



POTTERY SOUTHWEST

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In This Issue:

In 1978 the Albuquerque Archaeological Society, together with John Hayden, of the National Forest Service, conducted a survey in the Sandia foothills. Focusing on the Jaral Canyon the society identified 37 archaeological sites including the PIV pueblo's collection of 138 potsherds which are described by Hayward Franklin in this issue. Also in this issue, Steve Plog provides the latest on the Chaco Research Archive.

Ongoing features include "On the Shelf" and "On View". Finally, we provide some technical tips on submissions. These tips make publishing in *Pottery Southwest* easier for our contributors. We hope you will take advantage of them and send in your submissions (see Page 23 for how-to). Please remember submissions need to be "camera ready".

Pottery Southwest is now in its sixth year of publishing on the worldwide web. To continue this endeavor we need to hear from our readers. Please consider submitting a paper, inquiry, or comment so that we may keep our publication vital. Suggestions and articles are always welcome at our e-mail address: psw@unm.edu.

CONTENTS

	<u>Page</u>
The Pottery of Jaral Pueblo (LA 47875), a PIV Settlement in the Foothills of the Sandia Mountains by Hayward H. Franklin.	2-17
Online: Chaco Research Archive from Steve Plog.....	18-19
On the Shelf and On View:	20-21
Mission Statement	22
How to Submit Papers and Inquiries	23
Order Form for Archival CDs of Pottery Southwest	24

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**The Pottery of Jaral Pueblo (LA 47875),
a PIV Settlement in the Foothills of the Sandia Mountains
Hayward H. Franklin**

I. Background

The Jaral site is an obscure small pueblo in the western foothills of the Sandia Mountains near Albuquerque. It is one of several small “pueblitos” that line the western edge of the mountains, typically at mouths of major washes. Only one of these has been investigated intensively (Schmader 1989). All appear to be PIV (Classic) in major occupation, although a few began during PIII (Coalition), and contain Santa Fe and Socorro Black/white in addition to glazewares.

In 1978 the Albuquerque Archaeological Society, together with John Hayden, of the National Forest Service, conducted a survey in the Sandia foothills. Located near the tramway and expanding housing developments, this area was increasingly affected by modern population. Focusing on the Jaral Canyon (Spanish for “willow grove”), the society identified 37 archaeological sites. These ranged in time from prehistoric Pueblo to historic homestead, to modern era Forest Service cabin (Davis 1984). Old fields, terraces and water sources were recorded. The report by Davis (1984) summarizes the AAS project, and focused on describing the historic Cosme Garcia homestead. Other data and survey map was submitted by Hayden to USFS. Recently, the site was mapped by John Hayden, Erin Hudson, and me. There is an old collection of 138 potsherds from in and around the PIV pueblo, which will now be described here.

The condition of the site today is quite eroded with few artifacts visible, and it is fortunate that we have the collection made in the 1970's, A series of 15-20 contiguous rooms arranged in a C pattern was constructed next to the major wash, which is normally dry. Rough field stone was used as foundations, and upper walls were probably made of adobe reinforced with stone. Wooden roofs must have capped the structures, although no vigas are seen on the surface today. A small plaza faces the wash, but no sign of a kiva is present. Trash midden material is very scattered off of the south end of the site. The lack of extensive midden accumulation suggests only a limited occupation of the little village.

All the pottery from the Jaral site derives from the Puebloan Rio Grande Glazeware tradition, during the pueblo IV (or Classic) time period. This period of time, on the Middle Rio Grande, lasted from about AD 1300 to 1600. Glazeware spans the time from the end of the Pueblo III, or the Rio Grande Coalition Phase, which was dominated by B/w pottery, into the Historic period, with Spanish Colonization in the 17th century. Glazeware production ceased about AD 1700, after the Revolt of 1680.

II. Temporal Framework

Rio Grande Glazeware comprises a complex set of pottery types, which vary in design style as well as rim form. The “pottery types” as customarily used, are defined by the interaction of these two variables. Initial definitions were proposed by Kidder and Shepard (1936), and Mera (1933, 1940). Based primarily on alterations in rim form, and secondarily on design style, the essential chronology took shape as indicated by Mera (1933). Together, the sequence emerged as a series of rim forms sequent in time, but also allowing for some spatial variation across the

Rio Grande production zone. Figure 1 illustrates the basic bowl rim shapes as arranged by Mera, and the time spans currently assigned to these phases. The basic type descriptions were formalized by the Eighth Southwestern Ceramic Seminar (1966), but will always require further documentation. Recent re-definitions and color illustrations of the glazeware series are now available (Dyer 2008; Morales 1997; Wilson et. al. 2010).

The chronological classification by rim form can be summed up in Figure 1. Further refinements in the basic sequence of bowl rim forms are shown in Figure 2 (McKenna and Miles 1996). The inter-relationship of time, rim form and design style is illustrated in Figure 3 (Franklin 2009). Notable is that bichrome Glaze-on-red (G/r), Glaze-on-yellow (G/y) and polychrome (G/p) layouts persisted over time, and were intersected by temporal changes in bowl rim forms. The specific dates on individual types are not always well substantiated, and additional work is proceeding to pin these types more firmly in time. Although Tijeras Pueblo is well dated with over 400 tree ring dates (Linda Cordell personal communication) many of the major settlements lack adequate chronometric dating. There is no chronometric dating for Jaral pueblo at this time.

Traditional Phases and date ranges

- Glaze A: 1300 – 1425
- Glaze B: 1425 – 1450
- Glaze C: 1450 – 1490
- Glaze D: 1490 – 1525
- Glaze E: 1525 – 1625
- Glaze F: 1625 – 1700

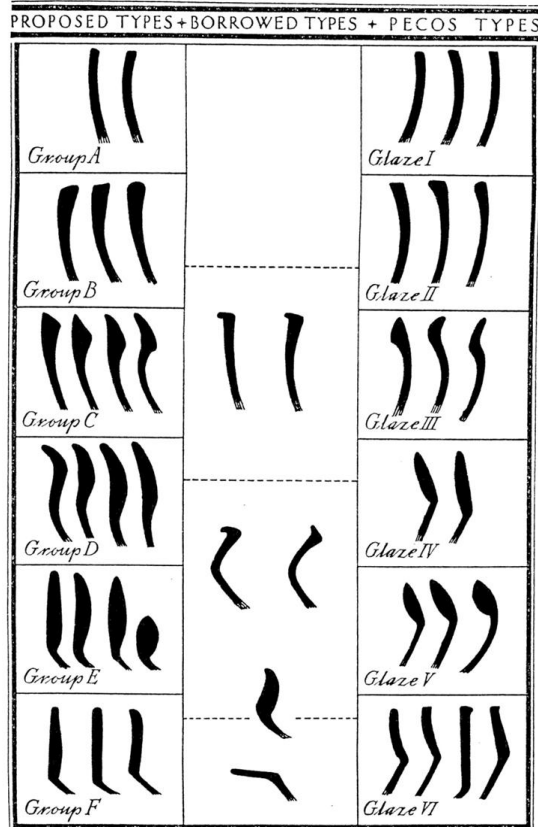


Figure 1 Rio Grande Glazeware Sequence by H.P. Mera

Figure 72: Rim Profile Chart, McKenna and Miles (1996)

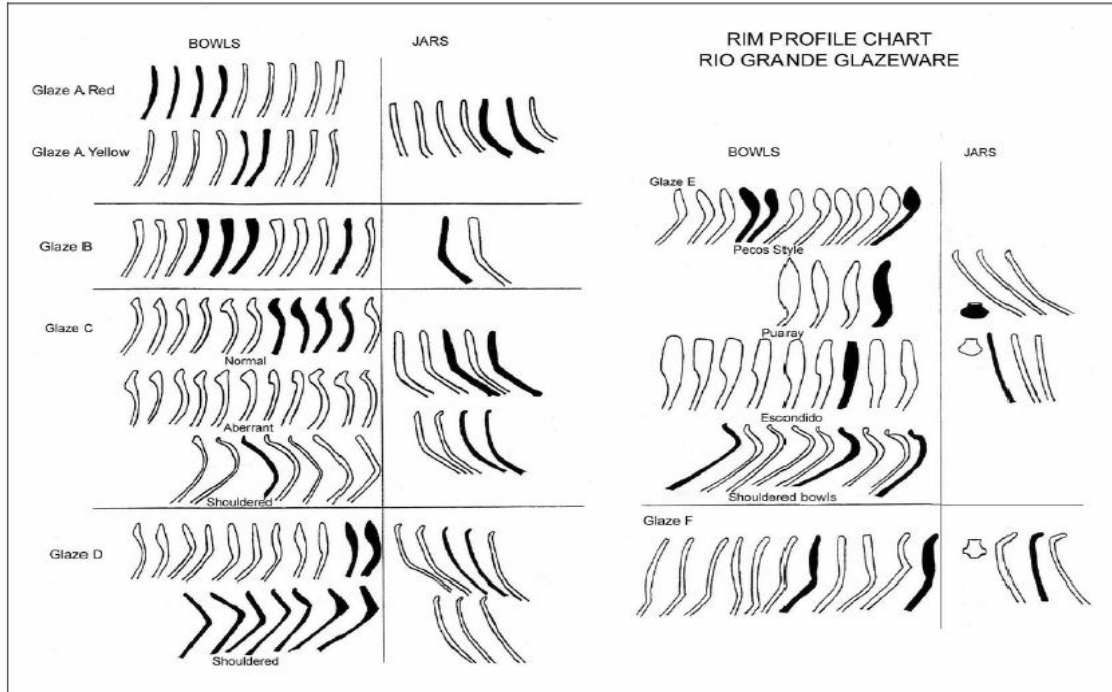


Figure 2. Expanded list of Glazeware rim forms (from McKenna and Miles 1996)

	Glaze-on-red (bichrome)	Glaze-on-yellow (bichrome)	Polychrome (contrasting slips)	Polychrome (3 or more colors per side)
Bowl Rim Shapes				
Glaze F rims	Kotyiti G/R	Kotyiti G/Y	?	Kotyiti G/P, Trenaquel G/P
Glaze E rims	?	?	?	Puaray G/P, Escondido G/P
Glaze D rims	?	?	?	San Lazaro G/P
Glaze C rims	Sanchez G/R?	Sanchez G/Y?	Kuaua G/P?	Espinoso G/P, Kuaua G/P
Glaze B rims	Largo G/R	Largo G/Y	Medio G/P	Largo G/P
Glaze A rims	Agua Fria G/R (Glaze A Red)	Cieneguilla G/Y	San Clemente G/P	Cieneguilla G/P, Pottery Mound G/P, Los Padillas Poly, Arenal Poly
Pueblo III prototypes	Wingate B/R, St. Johns B/R	Hopi yellow ware?	Gila Poly, Houck, Querino Poly	St. Johns Poly, Heshotauthla Poly, Fourmile Poly, Kwakina Poly, etc.

Figure 3. Design Style and Rim Shape (chronology) Relationships in Rio Grande Glazeware

NOTE: Figures 4 through 15 appear at the end of this paper.

III. Jaral Pottery Types

Using the framework given above, the Jaral ceramics can be placed into context. In general, the pottery belongs to the late end of the glazeware sequence. Except for one possible Glaze A body

sherd, all the painted ware is assigned to Glaze C thru F. The majority is placed in the Glaze E and F time (Table 1). Therefore, the broadest estimate would place Jaral in the period of AD 1400 to 1700. However, based on the preponderance of Glazes E and F, tighter estimates place the main occupation of Jaral at AD 1500 to 1650. Although a bit of Glaze C and D is evidenced, most of the decorated pieces are Glazes E and F. The main focus of the site's occupation is therefore late in prehistoric times, with some part evidently continuing into the historic period after AD 1600.

Rim forms at Jaral conform to those considered typical for Glazes C thru F. Glaze C (Espinosa G/p) rims are mildly thickened and everted at the lip. Design style typically consists of broad frets of red matte paint bordered by well controlled black glaze paint on bowl and jar exteriors. Bowl interiors are painted with the same black glaze paint but without the addition of matte red paint. Background slips are typically yellow to buff. A variant of Glaze C, "Kuaua G/p" uses incurved bowl rims with a sharply beveled lip. In many cases, this enclosed form variant of Glaze C was slipped but not painted on the inside, and painted decoration is confined to the exterior.

Glaze D (San Lazaro G/p) rims evolve into an elongated "lozenge" shape which is ovoid in cross section. The rim area thus becomes longer or "higher" as sometimes described. The juncture with the main bowl body is often angular, having a "keel" or "carina" (Figure 8). This sharp angle change is typical of this phase, but not always visible from pot fragments. Designs continue the same basic layouts from Glaze C, although the black glaze lines are wider with less straight edges. At this time slip colors show considerable variation. Not confined to just the traditional yellow-buff color, slips now included fawn, tan, and even reddish hues.

Glaze E (Puaray G/p) rims exaggerate the trends from Glaze D, with rims becoming quite thick and elongated in some cases. In profile, they may be "club" shaped (at Pecos), "lozenge" shaped (in Rio Grande valley), or even "rectangular" (Escondido variety). Jaral rims are shaped in the "Puaray" style. Slips revert to a buff or dirty yellow color. Basic design elements continue, but glaze paint application becomes "sloppier". The paint color now varies from black to brown or green. Pits, bubbles and runs are common. Glaze E and F examples are shown in Figures 6 – 11.

Glaze F (Kotyiti G/r, Kotyiti G/y, Kotyiti G/p) consists of three actual types, since bichrome painting on red or yellow background slips returned. The polychrome style continues, out of Puaray G/p, utilizing red painted frets outlined by glaze paint. Rims revert to a straight upright rim with rounded lip, similar to Glaze A. The return of bichrome painting and straight rims marks a similarity to pottery made over 200 years earlier. However, the runny and off-color paint noted in Glaze E continues, and many painted lines are runny and inconsistent in composition. The addition of European-influenced vessel forms to the usual bowl-jar repertoire comprises such items as soup plates and candelabras.

The change in glaze paint application during Glaze E and F has been noted by others, and certainly occurs at Jaral as well (Figure 11). Although ascribed to mere "sloppiness", this "deterioration" may be more complex than lack of line control by the painter. It has been suggested that the paint composition or "recipes" changed, whether intentionally or by necessity.

Glaze paint composition has received much attention recently (e.g. Habicht-Mauche et. al. 2006). The causes may range from incorrect application, change in paint chemical composition, or preparation of pigments. Access to lead mines in the Cerrillos Hills may have been restricted or limited by Spanish authorities. Alterations in glaze paint chemistry have been studied by Huntley (2008) for the Western Glazes and by Schleher (2010) for the Rio Grande Glazes. The subject has been researched and summarized recently by Schleher (2010). Suffice it to say at present, that the runny and discolored glazes at Jaral were widespread during Glaze E and F. In times of movement and stress, it is likely that traditional methods and preparation “recipes” were lost to neophyte potters.

Utility pottery at this time was no longer corrugated or even smeared-corrugated as in previous phases. Cooking ware is now completely untextured. Large cooking jars have a recurved rim, and are often smudged and polished on the interior near the rim. Utility jars of this kind were increasingly smudged and polished on the interior during PIV times. As a practical matter, this helps retain liquid contents from seeping through the vessel wall.

IV. Type Frequencies.

Sherd counts by type are shown in Table 1. Types from Glaze A to F are shown for reference, although some phases (e.g. Glaze B) are not represented here. The diagnostic rim sherds can be assigned to exact Glaze letter, but the bowl body sherds and glaze jar sherds can only be given broad assignments (Figures 4, 5, 8, and 9). With non-bowl rims, it is only possible to give general assignment (e.g. “Intermediate” glaze or Glaze C-D in time). Indeed, some were so fragmentary that all that could be seen is that they belong to the Rio Grande Glazeware in general.

Table 1. Pottery Type Frequencies at Jaral Pueblo

	Bowls	Jars	Totals	Percent
Glazeware rim sherds				
Glaze A Agua Fria Glaze/Red				
Glaze B Largo G/R, G/Y, G/P				
Glaze C Espinosa Glaze/Poly	2		2	1.4%
Glaze D San Lazaro Glaze/Poly	2		2	1.4%
Glaze E Puaray Glaze/Poly	3		3	2.2%
Glaze E-F Glaze/Poly	4		4	2.9%
Glaze F Kotyiti G/Red, G/Yellow, G/Poly	7		7	5.1%
Glazeware body sherds				
Glaze/red early (A-B)	1		1	0.7%
Glaze/poly intermediate (C-D)	1	6	7	5.1%
G/red, G/yellow, Glaze/poly late (E-F)	12	11	23	16.7%
Unidentified R.G. Glazeware	10	3	13	9.4%
Utility ware				
Plain Gray PIV (rims & body)		76	76	55.1%
Sub Total	42	96	138	100.0%

Of the 138 potsherds, the diagnostic glaze bowl rims are clearly centered on Glaze E and F. No diagnostics predate Glaze C, and C and D sherds are minor in number. The latter may even represent “heirloom” pieces still in use some time after their original manufacture. Combining the percentages of E and F in both the rim sherds and the “late” body sherds, they account for the great majority. The 34 glazeware sherds identifiable to Glazes E and F times comprise 69.4% of the identified painted pottery. Clearly, the major time of Jaral pottery usage was centered on Glaze E and F.

Plain utility includes 76 sherds (55%) of the total 138 sherds. Thus, only a little over half the sherds are utility. This rather low count of utility is noteworthy. It may be a result of differential visibility and collection by the field crew. However, a more likely reason is the continuing increase in painted pottery vs. unpainted pottery during PIV. This has also been noted at other PIV sites; at Pottery Mound there was likewise a high percentage of painted (ca 50%) relative to unpainted utility pottery (Eckert 2003; Franklin 2007). Sites of the time may all have large amounts of painted ceramics compared to earlier Puebloan phases.

Negative evidence is informative as well, and the lack of other pottery is telling. No Biscuitware (A or B) is seen. No Galisteo B/w is here, nor is there any earlier Wiyó or Santa Fe B/w from PII-early PIV times. This also argues for its late temporal position and short time depth occupation..

V. Locations of Manufacture

These types were made fairly uniformly across a wide area of the Middle Rio Grande and Galisteo Basin; in spite of minor differences, all villages produced similar appearing pottery at a given time. It is not easy to differentiate particular pueblos based on the surface decoration alone. Instead, we must rely on paste and temper characteristics to assist in pinpointing production locations. Sourcing these glazewares has been of interest since the early work of Shepard (1942), and investigators today utilize binocular, petrographic, chemical and isotopic analyses to trace the origins of pastes, tempers, and paint materials. Despite advances, however, there are major gaps in our knowledge of production locations. This limited study of a small collection involved binocular microscope analysis of all tempers and a refiring test of a portion of the sample.

A. Tempering Materials

The addition of aplastic materials to clay (temper) was commonplace in order to reduce drying shrinkage and strengthen the vessel wall. Fortunately, the Pueblo potters of the glazeware era chose rock materials almost exclusively as temper. Ground potsherd temper was utilized on a limited basis, mainly early in Glaze A times. If these rock constituents can be identified, it is possible to trace them back to geological/geographical origins, and thus indicate where these tempers were obtained. It is assumed that pottery was made in close proximity to the geological sources of temper, as transport of large quantities of heavy rock for tempering elsewhere would be impractical. Further, historic pottery making among the Pueblos has relied on paste and temper materials that are readily available, typically within a convenient walking distance. Nevertheless, clear evidence of transport of basalt rock five miles for grinding implements and pottery temper is documented at Pottery Mound (Eckert 2003; Franklin 2010).

Basic temper identification for the 138 sherds is shown in Table 2. Overall, granitic rock is the dominant material (Figure 13). It occurs in several variations; with or without hornblende, or muscovite mica. Some glazeware is tempered with black basalt only (Figure 12). A few examples have metamorphic quartzite with minor mica (Figure 14), and a few others have solid chunks of micaceous schist (Figure 15).

Table 2. Jaral Pueblo Temper by Type

Temper Composition	R. G. Glazeware	Plain Gray Utility	Total	Percent
Granitic rock, some mafic minerals (esp. hb)	52	63	115	83.3%
Black basalt	4	3	7	5.1%
Metamorphic with minor mica	5	2	7	5.1%
Granitic, mica flakes prominent	1	4	5	3.6%
Micaceous schist		3	3	2.2%
Mixed rock and sand		1	1	0.7%
Total	62	76	138	100.0%

The basic locations for rock outcrops matching the general nature of these tempers are known (Kelley 1977, 1982; Kelley and Northrup 1975). The popularity of granitic temper is not surprising, since the whole Sandia range lying above the Jaral site is mostly granite. The site itself sits on decayed alluvial granite. At various locations, the granite composition includes additional mafic minerals, specifically hornblende and biotite mica. Pegmatites at the mouth of Tijeras Canyon contain hornblende crystals with mica. At the southern end of the Sandia range, near Tijeras, and at the northern end toward Placitas, there are metamorphic bands of rock. These include veins of various ores; iron, copper minerals, and lead (galena). In these areas, also, large bands of micaceous schist are found. This author has recorded these in Tijeras Canyon, in the Juan Tabo picnic area and near Placitas. These sources may have provided mica schist rock for temper. These mica tempers contain chunks of schistose rock, not just a few isolated flakes of mica scattered randomly in the paste. Basalt is confined to the west side of the Rio Grande, where it formed from lava flows and volcanic vents on the West Mesa. Basalt makes an ideal temper due to angular fragments and stable thermal qualities. It was therefore a favorite material used by PIV glazeware potters resident in the Valley.

With this in mind, the sources of these tempers may be surmised. Obviously, the dominance of granitic temper is related to the abundance of this rock in the Jaral local environment. Pottery with this temper might have been made at Jaral. However, decayed granites are found on the bajada piedmont all the way down to the Rio Grande, where potters also utilized granitic debris and coarse sands as temper. Preliminary studies at Chamisal and Alameda pueblos of the same period show that similar tempers were utilized in a portion of the glazeware in the Valley, also. The clearest clue is from basalt tempered glazeware, which was clearly made at one of the Valley pueblos and brought up to Jaral. Pottery tempered with metamorphics including schist employed a temper type which is not immediately available at Jaral, but lies within the Sandia range as a whole. Such pieces could have been made at sites in the Tijeras Canyon area, or at the

north end of the Sandia range. Tijeras Pueblo itself utilized micaceous schist in much of its utility pottery; however this Glaze A settlement was abandoned by the time of the Jaral occupation.

In sum, a variety of rock tempers was used in Jaral pottery. Interestingly, both the painted as well as the utility ware display the same varieties of rock tempers. While exact sources cannot be pinpointed at present, it appears that the majority of pottery could have been tempered with locally available granite at Jaral. However, the use of metamorphics, schist, and basalt rocks argue for at least some pottery being made at distances of 10 to 20 miles from this site, and then brought in to the village.

B. Paste Clay

Paste clay can also be conveniently tested by means of refiring (oxidation) in order to evaluate coloration caused by mineral impurities, mainly iron. This process involves refiring samples in a kiln to a standard temperature, typically 900 degrees C. in an oxidizing atmosphere. Resulting colors are then compared using a Munsell Color Chart. Differences point to differences in clays based on mineral impurities. As with temper, widespread natural sources of identical materials makes it more difficult to locate a precise origin for materials.

A total of 32 utility and 18 glazeware fragments were oxidized in this experiment. Results of refiring are shown in Tables 3 and 4. The tables show their color frequencies arranged on a matrix of the color chip pages from the Munsell Color Chart. Here, the four major Hues (the pages of Munsell) are arranged horizontally, within which the Value (light-dark), and Chroma (saturation) are indicated for each Hue. Frequencies of color matches are shown in red within this matrix.

Utility ware specimens are separated by major temper category, schist, basalt, and granitic (Table 3). Results show a definite difference in refired color, depending on the temper. Schist tempers have a red hue (2.5YR). Basalt tempers are in the middle hues (5YR and 7.5YR). Granitic tempers are spread between Red (2.5YR) and Yellowish-red (5YR). It is difficult to assess these differences statistically, due to small samples and the nature of the Munsell color system. However, there seems to be an overall coloration in the red to reddish-yellow range for these utility sherds; no lighter buffs or white clays are present. Secondly, there are some differences within this range, in terms of correlation with temper type. Basalt tempers in particular, were used with clay of a distinctive color.

Table 4. Jaral Ceramics Refiring: Rio Grande Glazeware

Table 4. Jaral Ceramics Refiring: Rio Grande Glazeware																									
Temper Type = <i>intermediate igneous rock temper with mafics, hornb</i> n=6																									
Hue: 2.5YR Red Chroma (Saturation)					Hue: 5YR Yellowish-Red Chroma (Saturation)					Hue: 7.5 YR Reddish-yellow Chroma (Saturation)					Hue 10YR Yellow Chroma (Saturation)										
Value	0	2	4	6	8	Value	1	2	3	4	6	8	Value	0	2	4	6	8	Value	1	2	3	4	6	
light	6					light	8						light	8					light	8				2	2
	5						7							7						7				2	2
	4						6							6						6					
	3						5							5						5					
dark	2.5						4							4						4					
							3							3						3					
						dark	2.5						dark	2					dark	2					
Temper Type = <i>granitic temper, no mafic minerals</i> n=8																									
Value	0	2	4	6	8	Value	1	2	3	4	6	8	Value	0	2	4	6	8	Value	1	2	3	4	6	
light	6					light	8						light	8					light	8					
	5				3		7				1			7				1		7					
	4						6				2	1		6						6					
	3						5							5						5					
dark	2.5						4							4						4					
							3							3						3					
						dark	2.5						dark	2					dark	2					
Temper Type = <i>black basalt</i> n=4																									
Value	0	2	4	6	8	Value	1	2	3	4	6	8	Value	0	2	4	6	8	Value	1	2	3	4	6	
light	6					light	8						light	8					light	8					
	5						7							7						7					
	4						6							6						6					
	3						5							5						5					
dark	2.5						4							4						4					
							3							3						3					
						dark	2.5						dark	2					dark	2					

C. Source Areas

Interpretation of these temper and oxidized color results would suggest several conclusions. First, a variety of pastes and tempers is represented; Jaral ceramics were made in several places, possibly including Jaral itself. Sources for rock tempers are known only in general, and some data can be derived from geological studies: Clay resources used by early potters in the Albuquerque area are little studied, at present.

Tentatively, ceramics with basic granitic tempers might have been produced locally. If it was produced at Jaral, the temper would be granitic in nature, probably without the mafic minerals. This temper type is associated with refired hues 2.5YR and 5YR in both decorated and utility pottery (Tables 3 and 4). Presumably this is the color range for clays in the general vicinity. Pockets of secondary residual clay exist along the foothills in the wash areas. A sample was collected from the banks of the wash next to the site. It is a clay-loam mixture. Its dried color is 10YR 5/3. Oxidized in a kiln to 900 degrees C., its color is 5YR 5/6 to 5YR 6/6 (light reddish brown). This matches refired utility and glazeware sherds in the same color range (Tables 3 and 4). Specifically, this is a match for 7 utility and 4 glazeware, all of which have granitic temper (no mafic minerals). This clay color matched only 2 other samples, which are basalt tempered from the Valley sources. Thus, at least some of the utility and glazeware sherds match the local granitic temper and raw clay available in the Jaral vicinity.

Basalt tempered painted and utility is associated with a certain color range in the 7.5YR Hue. The temper itself clearly indicates manufacture of such vessels at villages in the Valley, and the color separation in the clay color seems to confirm this as a separate source area.

Schist temper is only seen in utility pottery. It could have been obtained geologically, from outcrops at the northern end of the Sandias, or in Tijeras Canyon. Schist also outcrops various places in the Manzano range to the south; these have been little explored, although Dick (1968) described historic wares with schist temper in villages bordering that range. Since Jaral is

somewhat in the middle of the Sandias, no deposits of schist are available in the local environment. Schistose utility ware was presumably obtained from settlements in Tijeras Canyon, such as Carnue (Wiseman 1980). Tijeras pueblo yielded abundant schist tempered utility (Warren 1980, Habicht-Mauche personal communication 2010), but was no longer occupied in Glaze E and F times. It is also possible that contemporary settlements in the Placitas area made and used schist-tempered utility ware, which Jaral residents then obtained.

The most intriguing group is the glazeware with intermediate igneous rock, with inclusions of hornblende and dark micas. The much lighter buff color of these clays suggests importation from farther afield, perhaps the Galisteo Basin. Although the temper does not look like classic “hornblende latite”, for which Tonque Pueblo is famous (Warren 1969), it is possible that it came from another one of the Galisteo area pueblos. The augite monzonite of San Marcos has been studied (Schleher 2010), but little is known of the tempers used at many of the other pueblos in that area. In any event, these glazeware sherds appear to be distinctly non-local, and from a source outside the immediate Rio Grande Valley production zone.

In sum, it seems that both glazeware and utility might have been produced at Jaral, or nearby in the Sandia range margins during Glaze E and F times. However, basalt tempered pieces, both utility and painted, definitely were produced in the Rio Grande large pueblos, about 10 – 15 miles distant. Schist tempered utility may have come from settlements in Tijeras Canyon or the Placitas area, at distances of 10 to 20 miles. Finally, a small amount of glazeware seems to have arrived from the Galisteo Basin production centers, at a distance of 30 to 50 miles from Jaral.

It is interesting that even at a small pueblo occupied for a relatively short time, and possibly intermittently, yields a variety of ceramics. These were clearly produced at several other locations in the region, ranging from 10 to possibly 50 miles from the Jaral site.

VI. Summary and Discussion.

As residents of the Valley for hundreds of years, the Pueblo farmers were also familiar with the resources of the upland areas. Utilization on a periodic or seasonal basis must have included hunting of game, gathering of seasonal produce such as pinon nuts, and limited agriculture. Construction of field houses, agricultural fields, and seasonal camps away from the main village is well documented in the Southwest. For example, the construction of field grids, field houses and shrines is well documented in the northern Rio Grande, both historically and archaeologically. Seen in this light, the Jaral “pueblito” is simply one of many in this environmental zone. While some of these hamlets were in use as early as AD 1150, heaviest use was during glazeware times. Here, the dominant types demonstrate usage when Glazes E and F were in vogue.

Started perhaps as a summer outpost for hunting, gathering and agriculture, Jaral may also have served another purpose. Given its date focus in the AD 1550 –1700 period, it could also have served as a refuge for Valley puebloan residents fleeing from the Spanish. After all, production spans for Glazes E and F include historic episodes of the Entradas, Colonization, Pueblo Revolt, and Reconquest. Documents of the period contain many references to natives who “fled to the sierras”. Davis (1984:11) also suggests that Jaral was occupied during the Coronado expedition, and “it has been suggested that refugees from the valley pueblos may have fled to Jaral during

this period". Continued use as a refuge during the Revolt period was also suggested in Davis' report, and her suggested time frame of Glaze E and F has been confirmed by this new analysis.

Ceramic assemblages provide clues regarding dating, site function, and trade relations. As mentioned, all the pottery at Jaral dates from the PIV and early Historic periods. Outside date estimates for Jaral are ca. AD 1500 – 1700, with concentration in the 1550 – 1650 range. Functionally, the painted and utility wares suggest a normal range of activities as would be present at any site of the period. Cooking and storage as well as serving are suggested uses. The range of vessel forms is restricted to painted bowls, ollas, and utility jars, but that is typical for PIV pottery assemblages. In all, the assemblage at this "special use" and/or "refuge" site differs little from what would be found in a contemporary large town site along the river.

The decline in quality and application of glaze paint at this time may be due to several factors: change in resource procurement, pigment preparation, or application. If lack of care or sloppiness was a factor, it must be remembered that this was a population under stress from foreign occupation, disease, and frequent displacement.

Jaral vessels were apparently made at a number of locations. Perhaps this is surprising for a small site which may have been temporary or limited-activity in nature. Some could have been made at or near Jaral, judging by the granitic tempers; small pockets of clay were available in the vicinity. Points of origin for other utility as well as glazeware pieces have also been suggested. These certainly include the basalt tempered utility and glazed pottery made in the Valley towns. Schist tempered wares came from the Tijeras, Manzano, or Placitas settlements where such outcrops are known to occur geologically. Suggestions of contact with more distant PIV towns are also seen; a few glazeware pieces were made at Tonque or the Galisteo Basin towns. The presence of a varied assemblage deriving from various sources at such a small village hidden in the foothills is noteworthy. However, the lack of Biscuitware sherds or Galisteo B/w suggests a lack of widespread ceramic trade beyond the glazeware production zone.

Hayden's examination of the few lithic tools from Jaral also suggests materials from several non-local sources. Thus, despite functioning as a possible hideout for refugees, a surprising variety of ceramic and lithic materials are evidence for widespread contacts and exchange.

In sum, this small site offers a glimpse of a PIV ceramic assemblage employed in a little village in the foothills environment. Here, we see ceramics from a location which was situated with regard to upland hunting, gathering and limited agriculture. Seasonal occupation is also suggested. It also holds the possibility that it was further used as a refugee location where small groups resided when fleeing European domination at large towns along the Rio Grande Valley.

Thanks to John Hayden, Erin Hudson, and David Snow for their assistance in this research.



Figure 4. Glaze/red body sherd



Figure 5. Intermediate Glazeware jar sherds



Figure 6. Two Glaze E bowl rims



Figure 7. Glaze E and F bowl rims



Figure 8. Late jar body sherd with carinated shoulder







Figure 9. Late Glaze/yellow body sherds



Figure 10. Late jar rims



Figure 11. Late glaze bowl body with bubbles in paint

	
<p>Figure 12. Black basalt temper in glazewre</p>	<p>Figure 13. Granitic temper in glazeware</p>
	
<p>Figure 14. Quartz with mica temper</p>	<p>Figure 15. Schist temper in utility ware</p>

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ONLINE: CHACO RESEARCH ARCHIVE

After many years of work, the Chaco Digital Initiative has created a completely redesigned website that offers users a variety of new tools, such as the ability to download database searches and to view and download over 1,500 digitized archival documents, as well as access to much more information from more sites. As part of this change, the Chaco Digital Initiative has been renamed the **Chaco Research Archive**. (The URL remains the same as before - www.chacoarchive.org.)

The new website is divided into six major sections:

Chaco Sites:

Allows users to access information on 28 different sites via a topographic map of the canyon.

Flag markers on the map are active links to individual pages for each site that provides a site plan, descriptive summary, image gallery, and data links to artifacts, tree-ring dates, and relevant archival documents.

For the sites that have been the focus of our project to date--Pueblo Bonito, Bc 50, Bc 51, Bc 53, Bc 57, and Bc 58--the individual site pages also provide links to interactive site maps that allow additional data lists and images to be displayed for individual rooms and kivas. We will be adding an interactive map for Aztec artifacts in the next few months. In the years to come, we hope to expand to include data from additional sites.

Explore the Canyon:

Allows the user two ways to explore various areas with a single click-and-zoom function using a Google satellite image rather than the schematic topographic map for "Chaco Sites." Locational markers take the user to the same site pages described above.

A second explore mode displays aerial photographs overlaid on Google satellite imagery. These 1963 aerials from the Gordon Vivian archive provide high-resolution images of some sites and agricultural features.

Query the Database:

Provides researchers access to the robust Chaco Research Archive database. This page currently allows one to list, search, and for the first time download (in Excel format) results from individual database tables. For example, you can execute and download artifact search results for a given room at a site, filtering by material type; or you can search for all floor features in the entire database. In addition to downloading query results, you can also download individual archival documents in PDF form via the "CRA Archival Accessions" table

Architectural Stabilization:

In addition to the main work of building the archive, we have devoted considerable time towards digitizing and keyboarding data from National Park Service Ruins Stabilization Records. Images from nearly all the records between 1938 and 1983 are searchable and available in this section of the website. For example, you can search for all stabilization records for an individual room or

kiva, or a specific wall of a room. When documentation of stabilization efforts is available, you can view high-resolution images of the work and available data.

Image Gallery:

Provides users access to over 18,000 historic images of Chaco Canyon searchable by site, image type, repository institution, caption, or a full text search of all image metadata fields. We have added seven thousand images we digitized during our 3 months of work at the CCNHP Museum Collection last fall.

Chaco Resources:

Tools like the Chaco bibliography (now updated) and access to digital monographs are still available through "Chaco Resources." In the "Help" section, we've also have added new material such as a glossary, user guide, and database schema.

This research tool that's taken many years, and the collaboration and talents of many people and institutions to build. We look forward to incorporating data from more sites in the coming years.

Contact:

Steve Plog
UVa Dept. of Anthropology
sep6n@virginia.edu
www.chacoarchive.org



Publications available from the Albuquerque Archaeological Society

Bice, Richard A., Phyllis S. Davis, and William M. Sundt
2003 AS-5 Indian of Mining of Lead for use in Rio Grande Glaze Paint. Albuquerque Archaeological Society. Albuquerque

From the Foreword

"Although three decades have passed between the beginning of the Albuquerque Archaeological Society's field work and the completion of this report, this report is still an historic first not just for New Mexico but for the entire country. This is a major milestone in archaeology, the first recorded excavation of a prehistoric lead and early historic lead/silver mine in the United States of America.

"Lead isotope studies have demonstrated that Rio Grande Pueblo potters almost exclusively used galena (lead) from the veins within 800 meters of the Bethsheba mine in the early 14th century (Habicht-Mauche, et al., 200, 2002). This report and the work conducted by Warren (1974) confirm that the Bethsheba and/or other veins within one-half mile were mined by AD 1300. . . "

"This report is also the first published report on the excavation of a Spanish or Mexican silver/lead or lead mine in the country." Homer E. Milford, Abandoned Mine Lands Bureau, New Mexico Mining and Minerals Division.

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

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"This volume is the latest in a long series of important contributions made by the Albuquerque Archaeological Society over the past 30 years. The project which is reported here involved excavations at a 13th century Anasazi pueblo and investigation of the larger community of which it was a part. Excavations focused on AS-8, a 46 room pueblo located near San Ysidro, New Mexico. AS-8 is the largest site in a cluster of mostly contemporaneous farmsteads which includes at least 48 other architectural sites located along a two mile long portion of Cañada de las Milpas. This cluster appears to represent a distinct community, and AS-8 is the preeminent site within the cluster. Several lines of evidence suggest that initial settlement in this area occurred around AD 1160, and that occupation continued until around 1305, with the period of most intensive occupation about AD 1245. . . .

"The cornerstone of the analytical and interpretive sections of the report is an innovative ceramic seriation. . . . The ceramic seriation is combined with other lines of evidence to infer the construction sequence at AS-8 and the settlement history of the community as a whole." John R. Roney, Albuquerque.

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ON VIEW

THE ARCHAEOLOGY OF THE AMERICAS DIGITAL MONOGRAPH INITIATIVE

<http://www.archaeologyoftheamericas.com/>

The Archaeology of the Americas Digital Monograph Initiative (AADMI) is a collaborative project funded by the Andrew W. Mellon Foundation. Its goal is to develop and publish a new generation of peer-reviewed "enhanced" monographs that will incorporate--in a stable online environment--the full data sets that serve as the basis for their scholarly analyses and arguments. Data sets may include data collection sheets, databases, digital still and moving image files (such as color GIS maps, 3-D laser scans, rotatable objects, and video clips) and supplementary text. AADMI will initially focus on book-length works authored or edited by junior scholars in the field of New World archaeology. AADMI publications shall be available on a digital delivery platform that permits, within reasonable limits, the search, display, updating, analysis, and downloading of digital monographs and their associated data sets. AADMI is intended to capitalize on the growing movement among individual and institutional buyers towards e-book acquisition and the inherent advantages of Web-enabled dissemination, analysis and collaboration. AADMI will facilitate partnerships with other digital initiatives to optimize the effectiveness and impact of its projects. Finally, AADMI envisions the production of enhanced monographs as a true instance of multiplatform design and delivery, with print and digital editions appearing concurrently.

ARIZONA STATE MUSEUM <http://www.statemuseum.arizona.edu/exhibits/pproj/index.asp>

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LOGAN MUSEUM OF ANTHROPOLOGY

http://www.beloit.edu/logan/exhibitions/virtual_exhibitions/north_america/southwest/index.php

The Logan Museum of Anthropology at Beloit College in Beloit, Wisconsin, possesses a superb collection of artifacts from the ancient Southwest. The vast majority were collected during excavations undertaken by the Museum in the 1930s under the direction of Paul Nesbitt. From 1929 to 1931, field work was done at the Mattocks Ruin in the Mimbres Valley of New Mexico resulting in an extensive collection of pottery and other artifacts from the Mimbres people. From 1931 to 1939 focus shifted to another group of Mogollon sites in the Reserve area of New Mexico. Work at the main site, the Starkweather Ruin, was supplemented by exploratory digs at the Hudson and Wheatley Ridge Ruins. These sites yielded a large number of Mogollon artifacts of all types. To these were added extensive surface sherd collections from important sites all over the Southwest.

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Pottery Southwest is a scholarly journal devoted to the prehistoric and historic pottery of the Greater Southwest, that provides a venue for professional and avocational archaeologists to publish scholarly articles as well as providing an opportunity to share questions and answers. This highly respected journal makes publishing more accessible for younger scholars and practicing archaeologists. *Pottery Southwest* regularly features information about new publications and exhibitions relating to prehistoric and historic pottery of the Greater Southwest. Published by the Albuquerque Archaeological Society from 1974 to 1996, it was revitalized on the World Wide Web in 2004. *Pottery Southwest's* website is hosted by the Maxwell Museum of the University of New Mexico.

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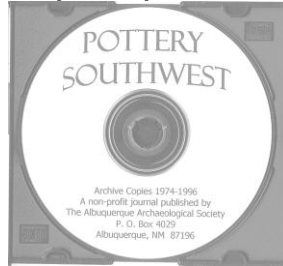
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