the influx of Mesa Verde region migrants to the La Plata and Animas River valleys by the A.D. 800s, the long-lived and consistent design style associated with Rosa Black-on-white began to evolve into finer-lined Bancos Black-on-white with greater variability in elements and motifs (Reed and Goff 2007; Wilson and Blinman 1993). The technological convention of glaze-painted designs over an organic binder continued with Bancos Black-on-white, but the use of greenish glaze decreased in favor of organic pigment. As discussed by Anna Shepard (1939), Dean Wilson (1996), and L. Reed (2008) in various publications, distributions of pigment types across the larger Upper and Middle San Juan regions suggests the influence of migrant potters on local populations through time.

Although elements and motifs characteristic of Rosa and Bancos Black-on-white are occasionally present on the Northern San Juan pottery types Chapin black-on-white and Piedra Black-on-white, the frequent use and consistency of walking circles, dots, and dot filler on Upper San Juan whitewares suggests greater symbolic meaning. By the early A.D. 900s, population density in the Navajo Reservoir District and Animas River Valley decreased significantly. Wilson suggests Gallina pottery produced in the 900s to the east along the continental divide was heavily influenced by Rosa pottery of the 800s and may be the result of population migration (Wilson 2012; Wilson and Blinman 1993). Dean Wilson and I have had a number of conversations regarding this idea. The stylistic and technological similarities of Rosa and Gallina pottery are quite obvious. Based on what we see in the La Plata, Animas, and San Juan River valleys through the 900s and into the 1000s, I would agree that a portion of the late Pueblo I and early Pueblo II populations in the Navajo Reservoir area migrated east, contributing significantly to the Gallina culture. People who chose to remain along the river valleys of the Totah had deep roots in the Pueblo I Rosa culture and by the late 900s were engaged in interactions with the emerging great houses of Chaco Canyon and its outliers. As Van Dyke (2008:337) suggests, "various locales in the general [Totah] region are likely to have figured in Chacoan migration stories or other oral traditions."

Circle and Dot Elements on Mancos and McElmo Black-on-white

By the 1000s in the Middle San Juan (Totah) region, interactions with the great houses of Chaco were in full swing with the establishment of the earliest outliers in the region at Point Pueblo along the San Juan River and at great house communities along the La Plata Valley (McKenna and Toll 2001; Reed et al. 2014; Wheelbarger 2008). In the last several decades, archaeological research in the region has established that by 1090 at Salmon Pueblo and 1100 at Aztec West, Chacoan migrants had established the two largest great houses outside of Chaco Canyon proper (Baker 2008; Brown et al. 2008; Clark and Reed 2011; P. Reed 2008). As Chacoan migrants established themselves in the Middle San Juan, their influence is seen in architecture, ceramics, perishables, and other aspects of material culture. Washburn and Reed (2011) suggest that a specific Chacoan style symmetry in painted designs is evident in pottery from Salmon and Aztec that reflects both migration of artisans and emulation by local potters. It is the local potters and their identity that I am most concerned with in this discussion. Technological data and observations of design elements suggest that a local population descending from the Pueblo I Upper San Juan culture may have contributed to the Pueblo II/III great house phenomenon in the Middle San Juan.

During analysis of sherds and vessels from the extensive Aztec and Salmon collections, I have noticed design elements on McElmo Black-on-white sherds that appear reminiscent of Rosa Black-on-white walking or embellished circles. Some of these examples are close approximations to Rosa designs while others seem to be variations on the theme. As yet, the frequency of Rosa-like designs on ceramics from Aztec Ruins is unknown due to the absence of a formal design element analysis. I have, however, recorded over 15 examples of embellished circle variations, predominantly on locally produced McElmo pottery from Aztec and one example from Salmon, but have not yet noticed examples from other sites in the Middle San Juan. In addition, a few examples illustrated below are locally made Mancos Black-on-white from Aztec. Pending analysis of pottery from the Tommy Site and Point Pueblo just downstream from Salmon on the south side of San Juan River may reveal additional examples of this element on Mancos and McElmo pottery.

Comparing McElmo sherds from Aztec to examples of earlier Pueblo I Rosa pottery described above demonstrates the similarity in circle and dot design elements. As shown in Figure 5, the circles with ticked embellishment on McElmo are similar to walking circles on Rosa Black-on-white. These three examples are isolated exterior elements that would be the most outwardly visible aspect of the bowl decoration. Robinson (2005) specifically addresses the use of exterior designs on bowls as a means by which Northern San Juan folks may have displayed certain design motifs as symbols of affiliation during feasting. Mills (1999, 2007) and others (e.g., Chamberlin 2011; Potter 2000; Spielman 2004) have also examined the increased display of pottery designs on the exterior of bowls as population aggregation and communal activities such as large scale feasting commenced in the 1200s. Robinson's (2005) research focuses on the period after A.D. 1200 and primarily Mesa Verde Black-on-white, but at the Aztec West and East great houses the painting of exterior designs on McElmo Black-on-white began during the early 1100s at the time Chacoan culture was flourishing at Aztec West (Reed 2014, 2017). Exterior designs on locally made pottery at Aztec are quite common on both McElmo and Mesa Verde style bowls (Reed 2014, 2017). Robinson (2005:75) indicates that as much as 70 percent of Mesa Verde Black-on-white bowls at Aztec have exterior designs, a significantly higher percentage than that recorded for late 1200s sites in the Central Mesa Verde region. Glowacki (2015:143) emphasizes the near absence of exterior bowl designs on late 1200s sites on the western extreme of the Northern San Juan region and increased frequency moving to the east until one reaches the far eastern extent where Aztec functioned as the ceremonial center for the Totah. I would suggest that the painting of circle elements on bowl exteriors at Aztec, demonstrating similarities to the walking circles on Rosa Black-on-white from the Pueblo I period, may have had important symbolic meaning, possibly signaling an ancestral Animas Valley affiliation.

Figure 6 shows an embellished circle painted on the base of a Pueblo II/III black-on-white bowl from Room 46 in the east wing of Aztec West. Recall that circle motifs with or without embellishment are one of the most common elements on Rosa Black-on-white bowls. This example is very similar to many of the Rosa circles and may be a representation symbolically harkening back to an earlier time.

Figure 5. Embellished circle elements on the exterior of McElmo Black-on-white bowls from Room 225 Aztec West Ruin: left, AZRU 11045; top center, AZRU 6930; right, AZRU 7612 and AZRU 7968. Photo by Lori Stephens Reed. Courtesy of Aztec Ruins National Monument.

Figure 6. Embellished circle element on the interior base of a Pueblo II/III black-on-white bowl from Room 46 Aztec West (AMNH 29.0/6939). Photo by Lori Stephens Reed. Courtesy of the Division of Anthropology, American Museum of Natural History.

The ticked element in Figure 7 is a triangle on a McElmo Black-on-white bowl that may represent a variation in the circle theme. Figure 8 is a locally made Mancos Black-on-white bowl fragment with ticked circles floating around the base of the bowl. Some of the circles have appended ticks that are attached at an angle, possibly representing motion similar to the typical Rosa style circle.

Figure 7. A triangle variation with tick embellishments on the interior of a McElmo Black-on-white bowl from Room 47 Aztec West (AMNH 29.0/6999). Photo by Lori Stephens Reed. Courtesy of the Division of Anthropology, American Museum of Natural History.

Figure 8. Example of isolated walking circle elements on the interior of a Mancos Black-on-white bowl from Room 111 Aztec West (AMNH 29.0/8715). Photo by Lori Stephens Reed. Courtesy of the Division of Anthropology, American Museum of Natural History.

One of the best examples of a circle in motion on McElmo Black-on-white is from Room 43 in the east wing of Aztec West. This partial vessel shown in Figure 9 has a large circle placed in the center of the bowl base with appended lines set at an angle, giving the clear appearance of a circle in motion. This example is an excellent copy of the walking circles or circles in motion that are common on Pueblo I Rosa Black-on-white bowls.

Figure 9. A walking circle on the interior base of a McElmo Black-on-white bowl from Room 43 Aztec West (AZRU 4481). Photo by Lori Stephens Reed. Courtesy of Aztec Ruins National Monument and the Division of Anthropology, American Museum of Natural History.

The one example that I found in the Salmon collection is on a local McElmo Black-on-white jar fragment from Room 100W. As shown in Figure 10, the embellished circle is placed in the center of a series of concentric circles within a banded layout. The solid triangles appended to the center circle are oriented at an angle, giving the appearance of a circle in motion. The smaller solid dot in the center of the rotating circle appears to remain static in the center of the rotation.

Figure 10. A variation on the walking circle element painted on the exterior of a McElmo Black-on-white jar from Room 100W in Salmon Pueblo (FS 24518). Photo by Lori Stephens Reed. Courtesy of Salmon Ruins Museum.

Use of isolated dots and dot filler appears to be more common on Mancos, McElmo, and Mesa Verde Black-on-white vessels from Aztec than the walking circle element. Dots are also seen on Mancos Black-on-white ceramics from the Central Mesa Verde region and may not be as significant as the walking circle element, but many of the dot designs on Aztec Ruins pottery have an appearance reminiscent of dots on Rosa and Bancos Black-on-white. As shown in Figure 11, dots are used as filler within a larger triangular element comprising part of a simple McElmo Black-on-white band motif. From my observations of the Aztec collection, dots are often used to fill space within alternating and repeating patterns in simple McElmo banded layouts. The Rosa Black-on-white bowl in the lower right corner of Figure 4 has a similar dot-filled triangle that mirrors itself on either side of a circle placed in the center of the bowl.

Dot fill is also commonly seen on Mancos Black-on-white at Aztec and other sites in the region, with ribbon motifs filled with abundant dots rather than the hatching typical of Gallup or Chaco style designs. As shown in Figure 12, dots are used to fill the space within the rectilinear ribbon pattern and are fairly common on locally made Mancos and McElmo pottery from Aztec. Dots are also common as filler on Mesa Verde Black-on-white pottery made at Aztec as well.

Figure 11. Solid dot filler in a triangle band segment on the interior of an Early McElmo Black-on-white bowl from Room 97 Aztec West (AMNH 29.0/8322). Photo by Lori Stephens Reed. Courtesy of the Division of Anthropology, American Museum of Natural History.

Figure 12. Solid dot filler in a rectilinear ribbon motif on the interior of a Mancos Black-on-white bowl from Aztec West (AMNH 29.0/9833). Photo by Lori Stephens Reed. Courtesy of the Division of Anthropology, American Museum of Natural History.

One final observation on attributes reflecting potential linkages with ancestral Rosa potters involves aspects of the paint technology at Aztec and other Pueblo II/III sites in the Middle San Juan. As discussed by Anna Shepard (1939) and Dean Wilson (1996) for Pueblo I La Plata Valley assemblages, variation and changes in pigment selection including organic, glaze, and mineral is characteristic of locally produced pottery. Variation in pigment use is also seen in the Animas Valley and at sites to the east in the Navajo Reservoir District. Often this variation defies standard typologies for Rosa and Bancos Black-on-white and for the locally made Piedra Black-on-white ceramics, making typological classification challenging. This pattern of pigment variability continues into the Pueblo II period with the use of mineral, organic, and mixed paints identified on Cortez and Mancos Black-on-white pottery produced in the Middle San Juan. Although glaze paint falls out of use by the end of the A.D. 800s, pigment variability continues through the Pueblo II and III periods. Given the use of organic paints in the Middle San Juan from the Pueblo I period and intermittently through Pueblo II, the shift to predominantly organic painted designs on McElmo and Mesa Verde Black-on-white pottery was not such a dramatic change as, for example, in the Chaco Cibola or Mesa Verde regions. Organic pigment, in particular, has a long history in the Upper and Middle San Juan region.

Discussion and Conclusions

In this paper, I have presented a number of observations suggesting similarities in design elements between Pueblo I Rosa Black-on-white and Mancos and McElmo Black-on-white pottery produced at Aztec and Salmon between A.D. 1100 and 1225. Most of the examples I have seen in the Aztec collections are McElmo bowls from early Chacoan era deposits in the east wing of Aztec West. Recent research (Turner 2019; Wharton et al. 2017) has shown that the first great house built in the Aztec complex was Aztec North which was probably constructed by local folks attempting to link themselves to Chaco in the late 1000s. By 1100, the Aztec West great house was under collaborative construction by Chacoan migrants and the local Middle San Juan inhabitants. Given that Aztec is the only Chacoan great house complex on the Animas River, it begs the question of why the Animas Valley, when prior to the 1070s the valley had been sparsely populated for almost 100 years. If as Van Dyke (2008) suggests, the Totah (Middle San Juan) figured prominently in Chacoan migration stories, it would be reasonable to assert that Totah people and Chacoan migrants looking to establish a new great house location would have eyed the Animas Valley as a legitimate spot to relocate and invoke their deep ancestral roots. A strong connection to the Animas Valley through Rosa ancestors may partially explain the building of Aztec in its preeminent location.

If pottery designs are a means by which memory is brought to life and ethnic, linguistic, or clan affiliations are visually represented, then the parallels suggested here with Rosa style rotational (walking) circles most notably, as well as isolated dots or dots used as filler in other design elements may have been a means by which Aztec builders and spiritual leaders invoked symbols and legitimized their ancestral Animas Valley connections. Display of these images on the exterior of bowls during communal feasting events would have signaled affiliation with Animas Valley ancestors.

Clearly, more research and analysis into the Aztec, Salmon, and other Middle San Juan collections is warranted to establish the spatial extent and frequency of Rosa style designs on Mancos, McElmo, and Mesa Verde black-on-white style pottery produced in the region. The examples presented here are not part of a systematic analysis, but are rather those I have observed and photographed over the last 15 years or so. I am sure there are more examples in the Aztec and Salmon collections, and there are very likely walking circle elements that will be identified on pottery at other great houses in the Middle San Juan. The walking circle and dot variations shown here, however, provide a focus for formulating research questions that can be pursued through design element analysis. In addition to a detailed Middle San Juan study, further examination of Pueblo I Rosa and Bancos Black-on-white designs and a comparative study of whiteware designs from the Northern San Juan (Central Mesa Verde) region would be informative. A systematic and larger scale study of design element patterning in Pueblo II/III whiteware would be instrumental in further characterizing the cultural complexity of the Middle San Juan region, presence of migrant populations, emulation of culturally defining attributes, and linkages to ancestral populations.

Acknowledgments. An earlier version of this paper was presented in 2009 at the 74th Annual Meeting of the Society for American Archaeology in Atlanta, Georgia. I had not considered publishing these observations until an email discussion with Pete McKenna earlier this year. After sending him the 2009 presentation version, he and Hayward Franklin convinced me that it was worth getting out there. So, thank you Pete and Hayward for pushing me to do a few revisions and updates so these ideas and observations could be published in Pottery Southwest. This research would not have been possible without the support of Aztec Ruins National Monument, Salmon Ruins Museum, the American Museum of Natural History, and Archaeology Southwest. Many thanks to my Middle San Juan research colleagues who have contributed so much over the years, including Linda Wheelbarger, Laurie Webster, Paul Reed, Gary Brown, Dorothy Washburn, Larry Baker, Jeffery Wharton, Aron Adams, Donna Glowacki, and Dean Wilson. Also, all of the analysis I have done over the past several decades would not have been possible without the help of Tori Myers, Joell Goff, Ben Bellorado, Michelle Turner, Kathy Hensler, Sheila Goff, Bonnie Gibson, and Matt Muth. Many thanks to you all.

References Cited

Allison, James R.
1995 *Early Puebloan Ceramics: Animas-La Plata Archaeological Project 1992-1993 Investigations in Ridges Basin, Colorado*. Animas-La Plata Archaeological Project Research Paper 3. Northern Arizona University, Flagstaff, Arizona.

2010 *Animas-La Plata Project: Volume XIV, Ceramic Studies*. SWCA Environmental Consultants, Phoenix.

Baker, Larry L.
2008 Architecture and Development of a Chacoan Satellite on the San Juan River. In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan Region after AD 1100,* edited by Paul F. Reed, pp. 29-41. University of Utah Press, Salt Lake City.

Brown, Gary M., Thomas C. Windes, and Peter J. McKenna
2008 Animas Anamnesis: Aztec Ruins or Anasazi Capital? In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan Region after AD 1100,* edited by Paul .F. Reed, pp. 231-250. University of Utah Press, Salt Lake City.

Chamberlin, Matthew
2011 Plazas, Performance, and Symbolic Power in Ancestral Pueblo Religion. In *Religious Transformation in the Late Pre-Hispanic Pueblo World*, edited by Donna M. Glowacki and Scott Van Keuren, pp. 130-52. University of Arizona Press, Tucson.

Clark, Jeffery J., and Paul F. Reed
2011 Chacoan Immigration and Influence in the Middle San Juan. *Kiva* 77(2):251-274.

Dykeman, Douglas D., and Kristen Langenfeld
1987 *Prehistory and History of the La Plata Valley, New Mexico: An Overview*. Report to the State Historic Preservation Officer. San Juan County Archaeology Research Center Contributions to Anthropology 891. Bloomfield, New Mexico.

Eddy, Frank W.
1966 *Prehistory of the Navajo Reservoir District, Northwestern New Mexico*. Museum of New Mexico Press Papers in Anthropology 15, Santa Fe.

Glowacki, Donna M.
2015 *Living and Leaving: A Social History of Regional Depopulation in Thirteenth-Century Mesa Verde*. The University of Arizona Press, Tucson.

McKenna, Peter J., and H. Wolcott Toll
2001 Regional Patterns of Great House Development among the Totah Anasazi, New Mexico. In *Anasazi Regional Organization and the Chaco System*, edited by David E. Doyel, pp. 133-143. Maxwell Museum of Anthropology Anthropological Papers 5. University of New Mexico, Albuquerque.

Mills, Barbara J.
1999 Ceramics and Social Contexts of Food Consumption in the Northern Southwest. In *Pottery and People: A Dynamic Interaction*, edited by James M. Skibo and Gary M. Feinman, pp. 99-114. University of Utah Press, Salt Lake City.

2007 Performing the Feast: Visual Display and Suprahousehold Commensalism in the Puebloan Southwest. *American Antiquity* 72:210-39.

2008 Remembering While Forgetting: Depositional Practices and Social Memory at Chaco. In *Memory Work: Archaeologies of Material Practices*, edited by Barbara J. Mills and William. H. Walker, pp. 81-108. School for Advanced Research Press, Santa Fe.

Potter, James M.
2000 Pots, Parties, and Politics: Communal Feasting in the American Southwest. *American Antiquity* 65:471-92.

Potter, James M., and Jason P. Chuipka
2007 Early Pueblo Communities and Cultural Diversity in the Durango Area. *Kiva* 72(4):407-430.

Potter, James M., Jason P. Chuipka, and Jerry Fetterman
2012 The Eastern Mesa Verde Region: Migrants, Cultural Diversity, and Violence in the East. In *Crucible of Pueblos: The Early Pueblo Period in the Northern Southwest*, edited by Richard H. Wilshusen, Gregson Schachner, and James R. Allison, pp. 53-71. Cotsen Institute of Archaeology Press Monograph 71, University of California, Los Angeles.

Reed, Lori Stephens
2003 Ceramic Clay and Temper. In *The Rocky Mountain Expansion Loop Pipeline Data Recovery Project, Volume 4: Synthetic Reports*, compiled by J. C. Horn, J. Fetterman, L. Honeycutt, pp. 4-28 - 4-32. Woods Canyon Archaeological Consultants, Inc., Yellow Jacket, Colorado.

2008 Ceramics of the Middle San Juan Region: Potters, Recipes, and Varieties. In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan after AD 1100*, edited by Paul F. Reed, pp. 190-206. University of Utah Press, Salt Lake City.

2014 Aztec Ruins Accession 61 Ceramic Analysis. In *1984 Archeological Investigations for Modifications to West Ruin Drainage*, Accession 61, by Jim Trott, pp. 5.1-5.50. National Park Service, Aztec Ruins National Monument, Aztec, New Mexico.

2017 Ceramic Artifacts. In *Prehistoric Puebloan Community in the Animas River Valley: The Aztec Ruins National Monument Archeological Inventory*, by Jeffrey T. Wharton, Lori Stephens Reed, and Aron. J. Adams, pp. 157-268. National Park Service, Aztec Ruins National Monument, Aztec, New Mexico.

Reed, Lori Stephens, and Joell Goff
2007 A Field Guide to Upper San Juan Anasazi and Navajo Pottery. Manuscript prepared for the New Mexico Archaeological Council Ceramic Workshop, Farmington District Office, Bureau of Land Management Farmington, New Mexico, revised from 1999 version.

Reed, Lori Stephens, Linda Wheelbarger, and David Witt
2014 Ancestral Great Houses in the Northern Borderlands: Chacoan Hegemony at Aztec North and Point Pueblo. Paper presented at the 79th Meeting of the Society for American Archaeology, Austin.

Reed, Paul F.
2008 Salmon Pueblo as a Ritual and Residential Chacoan Great House. In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan Region after AD 1100,* edited by Paul F. Reed, pp. 42-61. University of Utah Press, Salt Lake City.

Robinson, Hugh L.
2005 Feasting, Exterior Bowl Decoration, and Public Space in the Northern San Juan, A.D. 1240-1300. MA thesis, Department of Anthropology, Washington State University, Pullman.

Santarelli, Brunella, Sheila Goff, David Killick, Kari Schleher, and David Gonzales
2019 Lead Isotope Ratios of Pueblo I Lead-glazed Ceramics and Galena from Colorado and Pueblo II Galena from Chaco Canyon, New Mexico. *Journal of Archaeological Science: Reports* 23:634-645.

Shepard, Anna O.
1939 Technology of La Plata Pottery. In *Archaeological Studies in the La Plata District, Southwestern Colorado and Northwestern New Mexico*, by E. H. Morris, pp. 249-287. Carnegie Institute of Washington Publication 519. Washington, D.C.

Spielmann, Katherine A.
2004 Communal Feasting, Ceramics, and Exchange. In *Identity, Feasting, and the Archaeology of the Greater Southwest*, edited by Barbara J. Mills, pp. 210-32. University of Colorado Press, Boulder.

Turner, Michelle I.
2019 Becoming Chacoan: The Archaeology of the Aztec North Great House. PhD Dissertation, Department of Anthropology, State University of New York, Binghamton.

Van Dyke, Ruth
2008 Sacred Landscapes: The Chaco-Totah Connection. In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan Region after AD 1100*, edited by Paul F. Reed, pp. 334-348. University of Utah Press, Salt Lake City.

2009 Chaco Reloaded: Discursive Social Memory on the Post-Chacoan Landscape. *Journal of Social Archaeology* 9(2):220-248.

Washburn, Dorothy, and Lori Stephens Reed
2011 A Design and Technological Study of Hatched Ceramics: Tracking Chacoan Migrants in the Middle San Juan. *Kiva* 77(2):173-202.

Wharton, Jeffery T., Lori Stephens Reed, and Aron J. Adams
2017 *Prehistoric Puebloan Community in the Animas River Valley: The Aztec Ruins National Monument Archeological Inventory*. National Park Service, Aztec Ruins National Monument, Aztec, New Mexico.

Wheelbarger, Linda
2008 Puebloan Communities on the South Side of the Middle San Juan River. In *Chaco's Northern Prodigies: Salmon, Aztec, and the Ascendancy of the Middle San Juan Region after AD 1100*, edited by Paul F. Reed, pp. 209-230. University of Utah Press, Salt Lake City.

Wilshusen, Richard H. (compiler)
1995 *The Cedar Hill Special Treatment Project: Late Pueblo I, Early Navajo, and Historic Occupations in Northwestern New Mexico*. La Plata Archaeological Consultants Research Papers No. 1, Dolores, Colorado.

Wilshusen, Richard H., and Scott G. Ortman
1999 Rethinking the Pueblo I Period in the Northern Southwest: Aggregation, Migration, and Cultural Diversity. *Kiva* 64:369-399.

Wilshusen, Richard H., and Ruth Van Dyke
2006 Chaco's Beginnings. In *The Archaeology of Chaco Canyon*, edited by S. H. Lekson, pp. 211-259. School of American Research, Santa Fe.

Wilshusen, Richard H., and C. Dean Wilson
1995 Reformatting the Social Landscape in the Late Pueblo I-Early Pueblo II Period: The Cedar Hill Data in Regional Context. In *The Cedar Hill Special Treatment Project: Late Pueblo I, Early Navajo, and Historic Occupations in Northwestern New Mexico*, compiled by Richard H. Wilshusen, pp. 43-80. La Plata Archaeological Consultants Research Papers No. 1, Dolores, Colorado.

Wilson, C. Dean
1996 Ceramic Pigment Distributions and Regional Interactions: A Re-examination of Interpretations in Shepard's "Technology of La Plata Pottery." *Kiva* 62:83-102.

2012 Pottery Typology Project. New Mexico Office of Archaeological Studies, Santa Fe. http://ceramics.nmarchaeology.org/typology/type?p=207

Wilson, C. Dean, and Eric Blinman
1993 *Upper San Juan Region Pottery Typology*. Museum of New Mexico Archaeology Notes 80, Santa Fe.

EXHIBITS AND EVENTS

August 2020 is the Age of Coronavirus. We have no events to report. We can say that museums are trying to make the best of a bad situation, and many have special online exhibits.

Albuquerque Archaeological Society
Publications: 1968-2003 in PDF Format
Available as a 2 CD Pack for $15.00
(See order form on the last page of this volume)

CONTENTS

Bice, Richard A., Sheila Brewer, Bettie Terry, Phyllis Davis, Gordon Page, Elizabeth Kelley, William Sundt, and Joan Wilkes
1990 *The Vidal Great Kiva Near Gallup, New Mexico*, Summary Status Report. Albuquerque Archaeological Society, Albuquerque.

King, Dudley W., and Richard A. Bice
1992 *Subfloor Channels in Prehistoric Ruins: Anasazi Region of the Southwest*. Albuquerque Archaeological Society, Albuquerque.

Olson, Nancy H., and Richard A. Bice, edited by Alan M. Shalette
1995 *The Albuquerque Archaeological Society: The First Twenty-Five Years, 1966-1991*. Albuquerque Archaeological Society, Albuquerque.

Bice, Richard A.
1997 *Field Guide to Mid-Rio Grande Pottery.* Technical Note No. 4. Albuquerque Archaeological Society, Albuquerque.

Bice, Richard A.
1998 *Prehispanic Pueblo Pottery,* second edition, Albuquerque Archaeological Society, Albuquerque.

Bice, Richard A., Phyllis S. Davis, and William M. Sundt
1998 *The AS-8 Pueblo and the Cañada de las Milpas, a Pueblo III Complex in North-Central New Mexico*. Albuquerque Archaeological Society, Albuquerque.

Bice, Richard A., Phyllis S. Davis, and William M. Sundt
2003 *AS-5, Indian Mining of Lead for Use in Rio Grande Glaze Paint*, Report of the AS-5 Bethsheba Project Near Cerillos, New Mexico. Albuquerque Archaeological Society, Albuquerque.

SUBMISSIONS TO *POTTERY SOUTHWEST*

The availability of Pottery Southwest in electronic format creates opportunities for communicating with a wide audience in a sophisticated manner. It is currently published two or three times a year on a flexible schedule. Included are sections for Major Papers, Comments & Responses, Book Reviews, and Current Exhibits & Events. Following is a brief list of guidelines to follow in preparing submissions:

Style: Please adhere to the Society for American Archaeology's *American Antiquity* Style Guide for submissions. Refer to the *Chicago Manual of Style* for any questions regarding punctuation, i.e., single versus double quotation marks.

Author Information: Major papers should be approximately 10-15 pages including bibliographies and endnotes. Comments & Responses, Book Reviews, and Current Exhibits & Events should be short, in the 500- to 1,500-word range. Authors are responsible for the accuracy of their work.

Page Set-up: All submissions must be in Microsoft Word format. Top, bottom, left and right margins must be 1 inch. Do not use any headers and footers in your submission. Text font should be Times New Roman, 12 point. Figure labels should be Times New Roman, 10 point. Paragraphs should be single spaced. Do not use the tab key, enter key, or the space bar to line up text. Bibliographies must follow the *American Antiquity* style guide.

Spelling, Grammar, and Punctuation: Please spell check and grammar check your work before submission.

Images: Images must be in .jpg format. Images should be submitted as a separate file as well as inserted into the document.

Inserts: Please do not import spreadsheets, pie charts, etc. from Excel into the Word document. They must be converted to Word format for submission, or converted to .jpg format. Do not use text boxes.

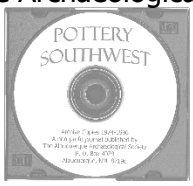
Deadlines: The deadlines for the 2020 issues are April 15, 2020 and October 15, 2020. Papers submitted after these dates will be considered for the following issue.

Returns or Rejections: *Pottery Southwest* reserves the right to reject or return for revision, any material submitted on the grounds of inappropriate subject matter or material of poor quality or of excessive length, or if the material contains defamatory or illegal references. Manuscripts may also be returned for reformatting when they do not comply with the style provisions. Papers under consideration for publication elsewhere will not be accepted.

Questions, comments or inquiries should be sent to the editors at *psw@unm.edu*.

***Pottery Southwest* Copyright:** The Albuquerque Archaeological Society has held the copyright for *Pottery Southwest* since 1974. Standard copyright procedures apply; i.e., an author who contributes a paper to *Pottery Southwest* may distribute the paper in its entirety as long as they reference *Pottery Southwest* as the source, i.e., *https://potterywouthwest.unm.edu* and the volume reference. The same hold true for citations in bibliographies. The author may not offer the same article in its entirety to any other publication. Downloads of *Pottery Southwest* are offered free of charge. Thus, it is unrealistic for an author to assume to hold an individual copyright on a specific paper. Copyrights for individual photographs that are used to illustrate a point in the text and referenced therein as "figures," are part of the submission and are treated as such. Authors are responsible for ensuring that material presented for publication does not infringe upon any copyright held by a third party.

ORDER FORM
for Pottery Southwest Vols. 1-23, 1974-1996 Archive CD,
Pottery Southwest Five Years in Cyberspace Archive CD Vols. 24-28,
Prehistoric Southwestern Pottery Types and Wares by Norman Oppelt,
and/or Albuquerque Archaeological Society 2-CD Sets



TO: Albuquerque Archaeological Society
P. O. Box 4029
Albuquerque, NM 87196

Number & Choice	**POTTERY SOUTHWEST CDs**	**Price per CD**	**Total**
[____] Vol. 1-23 [____] Vol. 24-28	**PLEASE PRINT CLEARLY** Name: _____ Address: _____ City: _____ State: _____ Zip Code: _____ E-Mail: _____	$5.00 for AAS members & students $7.50 for non-members	
No. of Oppelt CDs	**PREHISTORIC SOUTHWESTERN POTTERY TYPES AND WARES by Norman Oppelt**	**Price per CD**	
[____]	**PLEASE PRINT CLEARLY** Name: _____ Address: _____ City: _____ State: _____ Zip Code: _____ E-Mail: _____	$6.00 for AAS members & students, $7.50 for non-members	
Number of AAS CD Sets	**ALBUQUERQUE ARCHAEOLOGICAL SOCIETY 2-CD SETS**	**Price per CD Set of 2**	
[____]	**PLEASE PRINT CLEARLY** Name: _____ Address: _____ City: _____ State: _____ Zip Code: _____ E-Mail: _____	$15.00	

	Shipping		**$4.00**
	AMOUNT ENCLOSED:		**$_____**