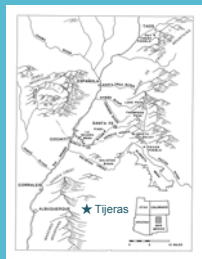


Sourcing Western-style Glaze-Painted Pottery from Tijeras Pueblo, NM

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Tijeras Pueblo (LA 581)

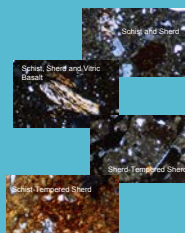
A.D. 1280+/- to A.D. 1410+
Tijeras Pueblo is one of the earliest dated nucleated village sites in the Central Rio Grande district of New Mexico. It is an excellent place to study processes of migration, community integration, and identity formation during the Pueblo IV (Late Precontact) Period. About a third of the site was excavated by a series of University of New Mexico field schools in the early 1970s, directed by James Judge and Linda Cordell. Since 2010, JHM has been analyzing pottery from these excavations housed at the Maxwell Museum.



Preliminary Results of Re-firing and Petrographic Analysis

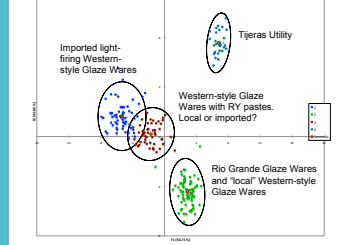
- Most Western-style glazes from Tijeras refire either Reddish Yellow [RY] (7.5YR 6/8-8; 5YR 6/8-9) or Very Pale Brown-Pink [VPB] (7.5YR 8/4; 10YR 8/4)
- RY pastes are generally tempered with sherd, sherd and schist, or sherd w/ varying mixes of schist and basalt (lithic sand).
- RY pastes w/ sherd and schist or sherd and lithic sand tempers are common in early Rio Grande style glazes (e.g., Agua Fria G/R) manufactured in the Albuquerque area of the Central Rio Grande [CRG].
- VPB pastes are generally tempered with sherd or sherd-tempered sherd.
- Light firing pastes are NOT characteristic of glaze-painted pottery made in the CRG. Such pastes are characteristic of glaze ware from the Acoma region to the West.

THUS: Some Western-style glaze wares with RY pastes were probably made locally in CRG. Glaze wares with VPB pastes are most likely imported.



Examples of most common tempers in thin section. All images photographed at 200x in X-Polars

INAA Analysis



First two functions of DA analysis plotted by k-means 4 cluster solution. Ovals represent 95% confidence interval for membership.

INAA Analysis

Methods: 219 Tijeras sherds (30 Tijeras Utility wares and a mix of 189 Rio Grande and Western-style glaze-painted red wares and polychromes) were analyzed by SLE using Neutron Activation Analysis using the Texas A&M Nuclear Science Center's 1 MW TRIGA research reactor. Sample preparation and analysis were conducted according to established methods (James et al. 1995). A standard suite of statistical techniques using XLSTAT, including bivariate scatter plots, k-means clustering, principal components analysis (PCA), discriminant analysis (DA), and Mahalanobis distances (MD) were used to explore patterning in the data and to assign sherds to compositional groups (Huntley 2004).

Results: The resultant Tijeras data set can be divided into 4 major core compositional groups based on the "best solution" for k-means analysis (Kinight and Ammerman 1982) and by using MD to set criteria for group membership at 95% confidence of belonging to one group and a less than 1% chance of belonging to any other group.

References Cited

Huntley, D. L. (2004) Technological Style, Exchange, and the Organizational Scale of Pueblo IV Zuni Society. PhD diss., Arizona State University, Tempe

James, W. D., R. L. Brewington, and J. J. Schafer (1995) Compositional analysis of American Southwestern Ceramics by Neutron Activation Analysis. *J. of Radioanalytical and Nuclear Chemistry* 192(1): 109-116

Kinight, K. W. and A. J. Ammerman (1982) Heuristic Approaches to Spatial Analysis in Archaeology. *American Antiquity* 47(1): 31-63

Kowalewski, S. A. (2006) Coalescent Societies. In *Light on the Path*, ed. T. J. Pluckhahn and R. Ethridge, pp. 94-122. The University of Alabama Press, Tuscaloosa

Early Glaze Wares at Tijeras

Tijeras has yielded the earliest known tree ring date associated with Agua Fria Glaze-on-Red (Rio Grande Glaze A), A.D. 1313.



Research Questions

Are Western-style glaze wares from Tijeras imported from Acoma/Zuni or are they local copies?

What does the presence of these Western-style glaze wares tell us about processes of immigration, local settlement aggregation, and early community formation at Tijeras and in the Central Rio Grande Valley?

TJERAS GROUP 1 (n = 63)

This group is dominated by red ware and polychrome sherds that refired to very pale brown-pink (7.5YR 8/4 or 10YR 8/4). Most are tempered with sherd, sherd-tempered sherd, or sherd and schist. Types include St. Johns, Heshotauha, and Kwakina polychromes, plus a few other rare Western types.

TJERAS GROUP 2 (n = 76)

This group is dominated by red ware and polychrome sherds that refired to reddish yellow (7.5YR 6/8-8; 5YR 6/8-8; 5YR 5/8) and are tempered mostly with lithic sand or lithic sand and sherd. Such pastes are characteristic of the Albuquerque area of the Central Rio Grande. All sherds clearly identifiable as Rio Grande Glaze Ware types (e.g. Agua Fria G/R) clustered in this group, but there are also a mix of Western types, including St. Johns, Heshotauha, and Kwakina polychromes.

TJERAS GROUP 3 (n = 33)

This group is dominated by red ware and polychrome sherds that refired to reddish yellow to red (5YR 7/8; 5YR 5-6/8-7; 5YR 5/8; 7.5YR 7/6-8) and are tempered mostly with sherd or sherd and schist. As a group these pastes refire slightly "redder" than Group 2. Identifiable types include mostly St. Johns and Heshotauha polychromes.

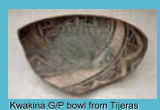
TJERAS GROUP 4 (n = 30)

This group consists entirely of Tijeras Utility Ware, which is made from a distinctive coarse micaceous residual clay that refires red (2.5YR 4-6/8; 5YR 5/8-8)

UNASSIGNED (n = 17)
These red ware and polychrome sherds could not be assigned to a single core group at confidence levels described above. While these sherds may represent outliers that reflect compositional groups poorly represented in our sample, it appears more likely that they are an artifact of the overlap between Groups 1 and 3. Based on paste refire color and temper they seem most closely associated with Group 3.

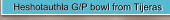
Unusual Feature of Tijeras Site

An unusual feature of the Tijeras Site is the very high percentage (up to 20% of the decorated assemblage) of Western-style glaze polychromes, including St. Johns, Heshotauha, and Kwakina polychromes.



Kwakina GP bowl from Tijeras

These types are most often associated with the Zuni and Acoma areas in West Central New Mexico. These areas are thought to have been the source of glaze-paint technology in the Rio Grande.



Heshotauha GP bowl from Tijeras

Pottery photos courtesy C. Lord

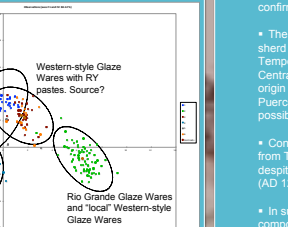
Comparison with Zuni Region Glaze Wares

INAA results from 215 glaze-painted red ware and polychrome sherds from the Zuni region (Huntley 2004) were compared to our 189 glaze ware sherds from Tijeras. Zuni samples were processed at the University of Missouri Reactor and Gauss was used to assign samples to core groups. Evaluation of standards from both data sets suggested that calibration was not necessary for comparison.

These results support our interpretation that our light-firing Western-style glaze wares came from the West, possibly from either the El Morro Valley or Acoma, where glaze ware with light firing paste is known to have been made. Further, our unassigned pottery (cluster 6) from Tijeras re-clustered in this analysis with Tijeras Group 3, which matches our interpretations based on paste color and temper.

6 cluster solution was initially assumed for DA based on 2 Zuni core groups (Huntley 2004) and our 3 Tijeras core groups plus our unassigned group. Resulting DA and MD suggests 4 cluster solution.

Results show clear separation of Rio Grande and Western-style glaze wares that were most likely produced in the Central Rio Grande (cluster 2). Sherds with light firing pastes (cluster 1) are definable as a separate group, but show strong overlap with the more reddish paste Tijeras Group 3 (cluster 3) and both Zuni groups (clusters 4 and 5).



First two functions of DA analysis plotted by 4 cluster solution. Ovals represent 95% confidence interval for membership.

Conclusions and Significance

- Petrographic and INAA analysis clearly confirm that some (possibly most) of the Western-style glaze-painted pottery recovered from Tijeras Pueblo was made locally in the Albuquerque area of the Central Rio Grande.
- Western-style glaze wares with distinct light-firing pastes were probably imported from the Western Pueblo region, possibly from either the Eastern Zuni (El Morro Valley) or Acoma regions. Comparing INAA studies of Acoma glaze wares are needed to confirm this assumption.
- The source of the redder paste Western-style glaze wares, tempered with sherd or sherd and schist and assigned to Tijeras Core Group 3, is much more ambiguous. Tempers and pastes are consistent with Rio Grande style glaze ware made in the Central Rio Grande but overlap of chemical signatures may also indicate a Western origin for at least part of this group. An intermediate source area, such as the Lower Rio Puerco, is also a distinct possibility. Additional data analysis is needed to sort out these possibilities.
- Contrary to our initial expectations, little or no Western-style glaze-painted pottery from Tijeras appears to be coming from the core area of the Zuni Region. This is despite close stylistic similarities between the assemblages. However, during this period (AD 1275-1425), the Acoma region also shares stylistic similarities.
- In sum, we interpret Tijeras Pueblo as a "coalescent community" (Kowalewski 2006) composed of a mix of local Central Rio Grande groups and immigrant Western Pueblo groups. The community's strongest Western ties appear to be with either the Acoma and/or Eastern Zuni (El Morro Valley) regions.

Methods

- Over 3000 decorated sherds from Tijeras examined visually (40x mag), typed and assigned by JHM to preliminary paste/temper groups.
- Two sherds from each major temper/paste group thin-sectioned for petrographic analysis by JHM.
- 219 sherds selected for Neutron Activation Analysis by SLE at Texas A&M (30+ sherds from 6 most common glaze ware paste/temper groups, plus 30 utility ware sherds).
- Chips from all INAA and thin-section voucher sherds refired at 900° C for one hour in electric kiln.



Refired ceramic chips on kiln shelf showing most common Glaze Ware paste colors - Reddish Yellow (7.5 YR 6/8-8; 5 YR 6/8-8) and Very Pale Brown-Pink (7.5 YR 8/4; 10 YR 8/4)

Acknowledgements

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- Special thanks to Dave Phillips at the Maxwell Museum, University of New Mexico and volunteers from the "Friends of Tijeras" for their efforts organizing and making accessible the Maxwell ceramic collections.
- Team Tijeras NM: Kym Campbell, Kath Linn, Bruce Willborn and Lu Kantz sorted and recorded sherds on Utility Ware sherds. Additional help sorting utility wares was provided by USCS undergraduates, Suzanne Millward, Samantha Linford, Kari Lentz, Reid Matamoras, and Araceli Robles.
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