FORWARD INTO THE PAST
Papers in Honor of Teddy Lou and Francis Stickney

Edited by: Regge N. Wiseman, Thomas C. O’Laughlin & Cordelia T. Snow

NO. 28 • 2002
FORWARD
INTO THE
PAST

PAPERS IN HONOR
OF TEDDY LOU &
FRANCIS STICKNEY

Edited by:
Regge N. Wiseman, Thomas C. O'Laughlin
& Cordelia T. Snow

CONTRIBUTORS:
David M. Brugge
Carol J. Condie
John Greer
Mavis Greer
Frances Joan Mathien
Thomas C. O'Laughlin
Hugh C. Rogers
Samantha M.
Ruscavage-Barz

Michael A. Schillaci
Dan Scurlock
Calvin B. Smith
H. Denise Smith
Cordelia T. Snow
Paul P. Steed, Jr.
Christopher M.
Stojanowski
Brenda B. Whorton
John P. Wilson

THE ARCHAEOLOGICAL
SOCIETY OF NEW MEXICO: 28

-2002-
Statements and interpretations presented in the articles are those of the author or authors and do not necessarily reflect the opinions of the Archaeological Society of New Mexico or its individual members.

Published by the Archaeological Society of New Mexico
P.O. Box 3485, Albuquerque, NM 87110

Copyright: Archaeological Society of New Mexico 2002

Printed in the United States of America

ISSN: 0587-1719
# TABLE OF CONTENTS

Teddy Lou and Francis Stickney. .................................................................1

David M. Brugge

**JEMEZ PUEBLO AND THE NAVAJOS: RELATIONS PRIOR TO 1800** ........................................5

Carol J. Condie, Cordelia T. Snow and Dan Scurlock

**A PLETHORA OF WALLS: ARCHEOLOGICAL AND HISTORICAL INVESTIGATIONS**

**AT THE VIGIL PROPERTIES, 411 AND 413 ROMERO STREET NW, OLD TOWN ALBUQUERQUE** ..................................................17

John Greer and Mavis Greer

**DARK ZONE PICTOGRAPHS AT SARRATT CAVE, CENTRAL NEW MEXICO** ..................37

Frances Joan Mathien

**MESA TIERRA AND THE HYDE EXPLORING EXPEDITION** ...................................47

Thomas C. O'Laughlin

**KEYSTONE DAM REVISITED** ........................................................................59

Hugh C. Rogers

**OBSERVATIONS IN LARGO – GOBERNADOR CANYON ROCK ART: BISON** ...........69

Samantha M. Ruscavage-Barz

**CLASSIC PERIOD SMALL STRUCTURE FUNCTION AND VARIABILITY ON THE PAJARITO PLATEAU** ........................................81

Michael A. Schillaci and Christopher M. Stojanowski

**INVESTIGATING SOCIAL ORGANIZATION AT AZTEC RUINS USING DETERMINANT RATIO ANALYSIS** ..........................93

Calvin B. Smith

**THE FUTURE OF AVOCATIONAL ARCHAEOLOGY** ................................................105

H. Denise Smith

**HISTORY RECORDED IN STONE: THE ROCK ART OF ABO PUEBLO** ..................109

Cordelia T. Snow

**FISH TALES: THE USE OF FRESHWATER FISH IN NEW MEXICO FROM A.D. 1000 TO 1900** .........................................119

Paul P. Steed, Jr.

**A STATISTICAL COMPARISON OF THE WATERFLOW AND CROW CANYON ROCK** .........................................................133

Brenda B. Whorton

**WORKING TOGETHER: CONTINUING RESEARCH AT THE DAVIS-HERRERA RANCH SITE (41PS622), PRESIDIO COUNTY, TEXAS** ........135

John P. Wilson

**CUSHING AT ZUNI: ANOTHER VIEW** ............................................................141
FIGURES & TABLES LIST

CONDIE, SNOW & SCURLOCK

Figure 1 Location of LA 132631, the Vigil Site . . . .17
Figure 2 Page from Vigil family Abstract of Title . . . .22
Figure 3 Schematic of Trenches A, B, and C . . . . . . .25
Figure 4 Profile of Trench A, showing artifact proveniences . . . .27
Figure 5 Profile of Trench B, showing artifact proveniences . . . .28
Figure 6 Profile of Trench C, showing artifact proveniences . . . .28
Figure 7 Portion of 1942 Sanborn Fire Insurance Map . . . .33
Table 1 Strata 1-5 and Trash Pit Fill 1 . . . . . . . . . . .26
Table 2 Ceramics: Pueblo . . . . . . . . . . . . . . . . . . . . . . . . . . .29
Table 3 Ceramics: Spanish . . . . . . . . . . . . . . . . . . . . . . . . . . .30
Table 4 Ceramics: Anglo . . . . . . . . . . . . . . . . . . . . . . . . . . .30
Table 5 Glass: Euro-American . . . . . . . . . . . . . . . . . . . . . . .30

MATHIEN

Figure 1 Aerial photograph of Mesa Tierra . . . . . . . . . . . . . . .47
Figure 2 Map of Mesa Tierra . . . . . . . . . . . . . . . . . . . . . . . . . . .48
Figure 3 Map locating “Wetherill Mesa Pueblo” . . . . . . . .49
Figure 4 Map of “Wetherill Mesa Pueblo” . . . . . . . . . . . . . . .49
Table 1 Room measurements for Wetherill Mesa Pueblo . . . . . . .50
Table 2 List of material recovered from Wetherill Mesa Pueblo . . . . . . .54
Table 3 Data from Farabee regarding Mesa Tierra skull comparisons . . . . . . .55

O’LAUGHLIN

Figure 1 Plan of House 3, Keystone Dam Site, with numbered features . . . . . . .62
Figure 2 Plan of House 3, with density contours for unmodified flakes . . . . . . .64
Figure 3 Plan of House 3, with object locations . . . . . . . . . . . . . . .66

ROGERS

Figure 1 LA83536. Anasazi panel, Largo Canyon . . . . . . . . . . . . . . .71
Figure 2 LA78129. Anasazi bison representations. Crow Canyon . . . . . . .72
Figure 3 LA78129. Navajo era bison representations. Crow Canyon . . . . . . .73
Figure 4 LA78130. Navajo era hunter and bison . . . . . . . . . . . . . . .73
Figure 5 LA78126. Navajo era Ye’i or Holy People and bison tracks . . . . . . .74
Figure 6 LA57095. Navajo era shield figure with bison horns . . . . . . . . . . .74
Figure 7 LA57114. Navajo era panel showing bison, bison tracks and horned circle . . . . . . .75
**RUSCAVAGE-BARZ**

Figure 1  Location of Bandelier National Monument ................. 82
Figure 2  Artifact types from small structures and pueblos .......... 88
Figure 3  Flaked stone and ceramic artifact densities from small sites and pueblos .......... 89
Table 1  BAS and NRG Chronological Divisions ................. 81

**SCHILLACI & STOJANOWSKI**

Figure 1  Map showing location of Aztec Ruins ..................... 94
Figure 2  Plan-view map of the Aztec Ruins complex ................ 95
Figure 3  Measurement variables ............................ 97
Table 1  List of measurement variables .................. 97
Table 2  Univariate comparison of male and female craniometric variability ............ 99

**DENISE SMITH**

Figure 1  Location of Abo Pueblo ..................... 109
Figure 2  Archaic Period petroglyph .................. 111
Figure 3  Early Pueblo Period petroglyph panel ........... 112
Figure 4  Late Pueblo style petroglyphs .......... 112
Figure 5  Late Pueblo Period petroglyph panel .......... 113
Figure 6  Historic pictograph panel .................. 113
Figure 7  Non-Puebloan pictographs .................. 116
Figure 8  Rock art with Christian motif .................. 116
Table 1  Culture period and rock art styles for Abo region ........ 110

**SNOW**

Table 1  Freshwater fish recovered from archaeological sites in New Mexico .... 120

**STEED**

Table 1  Anthropomorphic and zoomorphic elements for Waterfall and Crow Canyon .... 133
Table 2  Abstract elements for Waterfall and Crow Canyon ............ 134

**WHORTON**

Figure 1  Map of the Chihuahua Trail through Texas ........ 136
Figure 2  Photograph of the Davis Ranch chapel taken ca. 1930 .......... 137
Figure 3  Photograph of the Burgess Family Chapel at Fort Leaton .......... 137
Figure 4  Teddy Stickney studying adobes at the Davis-Herrera Ranch Site .......... 138
Figure 5  The fireplace at the Davis-Herrera Ranch Site .......... 138
Figure 6  The remodeled zaguan showing differing adobe types .......... 139
Archaeologists traditionally tend to ignore two types of cultural information. The first, rock art, has only recently come to the fore as an appreciated source of information and is now being recorded by ever increasing numbers of people. Artifacts collected by non-archaeologists still remain a largely untapped source of information about our country's prehistory and history.

In southeastern New Mexico and adjacent parts of Texas, Teddy Lou and Francis Stickney have helped rectify the situation. Over the past several decades now, they have helped establish and have led various avocational organizations, set professional standards, promoted public education in schools, and lobbied politicians and corporate executives, all in the service of our cultural patrimony. Teddy and Francis have worked countless hours in the literal and figurative trenches, recording private artifact collections and rock art panels, running field schools, excavating sites, and performing surveys. Their example is truly exemplary.
I was born in Farmington to Ted and Anne Mae Everett Smith. My father, Ted, also born in Farmington, was the tenth child of Robert and Alice Smith. He worked on the Navajo Reservation as a trader and sometimes managed a store for his sister and brother-in-law, O. J. and Jessie Carson. However, loss of hearing made it hard to understand the Navajo language. Ted and Anne Mae then moved back into Farmington and purchased land for farming and ranching. But Ted never completely left the reservation; he was back often, helping in times of need. There were many Navajo visitors to our home in Farmington.

My mother, Anne Mae, was born in Canada, but moved at the age of six months with her family to Oregon. Her father built a railroad to move timber to the freight docks. Anne Mae became very ill in her teens, and doctors advised the family to move to a drier climate. Because of her father’s friendship with John Wetherill, the family moved to property near Navajo Mountain. Later they moved into Farmington to help manage a farm that John Wetherill’s son Ben owned. After Farmington High School, Teddy Lou attended business school at UNM. Upon graduation, she began working for an accounting firm in Farmington just as the oil and gas boom arrived.

In 1928, Francis was born in Midland, Texas, the third son of Slim and Bess Stickney. In 1914 Slim, at age 15, was offered a job to drive a herd of horses to Roswell from Robert Lee, Texas. He had a sister, Anna Brown, living in Roswell at the time. From that point, he took a job working with the Browning ranch in the Mescalero Sands, then to the Figure 2’s ranch at Andrews, Texas, and finally to the Midland area where he worked on several more ranches. In 1916 Slim married Bess in Plains, Texas, and moved her to Midland.

Francis graduated from Midland High School, joined the naval reserves, and attended Durham Business School. A job with the Mid-Continent Supply Company lasted for 12 years and moved him to several different towns including Farmington before he started an oilfield business with his two brothers.
Francis and I started our lives' journey together on February 14, 1952, in Farmington. The Mid-Continent Supply Company soon transferred Francis to Hobbs where the oil business was booming. We lived in the Llano Hotel for three months before we could move into company housing. When the move finally happened, we found ourselves surrounded with what everyone termed “oilfield-trash furniture.” Drawing on my five years of experience with that accounting firm in Farmington, I immediately found employment at the Toole Construction Company as an assistant accountant.

It took us about a year to get involved in the community life of Hobbs. Francis became an assistant Boy Scout leader. On one of their camping trips, they discovered a skeleton eroding out of the sand dunes in the Loco Hills area. This was Francis’ first introduction to archeology. The Scout Leader was an amateur archeologist who quickened Francis’ interest with reading material and collections from the area.

Since I had been born and reared in the Four Corners region, I was already dusted with archeology. But in this gosh awful region with no architecture or pottery, I didn't really want to get involved with surveying for arrowheads. But, for the experience of getting out in the wide and open countryside, I trooped along. I finally found my first arrowhead in the dunes of San Simon Sink, and I was hooked on this type of archeology.

Francis was at the Mid-Continent Supply Company store in Hobbs for seven years. Then he was transferred to Eunice, New Mexico, as a store manager. We lived in Eunice two years before Francis and his two brothers decided to venture into the oil business. We moved to Midland, Francis’ home town. Francis and his brothers company, Stickney Bros., Inc., operated for four years, at which time Francis bought out his brothers and began operating the company as F. C. Stickney, Inc.

Three of our children had been born in Hobbs: Beverly Ann, Deborah Lee, and Burt. Our fourth child, James Scott, was born after our move to Midland. Beverly married Doug Gordon in college and moved to Kansas City after they graduated. After five years and one son, Samuel L., they moved to Dallas where Meghan was born. Sam graduated from University of Texas in December, 2000, and went to work for Braun Consultants in Chicago. Meghan is still in school at Northwestern University where she will graduate in June, 2002, with a masters degree in journalism.

Deborah married Dave Allard, who works for Apache, Inc. They are currently stationed in Cairo, Egypt, where they live in the suburbs and send Graham, age eight, to a school for American children. They are taking some wonderful trips in that part of the world, plus visiting all of the sites of Egyptian history.

Burt and his wife Marty live in Midland. Burt took over management of F. C. Stickney, Inc. after his father's death. Burt has two step-daughters and two grand children, Gabriel and Stella.

Scott and his wife, Jennifer, live in The Colony near Dallas. They have three children, Mika, Celeste and Zane. In all, I have eight grandchildren and two great grandchildren.

Our archeology consumed much of our lives. Francis was a charter member of the Midland Archeological Society in 1964, and I joined the next year. In the summer of 1965 Francis attended the Texas Archeological Society’s field school at the Gault site near Beaumont, Texas, and in 1966 we joined the society. From 1965 on, Francis attended 32 field schools. He thought that the field schools were the only thing that could teach field archeology to the amateur and help get their collections catalogued. Francis served as the TAS Field School Director for nine field schools, was on the TAS Field School Committee for 12 years, was TAS President for two terms, and served on many of the different committees.
In New Mexico, Francis helped organize and direct the Archeological Society of New Mexico's field school at the Sterling Site for two years. He also served on the ASNM Board of Trustees for 12 years, participating on several committees and helping promote public education in archeology.

In 1989, I became involved with rock art recording. Francis and I enjoyed rock art recording because it was an activity that was year round. As members of the TAS Rock Art Task Force, we recorded sites for the Texas Parks and Wildlife Department and the National Park Service at the Amistad Recreational Area. In between these projects, we recorded rock art on private land, an activity with which I am still involved.

In 1997 I was elected a Fellow of the Texas Archeological Society. This was extremely humbling for me, as I never expected such an honor.

Francis and I served in many capacities while educating the public in the archeology of Texas and the Southwest. We started the Archeology Awareness Program in Texas in 1989 with a very small budget. This program took off with such emphasis that the Texas Archeological Society and the Texas Historical Commission are struggling to keep up with the demand from teachers for educational materials. Through our travels and activities, Francis and I have made many friends. These friendships have meant so very much to us.
Jemez Pueblo and the Navajo Nation have a long record of friendship and cooperation that is well documented in historical sources, one that is also vouched for in Navajo tradition and by some archaeological remains. There is a high degree of probability that this amicable relationship extends back into prehistory, providing some basis for inferences concerning earlier locations of both peoples.

During the time that I was working in the Navajo land claim research in the late 1950s into the early '60s, I heard and read repeated descriptions of the Navajos as "traditional enemies" of a great many tribes, most frequently by historians and anthropologists retained by the Justice Department and by those tribes whose claims overlapped with that of the Navajos. A good deal of the published writings also advanced this concept (Brugge 1994a). This description did not mesh with what I heard from elderly Navajos who worked with us, nor did it really match the data in the archival sources when viewed in terms of intertribal relations over extended periods.

Ultimately I concluded that no two tribes that were actually neighbors could afford to be enemies for tradition alone. Perhaps for those tribes separated by great distances, as between the Navajos and Comanches, that option was possible, but certainly common sense predicts that unrelenting warfare with the people next door just does not compute. Variable relationships seem far more logical, friendly at time, at odds at times, even fighting each other on occasion, according to changing circumstances.

After thinking about the matter for several years, I eventually wrote a paper on the subject, "Pueblo Factionalism and External Relations," which was published in Ethnohistory in 1969 (Brugge 1969). I had found in the historical documentation what seemed to me a partial explanation in the effects of internal conflict on the pueblos' relationships with Apachean peoples, most clearly demonstrated in the data available to me by historical records of Navajo-Pueblo contacts. I was encouraged when a few colleagues actually agreed with me, but never followed up on that research, having in the meantime taken a position with the National Park Service.

The present paper grows out of that early interest, however, in the form of a brief study of the history of the interactions of the Navajos and a single Pueblo people, the Jemez. I will begin with an overview of that interaction while attempting to derive some general principles.

We do not know just how long ago the Navajos' Athabaskan ancestors entered the Southwest, but can feel confident that by 1500 they were well established at least in the upper San Juan River country, and probably had extended their territory in various directions beyond that region. Their route or routes of migration have yet to be traced with any certainty (Towner 1966).

At the same time the Jemez people occupied a number of pueblos in the western portion of the
Jemez Mountains, generally south and southwest of the Valle Grande. They came also from the north according to their traditions and were settled in their historic location by 1300 (Sando 1979:418). At the time of initial Spanish contact in 1541 there were about ten villages, some in the canyons and others in the high country. Other 16th Century reports note 11 villages in 1581, seven in 1583 and 11 in 1598 (Reiter 1938:23-27). The latter date marks the beginning of Spanish settlement in New Mexico.

In September 1598, Fray Alonso de Lugo was assigned as missionary to "the province of Emmes," for which ten pueblos were listed by name, with the additional duty to convert "all the Apaches and Cocoyes of the neighboring sierras and settlements" (Hammond and Rey 1953:345). Fray Alonso built at least one church among the Jemez. By 1601 there was a Mexican Indian who had learned the Jemez language well enough to preach in the church with such facility that the Jemez people came readily and with interest in his words (Hammond and Rey 1953:345, 709). The Apaches mentioned were almost certainly Navajos, but the Cocoyes have not been identified.

The mission work among the Jemez did not prosper. Fray Alonso left New Mexico in 1601, and there is no record of an immediate replacement. In 1614 some of the Jemez Indians together with their Apache neighbors killed a Cochiti Indian. Several of the Jemez "captains" were taken to Santa Fe where one was hanged. No record of a new priest exists until the arrival of Fray Gerónimo de Zárate Salmerón in 1621. He founded two new missions, San José de los Jemez at Giusewa, near present-day Jemez Springs, and San Diego de la Congregación, probably at or near Walatowa, modern Jemez Pueblo. It appears that he labored in the Jemez province little more than two years, but he is said to have learned the language and baptized 6,566 souls. He was the first to distinguish the Navajos by name in the extant writings of the colonists. During his stint at that post, the Jemez burned a church and convent in 1623 and scattered out away from their towns. During the next few years, wars and famine brought great hardship, but it is probable that Zárate Salmerón was able to return to San José with soldiers for his protection in 1626 (Reiter 1938:29-34; Scholes 1938:64-70).

Tree-ring records for the Jemez Mountains show very dry years for 1624, 1625 and 1626 (Dean and Robinson 1978:43), a period that correlates well with the historical data.

It was about 1627 that Fray Martín de Arvide persuaded some 3,000 Jemez to return to two pueblos where he reestablished two missions, probably at the sites where Zárate Salmerón had located his missions. By 1639 San José had again been abandoned. "Apache Indians," probably Navajos, attacked the remaining mission in that year, killing the missionary with arrows (Reiter 1938:33-34).

It seems strange that Navajos, or other Apaches for that matter, would specifically target the priest on their own and the question of possible involvement of Jemez refugees seems appropriate. We lack details regarding the abandonment of the pueblos and the wars, whether concurrent or following flight from Spanish rule, in the 1620s. Participation by Navajos on the side of an anti-Spanish faction is certainly a possibility. The loss of over half of the Jemez population seems unlikely to be due entirely to the death of so many people; escape of some among the Navajos would provide an alternative explanation.

It was reported in 1638 that Pueblo people were fleeing "to the heathen, believing that they enjoy greater happiness with them, since they live according to their whims, and in complete freedom." Desertion of the missions and pueblos to find refuge with the free tribes continued to increase into the 1640s (Bailey 1980:57; Reeve 1957:42).
There was a priest again at Jemez by 1640. In the mid-40s (1644-1647) the Jemez were definitely allied with the Navajos or other Apaches, and they succeeded in killing a Spaniard. It was only the Jemez who suffered punishment. Twenty-nine of their leaders were hanged, while others were sentenced to be whipped and to servitude. Probably not coincidentally, Zia and Jemez soon became points of departure for campaigns against the Navajos (Parsons 1925:2; Reeve 1957:42-45; Reiter 1938:34).

Pueblo desperation reached a new high at mid-century. The people of Isleta, Alameda, Sandia, and San Felipe united with those of Jemez and they plotted a revolt with the aid of the Apaches, including the Navajos. Nine more Pueblo leaders were hanged and some other residents of the pueblos were sold into 10 years of slavery. The governor of New Mexico followed this punishment by campaigning against the Apaches of Casa Fuerte Navajo and Matanssas, finding Christian Indians among them (Bailey 1980:57; Parsons 1925:2; Reeve 1957:45-46; Reiter 1938:35).

The revolt of 1650 is of special interest in that it encompassed Pueblo peoples of three different languages, Southern Tiwa of the old province of Tiguex (or Tiwesh in the closest English approximation), the eastern Keres, and the Towa of the Jemez province, which was now reduced to a single pueblo. This may not have been the first plot that crossed Puebloan language boundaries, but it was apparently more carefully planned and did help establish a precedent for later efforts. Earlier uprisings had normally gone only outside Pueblo culture to recruit allies among the Apachean tribes.

There were distinct advantages to have the free tribes as allies. Not being under Spanish rule, there was less likelihood that the plan would be revealed prematurely. The free tribes had also learned equestrian skills, which were forbidden to the Pueblos except for a few favored individuals.

Equally significant and perhaps most crucial would have been older ties of trade and alliance.

Lori S. and Paul F. Reed (1992) have made an especially strong case for a Navajo-Jemez alliance based on archaeological evidence. They rely on the presence of Jemez Black-on-White pottery on Navajo sites dating to AD 1500 or earlier to infer not only a trade relationship, but an alliance such as later came to facilitate the acceptance of refugees from Spanish oppression in the pueblos.

The Spaniards in 1540-42 and subsequent years had found the Pueblos at odds with each other across the language boundaries, or “provinces.” The townspeople were also trading with the Apaches, although how general this might have been is not at all certain. Alliances with neighboring non-Puebloans seem to have existed as well, but the data for this are scanty (Forbes 1960:10-11).

We will probably never know how many Pueblo people took refuge among the Navajos in these early years, nor how many remained among them rather than risk returning to their former homes. Perhaps archaeological research will provide additional clues or yet unknown Spanish documents will be found that can shed more light on that remote period.

We do know that the next three decades leading to the Pueblo Revolt of 1680 saw increasing violence involving both the Puebloans and the Apacheans.

According to one account, sometime during the years 1653-1656 the Navajos RAIDED Jemez. They killed 19 people, probably all Jemez Indians, and took 34 captives. The Spaniards mounted a campaign, attacking during a major ceremonial gathering. Several Navajos were killed, 211 taken prisoners and an unspecified number of captives freed, including one Spanish woman. The authenticity of this story has been called into question, however, as it is among the exploits claimed by a Spanish officer hoping to be reward-
ed by the king. These lists of services rendered by those hoping to be favored were often padded quite liberally (Brugge 1980:8; Forbes 1960:147; Reeve 1957:46).

One of the less pleasant episodes in Navajo-Jemez relations took place during the term of Governor Bernardo López de Mendizábal (1659-1661). He had 15 Navajos who visited Jemez in peace killed and an expedition sent out to take their families captive for sale as slaves (Forbes 1960:154; McNitt 1972:15; Reeve 1957:47; Sando 1982:26).

Specific mention of Jemez during the next two decades are infrequent, despite plentiful reports of raids and wars in other areas. In the 1660s the Apacheans were restricted from visiting any but the frontier pueblos for trade, which would apparently have included Jemez as one place where contact was permitted (Reeve 1957:48). In the 1670s there were several campaigns against the Navajos, but most set out from Zia (Forbes 1960:173-76; Reeve 1957:49-50). Jemez had not been abandoned by the Spaniards, however. There were two priests there at the time of the revolt; one was killed and the other had a narrow escape along with the alcalde and some soldiers. Early Spanish efforts at reconquest had little effect on the Jemez except to cause them to flee again from their pueblos (Parsons 1925:2).

Participation of the Navajos in the Revolt is obscure. Most authorities maintain that they played little, if any, part and they certainly were not conspicuous at the siege of Santa Fe, whence most of the records derive. That was not the Navajo style of warfare, however, and neither they nor the other Apacheans should be expected to have been prominent there. They may well have been present at some of the pueblos when they rose and Jemez is one of those most likely to have had them as allies within their towns. The Navajos did receive two Spanish girls, or infants according to Navajo tradition, as captives, the ancestresses of the Mexican Peoples Clan (Nakaidine’é) and the River Junction Clan (Tó’aheelldlinii), whose names were known to the priests who attempted to convert the Navajos almost 70 years later (Brugge 1985:46; Reeve 1959:16-17, n. 17).

The confusion in the records of the Revolt is complemented by the much better documentation of the Reconquest, in which Apachean participation, particularly on the part of the Navajos, is considerably clearer.

When Diego de Vargas visited the Jemez on his initial entrada in October 1692, he found many Navajos there, most being within rooms of the pueblo itself. He implied that some intended to attack him, as he had been warned, but that by his courage, and a bit of bluster, he made them lay down their weapons (Kessell and Hendricks 1992:522; Kessell et al., 1995:202).

There were more reports following his return with settlers in 1693. He learned in November that Apaches, most likely Navajos, had warned the Jemez of his coming. The Jemez took their provisions to hide on the mesa (Kessell et al., 1995:403-04). In December it was reported that don Luis el Picurí, in order to assemble a force to oppose Vargas, sent a message for the Jemez to come and to bring the Navajo Apaches, who bordered them. Then in March 1694 Vargas wrote that both the Jemez and the Navajo Apaches were among those in an alliance resisting the Spaniards. In July Tewas and the Jemez, with as their allies the Keres from Cochiti and the Navajo Apaches, had attacked Zia, killing four and losing a Jemez captain (Kessell et al. 1998:67, 173, 220-21).

Following this the Spanish assaulted a Jemez pueblo on a peñol. Most of the defenders were either killed in the battle or died jumping off the edge of the peñol. The army took as captives 361 women and children and two men, one Jemez, the other “an Apache of those there helping them.” Both of the men were executed. Later a Santo Domingo captain, who had survived leaping from the peñol, but who was severely wounded as a result, appeared suffering from thirst. When inter-
rogated, he said those who had escaped had fled to Taos and Cochiti and that “another few were with their allies, the Navajo Apaches” (Kessell et al.1998:325-27, 332).

Resistance ended except at the most distant places by September 1694 and into December of that year troops escorted priests to mission stations in several pueblos. Soon the missionaries, heeding rumors, feared that a new revolt was planned. Initially they expected it on Christmas Day. As time passed, they became increasingly uncomfortable in the pueblos and asked for soldiers for protection. Vargas discounted their evidence and asserted a need for his troops elsewhere (Espinosa 1988:46-50).

The revolt broke out on 4 June 1696. The Indians killed five missionaries and 21 other Spaniards. Churches and convents were burned in several pueblos and the occupants fled to refuge villages in the rugged mesa and mountain regions nearby. A few Pueblo towns allied themselves with the Spanish. The custodian of the missions, who was visiting Santa Ana, a pro-Spanish pueblo, set out with Indian auxiliaries for the Jemez towns. While salvaging such things as holy objects from the church and horses, clothing and corn in an abandoned pueblo, San Juan de los Jemez, they were attacked by Jemez, Acoma and Apache warriors. The attackers quickly turned back when they perceived the size of the loyalist force, believing it composed of Spanish troops (Espinosa 1988:50-51, 247).

Vargas promptly took the offensive. Questioning of an Acoma captive revealed that there had assembled at the Jemez peñol a force made up of Zunis, Hopis, Cochitis, Jemez and Navajo Apaches. One Jemez missionary had been killed at San Diego del Monte by the Jemez with the help of Apaches and Navajos. Taos was informed of the initial success of the revolt by a Navajo Apache messenger sent from Jemez who told them not to believe what Vargas might say to them (Kessell et al.1988:802, 966, 1030).

In July the Jemez, along with their Navajo Apache allies and some warriors from other pueblos, were defeated in one or two battles in the vicinity of San Juan de los Jémez. Following this, the Jemez seem to have dispersed to various places of refuge, including Los Pedernales, Blanco Canyon, Canyon Largo, Gobernador Canyon, Torreon, a place called Navajo Springs, and the Chaco region (Ellis 1964:13-14; Espinosa 1988:271; Kessell et al.1998:881, 1064; Parsons 1925:3; Reiter 1938:38, 177; Sando1982:121).

While it is entirely possible that the Jemez Clan (Ma’ii Deeshgiizhii, “Coyote Pass People”) may have originated with Jemez people fleeing for security to the Navajos in earlier years, it has been customary to trace its beginnings to refugees from the Reconquest or from the collapse of the Revolt of 1696. Sources not based on Navajo tradition generally mistranslate the clan name as “Coyotes” or “Coyote People.” The Jemez Clan is thought to be one of the older and better integrated of those of foreign origin, but it has been assigned to different clan groups, suggesting multiple origins of different branches of the clan. An original nucleus may well long predate the 1690s, but there seems little reason to doubt that Jemez refugees were added to the Navajo population in that decade (Brugge 1985:45-46; Ellis 1964:14; Franciscan Fathers 1910:426-29, 431; Reeve 1959:15; Reichard 1928:19, 38-39, 48; Sando 1982:121; Van Valkenburgh 1942).

Just when a pueblo and mission were reestablished in the Jemez country remains uncertain, but Walatowa, the present-day Jemez pueblo, was in existence in 1703. People were returning, apparently from various locations. Despite this deflection of some refugees, or perhaps because of it, a new plot to drive out the Spanish was formulated in 1704, with the Navajos taking the initiative in trying to forge an alliance including the Utes, San Juan Pueblo, the Jemez and several Apache groups including the Jicarillas, Tremingtonas, Achos, Faraones and Gilas (Brugge 1979:104-06).
In 1705, in response to this threat, to Navajo raids and to reports of “apostates outside their pueblos, lands and families, living in the mountains, forests, and rocks, causing raids, deaths and robberies,” Roque Madrid’s August campaign that year included a contingent called “the genízaros de nación Jemez” who seem to have had some idea of the lay of the land in Navajo country. The route they recommended would have brought the army directly into a settled and heavily populated portion of Dinétah. That recommended by a Tewa and a Picuris which was less direct and allowed the troops to approach from an unanticipated direction was the route actually followed. Somewhere between the upper Chama valley and the Navajo River they captured a Jemez woman in the company of a Navajo woman. The women were gathering greens (quelites) for food while their husbands were off hunting. One of the women was carrying a child, identified in the journal as her son (Brugge 1979:104-09; Hendricks and Wilson 1996:3, 20, 45).

The Jemez woman may have been Catharina Ursula whose daughter by an “Apache” father and who “came from Navajo” was baptized at Jemez three days after the troops reached Zia on their return (Brugge 1985:42).

Another campaign into Navajo country set out in September and caused the Navajos even greater losses, including the capture of many apostate Jemez and Taos Indians (Brugge 1979:110; Hendricks and Wilson 1996:90-92).

Despite the capture of many apostates in 1705, many remained among the Navajos in 1707. In 1708 a Jemez woman, María Cuchee Neva, fled from alleged captivity among the Navajos and her daughter was baptized at Jemez, receiving the name of Micaela (Brugge 1979:113; 1985:42).

There were seven Spanish campaigns against the Navajos in 1709, but little is known of most of them. Following the second campaign the Spanish learned from some women of Pojoaque who were brought back from Navajo country of a meeting to plan attacks on Santa Clara, Cochiti, and Jemez by “different nations;” unfortunately these allies have not been identified. By coincidence, a force sent to attack the Navajos arrived at Jemez as the Navajos were attacking. They were aiming not so much at the Jemez Indians as at the Spaniards, taking the casas reales and the church, sacking the houses and destroying religious objects in the church. They also killed a Jemez family consisting of the parents and four children. The troops engaged them at the cost of one soldier killed and a number wounded, one of whom lost “all that he had,” probably his horse and weapons. The Navajos were reported to have suffered severe losses, over 20 killed and others captured, but they were able to rally and stage another attack on outlying fields (Brugge 1979:117-18; Correll 1979: v.I, 51). In view of the fact that the Navajos targeted the Spanish structures at Jemez, refugees or friends within the pueblo may be suspect allies.

On the last campaign of that year, Roque Madrid encountered some Navajos on a peñol. A Jemez woman came down carrying a cross to ask for peace. She was urged to stay, but said that she wanted to return to the peñol for her children. Madrid allowed her to go and she did not return. That night more “Apaches” arrived from Los Peñoles (Santos Peak and Magdalena Butte in the Dinétah), also requesting peace. The army, probably with worn out mounts, left them all in peace and headed for home (Brugge 1979:119; Hendricks and Wilson 1996:81).

There was at least one more raid on Jemez in 1714 in which a man was killed. Campaigns against the Navajos set out from Jemez in 1713 and 1716, while one in 1714 returned via that pueblo (Correll 1979: v.I, 52-53).

A peaceful interlude followed the 1716 war, at least between the Navajos and the Spaniards. It had been 20 years since the Revolt of 1696. A new generation was succeeding to leadership on both sides and passions had cooled. From Hopi,
113 Jemez refugees moved back to their ancestral lands. The peace may not have been perfect, for Navajos are reported to have participated in a raid on Jemez by Utes and Apaches in 1724, but it endured for over half a century. Nor had the Jemez lost their propensity to abandon their settlement. In 1728 they, together with the people of Zia, Santa Ana and Cochiti, "rebelled" and fled to the sierra with all their belongings, this in the midst of an epidemic which may well have been the cause of their distress. They returned voluntarily before the end of the year (Adams and Chavez 1956:332; Reeve 1979; Reiter 1938:39).

Still, during this era of peace between the Navajos and the New Mexicans the documentary record for Jemez contacts with the Navajos is rather sparse, but generally reflects the continuation of peaceful conditions. On 1 April 1737 Magdalena, daughter of gentile parents of the Apache de Navajo nation, was baptized at Jemez. The circumstances leading to her baptism are unknown. Seven years later the priest at Jemez was accustomed to catechizing, or teaching, Navajos who came in peace to the pueblo. This priest was doubtless Fray José Irigoyen (Brugge 1985:44; Reeve 1959:10).

In the same year, Fray José accompanied Fray Carlos Delgado, an elderly missionary stationed at Isleta, on a trip to Navajo country where they preached and distributed gifts for six days. Another trip by the same two priests with one other took place in 1745. They were met by a Navajo headman, probably near the head of Canyon Largo. A Jemez Indian had spread the tale that they came to destroy the Navajos, but having demonstrated their goodwill, the Navajos welcomed them at a Navajo "pueblo" called "los Collotes" or the Coyotes (Reeve 1959:12-16).

As noted above, the name of this settlement is probably a poor translation of the name of the Jemez Clan among the Navajos and is no doubt an indication that they were at the homesite of a matrilineage descended from Jemez refugees who had probably maintained contact with distant relatives at Jemez Pueblo. Some may well have been those who when visiting there in peace listened to Fray José. A community of Jemez Clan Navajos centered on one or more defensive pueblos for protection from Ute and Comanche raiders, but including hogans, sweat lodges and other facilities, seems indicated, much like those that have been described archaeologically in the Largo-Gobernador region east of Farmington, New Mexico (Marshall 1991; Towner and Johnson 1996). Rock art and caches of ceremonial objects from this area exhibit such explicit Christian motifs as to suggest that they date from the years when the missionaries were visiting the Navajos. At least one specimen so resembles Jemez dance tablitas that a specific connection with that pueblo is likely (Brugge 1994b; 1996).

The missionaries, impressed by the Navajos' hospitality, began baptisms and by June of that year they set out to guide Fray Miguel Menchero, the solicitor general of the New Mexico missions, to observe first hand what they were doing. Soon the king received word of the work and ordered that their successes be given support. The viceroy approved the establishment of four missions, two to be in the San Juan country and two in the vicinity of Mount Taylor in the south (Reeve 1959:15-18).

Jemez did not fit into the plans, which ultimately failed, but there continued to be occasional baptisms of Navajos at the Jemez mission. In 1749 two Navajos, a twenty-year old woman and a boy of ten, were baptized there. In 1753 the Jemez missionary baptized 12 Navajos. In 1756 all members of a family of five received the Christianizing rite. The numbers diminished; with one in 1759 and one in 1760 (Brugge 1985:46-47).

A course of events with more ominous portent was also in progress. Spanish settlers were moving into the eastern fringes of Navajo country, promising the Navajos that they would help defend against Ute attacks, but at the same time receiv-
ing ownership of the land by grants from the governor. One other grant, that of the Ojo del Espíritu Santo, gave rights to a large tract on the Rio Puerco of the East to the pueblos of Zia, Santa Ana and Jemez. On the north it bordered on La Ventana "where some Navajo Apache live" (Reeve 1959:28-29; 1971:128 n.25).

In the early 1770s war again broke out in earnest between the New Mexicans and the Navajos, set off by Ute raiding the Navajos with secret Spanish support. The Navajos learned of the collusion and successfully drove the settlers from the land grants along the Puerco (Reeve 1960:209-10).

The breakdown of the long peace led to a period of shifting relationships between the Navajos and New Mexico, one that is reflected in the pattern of Navajo-Jemez interactions. In 1775 in the course of the early hostilities, Jemez with some Cochitis captured five Navajos with three stolen horses (Navarro García 1964:247; Reeve 1960:208). In the same year there were baptisms of Navajo children at Jemez; two in October were the offspring of a heathen father, the ethnicity of neither parent being specified, although it seems likely that both were Navajo and that the mother was one of those baptized during the abortive Navajo mission episode of the 1740s. In December two Navajo children who were ill were baptized at their parents' request, apparently in the belief that this might affect a cure. A similar motive may be suspected for the October baptisms. Again in 1780 a Navajo was baptized at Jemez, in this case a captive held in servitude (Brugge 1985:50-52).

It is worth noting that in 1780 Governor Juan Bautista de Anza led an expedition to Hopi to bring to New Mexico those willing to come as they were suffering drought and famine. Some people from Hopi had already migrated and of these a few had settled at Jemez. Forty additional families wished to leave, but due to Navajo opposition, feared to do so without military protection. By the time Anza reached the Hopi villages, however, they had given up hope of Spanish help and had gone to join the Navajos. Whether any of these people were descendants of Jemez refugees who had gone to Hopi in the 1690s is not known, but this is another possibility that must be held in mind when trying to account for the various branches of the Navajo Jemez Clan (Thomas 1932:223).

In 1783 a Navajo raiding party made off with 55 horses belonging to the pueblos of Jemez and Zia, but this seems not to have upset the peace that followed the war. Anza was trying to forge an alliance of Navajos, Jicarilla Apaches, Utes and Comanches to join the Spanish in war on the southern Apaches. At a meeting in 1786 with Navajo leaders, Jemez were included in the Spanish party. Terms of the alliance were formalized, but what role, if any beyond that of witnesses, was played by the Jemez alcalde or any of the Jemez natives is not recorded (Reeve 1960:218, n. 48, 223-24).

In at least one campaign against the Apaches in which Navajos participated under this agreement, that of 1788, Jemez auxiliaries also took part (Feather 1959:287-89).

In 1793 when a party of Gila apaches attacked the homesite of Navajo headman Antonio el Pinto at Guadalupe on the Puerco, two Jemez warriors and the Spaniards' Navajo interpreter joined in the pursuit. Intercepting the raiders, a battle took place in which el Pinto was fatally wounded (de la Concha 1793; McNitt 1972:35; Reeve 1960:234). In August 1799 some Navajos stole horses from Jemez Pueblo. The Navajo interpreter secured the aid of the son of the late Antonio el Pinto to retrieve 25 of the lost animals (Correll 1979: v.I, 93).

In his "Description of the Apache – 1796," Antonio Cordero listed 10 "fixed domiciles" for the Navajos. The closest to Jemez Pueblo was a place named Chacoli (Matson and Schroeder 1957:356). While Chacoli has been identified as Chaco Canyon, the name in that form appears on
the 1779 map by Bernardo de Miera y Pacheco. It is quite explicitly placed east of the Rio Puerco of the East and west of the Rio Salado, almost due south of the Ojo de Espíritu Santo (Adams and Chavez 1956:218). A place with what is obviously the same name, but spelled Chaculin, was described in 1823 as nine leagues, some 23 miles, west of Jemez (Brugge 1980:12). While this is the closest to Jemez of any Navajo settlement reported prior to 1800, there were, as noted above, repeated descriptions of the Navajos as immediate neighbors of the Jemez.

In 1798 two official Navajo interpreters, the brothers Francisco and Antonio Garcia de Noriega, received a grant of land on the north of the Jemez Pueblo grant. These interpreters filled some of the functions that Indian agents under the United States government would later find a part of their jobs. Jemez had become the major point of contact with the Navajos for the governors in Santa Fe and would remain so into the next century through Mexican independence and the early years of American sovereignty (Sando 1982:41).

**SUMMARY**

It has been necessary to fall back on inference in several instances in this chronicle. There were events for which some participants were identified only as “Apache,” but in which Navajo involvement is most likely. There were occasions when the Jemez abandoned their villages and it is not at all certain just where they went. That some or all of them may have gone to stay with the Navajos in such cases remains only a possibility, but a very real one, for they clearly did flee to the Navajos during the 1690s.

There is greater certainty in post-Revolt times than earlier, beginning with the extensive documentation of the Vargas era. There were events in which Navajo actions suggest Jemez influence, perhaps by refugees, perhaps by anti-Christian traditionalists within their pueblos.

Some of my inferences are based on analogies with events in the relationship of other Puebloans with the Navajos as well as somewhat similar situations in later Jemez history. I must admit to feeling a bit uncomfortable with so many uncertainties. I feel confident that most of my inferences are correct, but I cannot say which ones. I feel almost equally confident that they are not all correct and again I do not know which are in error.

There were plenty of places in the mountains of the Jemez region where refugees might remain hidden, including long abandoned pueblos that would perhaps still offer shelter from the elements. Other Apachean peoples did interact with the Jemez, although not with the frequency of the Navajos.

The Navajo-Jemez relationship was special. Despite the pressures of foreign rule that impinged on Jemez intertribal relationships, the ties that bound them with the Navajos were never totally extinguished and continue in various ways today. It is not clear how deep into the past the roots of this amicable relationship extend, but certainly they were trading partners in pre-Spanish times. Traditions and linguistic evidence point to a northern origin for both peoples. The question is seldom raised as to whether the two tribes were in contact in the north, but it is worth pursuing.

**ACKNOWLEDGEMENTS**

The author wishes to express appreciation to Freda Garnanez for including this paper in the program of the 2000 Navajo Studies Conference. Lauren Rimbert typed the final version under difficult circumstances, for which I am very thankful. This paper was presented at the 12th Navajo Studies Conference at San Juan College, Farmington, NM, on 28 September 2000. Readers at the conference pointed out a few errors for me. I must take responsibility for all remaining errors, having no one else to blame.
ENDNOTES

1 There is considerable confusion in the various sources regarding the events during Zárate Salmerón's incumbency. It would appear that only the mission and pueblo at San Diego de la Congregación was destroyed in 1623. See especially Morrow 1996:99 for the clearest translation of a rather murky passage in Benavides' account of 1630. Scholes (1938:70) suggests as possibilities with regard to San José that Zárate Salmerón made an effort to continue serving there “from time to time” or that perhaps San José was “temporarily abandoned” until Felipe de Sotelo Osorio replaced Governor Juan de Eulate. It appears that San José was the ultimate cause of the troubles, Zárate Salmerón returning with the soldiers for protection for a few months in 1626.

2 The mistranslation of the Navajo name in the twentieth century replicates a similar error in the missionaries' reports in the 1740s (Reeve 1959:15n.). Sando's (1982:121) attribution of the name of the Navajo clan deriving its name from the Jemez Coyote Clan is a false etymology, although that does not preclude the possibility that some of the refugee founders of the clan may have been members of that Jemez clan.

3 The use of the term genízaros for these Jemez men may have indicated that they had been captured in earlier fighting at an age young enough to have been placed as servants with Spanish families and thus spent a part of their youth in Spanish society, long enough to have become partially acculturated to Spanish ways and were perhaps still living among the settlers rather than with their natal society.

4 This region, known as the Dinétah, “Among the Navajos,” was recognized as an area of early Navajo settlement and it includes many Navajo archaeological sites as well as places important in Navajo religious traditions as well as associations with clan origins. In recent years some younger Navajos have begun to apply the name to the full modern extent of Navajo country.

5 Since writing this, I have seen Kulisheck's (2001) paper on 17th Century Jemez settlement and population dynamics which presents data indicating occupation of small sites in the Jemez Mountains by Jemez people long after the establishment of the missions in the Jemez pueblos, an ideal circumstance for any Jemez who might wish to slip away to Navajo country.

REFERENCES

Adams, Eleanor B. and Fray Angelico Chavez 1956 The Missions of New Mexico, 1776: A Description by Fray Francisco Atanasio Dominguez with Other Contemporary Documents. University of New Mexico Press, Albuquerque.


Correll, J. Lee
1979 *Through White Men's eyes, a Contribution to Navajo History: A Chronological Record of the Navajo People From Earliest Times to the Treaty of June 1, 1868*. Navajo Heritage Center, Window Rock, Arizona.

Dean, Jeffrey S. and William J. Robinson
1978 *Expanded Tree-Ring Chronologies for the Southwestern United States*. Chronology Series III. Laboratory of Tree-Ring Research, University of Arizona, Tucson.

De la Concha, Fernando
1793 *Letter to Pedro de Nava, 19 Nov.* Spanish Archives No. 1266. New Mexico Records Center and Archives, Santa Fe.

Ellis, Florence Hawley
1964 *A Reconstruction of the Basic Jemez Pattern of Social Organization, with Comparisons to other Tanoan Social Structures*. University of New Mexico Publications in Anthropology No. 11. University of New Mexico Press, Albuquerque.

Espinosa, J. Manuel

Feather, Adlai, editor

Forbes, Jack D.

Franciscan Fathers

Hammond, George P. and Agapito Rey
1953 *Don Juan de Oñate, Colonizer of New Mexico, 1595-1628*. University of New Mexico Press, Albuquerque.

Hendricks, Rick and John P. Wilson, editors and translators

Kessell, John L. and Rick Hendricks, editors

Kessell, John L., Rick Hendricks and Meredith Dodge, editors

Kulisheck, Jeremy

Marshall, Michael P.

Matson, Daniel S. and Albert H. Schroeder, editors

McNitt, Frank

Morrow, Baker H., translator and editor

Navarro García, Luis
1964 *José de Gálvez y la Comandancia General de las Provincias Internas*, Escuela de Estudios Hispano-Americanos de Sevilla, Sevilla, Spain.
Parsons, Elsie Clews
1925 The Pueblo of Jemez. Department of Archaeology, Phillips Academy, Andover, Massachusetts.

Reed, Lori Stephens and Paul F.

Reeve, Frank D.

Reichard, Gladys A.

Reiter, Paul
1938 The Jemez Pueblo of Unshagi, New Mexico. University of New Mexico and School of American Research, Albuquerque and Santa Fe.

Sando, Joe S.

Scholes, France V.

Thomas, Alfred Barnaby

Towner, Ronald H., editor

Towner, Ronald H. and Byron P. Johnson

Van Valkenburgh, Richard F.
Quivira Research Associates conducted testing at the Vigil Site, LA 132631, 411 Romero Street NW, Old Town Albuquerque, on May 29-31 and June 1 and 4, 2001 (Figure 1). Three test trenches excavated with a backhoe revealed five distinct strata. Unfortunately, the two cultural strata have undergone repeated churning because of washing and flooding. The site consists of the traces of several adobe walls, a large trash pit that may have originated as an adobe borrow pit, and a thin scatter of artifacts that appear to have been displaced.
numerous times. In spite of careful archival research, we were unable to tie any of the adobe wall remnants to a specific occupant. The artifacts indicate occupation between the late 1700s and the 1870s/1880s. They also indicate that the residents enjoyed a fairly comfortable lifestyle. (As a small added bonus, during the research for 411 Romero Street, additional information on the Antonio Vigil House at 413 Romero Street was found and we are including that information here.)

The project was initiated when Edgar Boles, the Historic Preservation Planner for the City of Albuquerque, learned of plans to raze an existing building at 411 Romero Street NW and replace it with new construction. He asked the owners, the Vigil family, for permission to conduct a short testing program while the lot was between structures. Quivira Research Associates conducted the testing program as part of an on-call contract with the city. This paper is derived from the technical report for the project (Condie and Snow 2001).

The field crew consisted of Carol J. Condie (P.I.), Erik R. Stout, and Daniel W. Stiteler. M. Kent Stout mapped the lot boundaries and trenches. Paula J. Slavin cast her geologic eye on the trench stratigraphy. Eligio Aragon, Alley Cat Excavating, excavated the trenches.

Cordelia Snow prepared the historical background section and researched and wrote the section on the Vigil properties at 411 and 413 Romero Street NW. Dan Scurlock analyzed the artifacts and prepared the discussion. Carol Condie was responsible for the remaining sections.

HISTORICAL BACKGROUND

The most comprehensive history of the city of Albuquerque is that prepared by Marc Simmons (1982). That reference details the founding of the Villa de Alburquerque de San Francisco Xavier del Bosque, named in part for the then Viceroy of New Spain, the Duke of Alburquerque. The founding of Albuquerque did not occur until 1706, well after the Pueblo Rebellion and subsequent reconquest of the Spanish Colony in the 1690s. However, the fact that Albuquerque was not officially founded until the first decade of the eighteenth century does not mean to say the area was unoccupied by Spaniards during the seventeenth century. Indeed, the entire stretch of the Rio Grande from Socorro northward to Taos seems to have been occupied by estancias and ranchos that belonged to Spanish colonists interspersed by the larger holdings of the pueblo missions of Isleta to the south and Sandia on the north. More importantly, the entire area occupied by present greater Albuquerque appears to have been the seventeenth century equivalent of the "bread basket" for the small colony. According to Scholes (1929:55), the mission and convento of Nuestro Padre San Francisco of Sandia had “thirty estancias, more or less” under its jurisdiction, while the convento of San Antonio at Isleta had fourteen estancias under its control. These estancias provided not only the corn, wheat, beans and peas, and livestock for Sandia, Isleta and surrounding Spanish settlers, but also the trade goods needed at the missions over and above those provided by the King (see also Ivey 1994). Life in seventeenth century New Mexico was not as rude, crude, and arduous as some historians would have us believe. Indeed, had life been stultifying and economically hard, there would have been little reason to reclaim the colony for the Crown after the Pueblo Rebellion of 1680.

While life was not easy on the far northern frontier of New Spain, it was not without compensation for the inhabitants of the colony. Archaeological excavation of small domestic sites has produced sherds of Chinese porcelains, Mexican and Spanish majolicas, and even religious medals and other evidence of so-called luxury goods that had been transported over the Camino Real into New Mexico (Pierce and Snow 1999; C. T. Snow 1993; D. H. Snow 1993). The testing and excavation of larger mission sites and the Palace of the Governors in Santa Fe has pro-
duced even more evidence of luxury goods used in the colony (Snow 1974). Wills and inventories of the estates of a number of residents provide even greater evidence that life in New Mexico was not all that destitute during the Spanish Colonial period (Pierce and Snow 1999; C. T. Snow 1993).

The Pueblo Rebellion disrupted the colony, but even after the reconquest of New Mexico in 1692, life took some years to return to normal. The arrival of additional settlers in 1694/95 crowded the Capitol City, Villa De Santa Fe, necessitating the founding of new communities. Santa Cruz de la Cañada was the first of several new settlements founded in the colony. Bernalillo may have been another and, as Bloom (1935), Simmons (1982) and others have shown, Albuquerque was founded in 1706.

In 1935, Lansing B. Bloom published a certification of the founding of Albuquerque he had uncovered in the Archivo General de la Nación, sección de las Provincias Internas in Mexico.

[I] Don Francisco Cuerbo [Cuervo] y Valdez, Caballero of the Order of Santiago, Governor and Captain General of this Kingdom and [the] provinces of New Mexico...certify...that I founded a Villa on the margin and meadows of the Rio Del Norte in a goodly place of fields, waters, pastureage, and timber, distant from this Villa de Santa Fe about twenty-two leagues [ca. 66 miles], giving to it as titular Patron the most glorious Apostle of the Indies San Francisco Xavier, calling it and naming it the Villa of Alburquerque [I located it] in a good site, keeping in mind what is prescribed by his Majesty in his Royal Laws of the Recopilacion, Book Iv, title Vii, and there are now thirty-five families settled there, comprising 252 persons, large and small. The Church [is already] completed, capacious and appropriate, with part of the dwelling for the Religious Minister, the Royal Houses [are] begun, and the other houses of the settlers finished with their corrals, acequias ditched and running, fields [already] sowed—all well arranged and without any expense to the Royal Treasury (Bloom 1935:48).

This document and a certification to the [re]founding of the Pueblo of Galisteo were dated April 23, 1706. However, the fact that the church in the new settlement of Albuquerque had been completed, along with the houses of the settlers and the running irrigation ditches, suggests that the certification may have taken place after the fact and the small settlement actually was founded the previous year.

Some years later, in May 1776, Fray Francisco Atanasio Dominguez described the little villa of Albuquerque as follows:

It [Albuquerque] stands on the plain near the meadows of the Rio del Norte. The villa itself consists of twenty-four houses near the mission. The rest of what is called Albuquerque extends upstream to the north, and all of it is a settlement of ranchos on the meadows of the said river for the distance of a league from the church to the last one upstream. Some of their lands are good, some better, some mediocre. They are watered by the said river through very wide, deep irrigation ditches, so much so that there are little beam bridges to cross them. The crops taken from them at harvest time are many, good, and everything sown in them bears fruit.

There are also little orchards with vine-stocks and small apricot, peach, apple and pear trees. Delicious melons and water-melons are grown. Not all those who have grapes make wine, but some do. The citizens are of all classes and walks of life as in the other places I have mentioned, and they speak the local Spanish (Adams and Chavez 1975:151).
At the time of Fray Francisco’s visit in 1776, the population of Albuquerque stood at 157 families with 763 people (Adams and Chavez 1975:151). The population of Santa Fe, on the other hand, stood at 229 Spanish families with 1,167 persons and 42 families of genízaros with 164 people (Adams and Chavez 1975:42). There were at the time of Dominguez’ visit three churches in Santa Fe, the parroquia, or parish church, San Miguel, and the military chapel dedicated to Our Lady of Light, or La Castrense, contrasted with the single church dedicated to San Felipe Neri in Albuquerque. The difference in population between the two villas would change drastically during the latter part of the nineteenth century and Albuquerque eventually would far outstrip the capitol city in size.

However, within less than a decade of Fray Francisco Dominguez’ visit to Albuquerque, Fray Juan Agustín de Morfi had occasion to visit the villa (Thomas 1969:101). Morfi’s description of the villa was somewhat less idyllic than that of the usually acerbic Dominguez:

The Villa of Albuquerque was founded in [[1706]] [the braces and brackets are Thomas’ additions] is distant twenty leagues from the Villa of Santa Fe in a large plain which will be a league from south to north and two and a half from east to west on the banks of the Rio Grande. It possesses seven and one half leagues of land for crops and pastures which they irrigate with the waters of the river diverted by means of ditches. The climate is fair with respect to its elevation and very healthy because of the purity of the atmosphere. The land is fertile although it does not produce what it could because of insufficient cultivation for lack of oxen and leisure, the [threat of] enemies not permitting them to absent themselves from the villages for various tasks. Thus the land lies fallow. Scarcity of fuel obliges the settlers to utilize the manure of the horses. The settlement is scattered throughout the entire breadth of the valley. In 1779 the governor, Don Juan Bautista de Anza, reduced it to regular form. At that time three hundred and eighty-one Spanish settlers lived there (Thomas 1969:101).

The reason for the sudden drop in the population of Albuquerque between the visits of Dominguez and Morfi is not explained.

Meanwhile, the economic basis of the colony was slowly changing. Throughout the seventeenth century and even after the Pueblo Revolt when New Mexico was reclaimed by Spain, the missions had larger herds of livestock, whether cattle or sheep and goats, than had the colonists (Baxter 1987). Not until the middle of the eighteenth century did the size of the herds of livestock owned by the colonists begin to surpass those of the missions and shortly thereafter they began to increase exponentially (Baxter 1987). By the 1830s, private citizens in Albuquerque and the Rio Abajo laid claim to more than 150,000 head of sheep alone, not counting cattle and goats (Baxter 1987:90). The numbers of sheep would grow even larger, until by the late-1840s and early-1850s, flocks of several thousand head of sheep were being driven to California to provide sustenance to hungry gold miners there (Baxter 1987:118-128).

Besides the tremendous growth in the livestock industry in New Mexico other changes had occurred in the colony during the nineteenth century. In late 1821, as the result of Mexico’s declaration of independence from Spain, the Santa Fe Trail between that city and the eastern United States had been opened for trade with the colony and Mexico. Within a matter of years, manufactured goods, the result of the industrial revolution elsewhere, flooded into New Mexico.

In 1846 when U. S. military troops invaded the former Spanish Colony, Albuquerque and Santa Fe were still small Hispanic communities, the
Santa Fe Trail notwithstanding. On their march south General Stephen Watts Kearny’s men reported on the Albuquerque area that “On both banks of the river, the towns, villages, and ranchos or farm houses cluster so thickly together that it presents the appearance of one continued village from Algodones to San Tomé, a distance of nearly sixty miles” (Simmons 1982:139).

Several weeks later, Kearny posted a detachment of Dragoons to Albuquerque, which suddenly became a military town (Simmons 1982:139) and in 1850 New Mexico was added to the growing list of U. S. Territories.

Ultimately, Colonel James H. Carleton was stationed in Albuquerque to rectify excesses that had occurred in the Valley during the Civil War. Carleton was accompanied by his wife, Sophia, and family who, very shortly, became major landholders in Old Town (Simmons 1982:188-189). The economy of Albuquerque began to boom. However, it was the arrival of the AT&SF on April 22, 1880 that altered the appearance and economy of Albuquerque more than any single previous factor since the founding of the villa in 1706 (Simmons 1982:212-221). Because the AT&SF depot was not and could not be located in Old Town (a function of railroad designers’ preference for straight-line routes—and, probably, the marshy ground near the river), a “New Town” was founded and growth was explosive. Even though New Mexico did not gain statehood until 1912, with the advent of the train Albuquerque quickly became the leading community in the territory and later the state.

ARCHIVAL RESEARCH AT 411 AND 413 ROMERO STREET NW

Archival research for 411 and 413 Romero Street NW, the Vigil property, Albuquerque, New Mexico, was undertaken during June, July and August 2001. Constructed in 1879, the Antonio Vigil house at 413 Romero Street is listed on both the State Register of Cultural Properties and the National Register of Historic Places. Located north of the plaza in Old Town, the Vigil house was originally constructed by Santiago Baca, descendant of one of the founding families of New Mexico. The Vigil family has owned the historic structure since 1904, but obtained the adjacent property at 411 Romero Street over the course of several years during the first half of the twentieth century.

The archival research for this paper took place primarily at the State Records Center and Archives. Additional research concerning Santiago Baca was undertaken at the History Library of the Palace of the Governors. Descendants of Antonio Vigil provided copies of the abstracts for both properties.

The Vigil property in Albuquerque encompasses both 411 and 413 Romero Street. The property is located north of the plaza in the area known familiarly as Old Town—the original site of the former Spanish villa founded in 1706. It has not been possible to determine original ownership of the lot or to learn if it was included in any of the holdings of the Church or original settlers of Albuquerque. Further, while the chain-of-title for 413 Romero Street is relatively clear from the latter part of the nineteenth century, the late nineteenth century chain-of-title for 411 Romero Street is more difficult to trace. A warranty deed, escritura garantizada, for the west portion of the present lot, from Emeterio Sedillo and his wife, Josefa Baca de Sedillo, to Jose V. Garcia and his wife, Juanita Kaslowsky de Garcia, dated November 6, 1896 provides a sketch map of properties south of the home of Santiago Baca (SRCA, Bernalillo County Records, Book 30, page 52; Reel 28, Frame illegible)(Figure 2). Owners of adjacent properties at the time included Transito L. Matta, a Notary Public who owned the east portion of 411 Romero Street, Meliton Chavez, and Jose T. Garcia. While both Matta and Garcia are shown as having houses on their lots, the Chavez property is simply listed as “house lot” sug-
The boundaries are here as follows: On the North by property of Jose T. Garcia and wife; on the South by property of the inlets and outlets in common with the unknown adjacent owners or tenants; on the East property now of Transito L. Matta and wife; on the West property of Charles W. Lewis, widower, and the inlets and outlets are as above described. With the understanding that the house within the land marked with red ink is excepted, and all in this diagram marked with red ink, and stars comprises the tract of land sold to the purchaser herein specified.

Figure 2.
Page from Vigil family Abstract of Title No. 5837, showing sketch map drawn as part of 1896 warranty deed. This deed has obviously been translated from the original deed written in Spanish (Condie and Snow 2001: App. II). Even the spelling of Juanita Kaslowsky has been changed to Kozloski.

suggesting the property was vacant in 1896 (Figure 2).

On August 20, 2001, this author spent nearly three hours reviewing the “direct” (grantor to grantee), and “indirect” (grantee to grantor) deed indices on microfilm for Bernalillo County at the State Records Center and Archives in a vain attempt to locate Transito L. Matta. It is entirely possible, and indeed probable, that the author simply missed Matta’s records while scanning the microfilm of the handwritten accounts. On the other hand, property belonging to Meliton Chavez and Jose Garcia was much more easily traced. Chavez was the husband of Francisca Baca de Chavez, daughter of Santiago Baca, who, as we shall see, constructed the building at 413 Romero Street, while Garcia continued to own the adjacent property until well into the twentieth century.

The Antonio Vigil house, located at 413 Romero Street, north of the Old Town Plaza in Albuquerque, was constructed in 1879 on property that had been owned previously by Sophia Wolfe Carleton. Little is known about Sophia, the wife of James Carleton, commander of the U.S. military post in Albuquerque, except for the fact that she had developed the habit of buying large parcels of land in both her name and the names of her children, Eva, Etta, Henry, and Guy (SRCA, Bernalillo County Records, Book A:127, 128, 134, 177; B:341). In at least one instance, a parcel that Sophia purchased in Old Town was rented out for subsequent military use—“a clear conflict of interest” according to historian Simmons (SRCA, Bernalillo County Records, Roll 5, Frame 60; Simmons 1982:169). Whether Sophia originally owned the property at 411 Romero Street is not known for certain, but it seems probable.

Meanwhile, Santiago Baca, the eldest son of Major Jesus M. A. Baca y Salazar and Maria Jesus Salazar, had married Piedad Armijo in 1862 and moved to Albuquerque from Santa Fe. Baca, who had been educated in Santa Fe and in Mexico, joined his father-in-law in the wholesale and retail business (Anonymous 1895:249). Business interests aside, Baca also began to purchase land throughout Old Town, much of it from Sophia
Carleton. One of his purchases was the lot where the Antonio Vigil house stands today. Several months later, on July 28, 1879, Sophia W. Carleton sold another tract of land that had been purchased in the names of her children to Santiago Baca (SRCA, Bernalillo County Records, Book G: 497-498; Roll 6:Frames 538-539). This and other purchases adjoined property Baca’s wife, Piedad Armijo de Baca, had obtained from her father, Salvador Armijo, and other relatives, the most famous of whom was Manuel Armijo (Anonymous 1895: 249).

On February 4, 1879, Santiago Baca leased one of three houses he was in the process of constructing on then Santiago Street in Old Town to Albert Grunsfeld (SCRA, Bernalillo County Records, Book H:111-116, Roll 6:606-613). This structure, later known as the Antonio Vigil house at 413 Romero Street, was on property that had been purchased from Sophia W. Carleton. Grunsfeld was an agent of Spiegelberg Brothers, merchants in Santa Fe, which explains the signature of Willi Spiegelberg on the endorsement of the lease. Because the structure was unfinished at the time of the lease, the document recorded at the Bernalillo County Court House was unusually detailed and contained a draft plan of the structure (Condie and Snow 2001:App. I, Fig. 2).

According to the lease, the boundaries of the property were as follows:

Sitatue in said Town of Albuquerque, on the public street, running north from the plaza of said town of Albuquerque and bounded as follows, on the south by the property of Melquiades F. Chavez, on the east, by the said public street, on the north by the property of the said party of the first part [Santiago Baca], and on the west by the property of Mariano Apodaca (SRCA, Bernalillo County Records, Book H:111-112, Roll 6, Frame 606-607).

Further, the “dwelling house, corral, outbuildings and appurtenances [would be constructed], agreeable to, and of the shape size and dimensions of the draft plan and explanation.” The building would be completed in a “good, substantial and workman-like manner” and would be “ready for occupation and with keys in the locks, on or before the first day of August A.D. 1879.” According to John O. Baxter (1977) and Byron A. Johnson (1980), the Vigil house was constructed of terrones, that is, bricks cut from sod. Interestingly, the house at 411 Romero Street was constructed of adobe bricks (C. J. Condie, personal communication 2001).

As a construction material, terrones were commonly used in Albuquerque due to the fact that Old Town was located in an area subject to periodic flooding by the Rio Grande. Repeated flooding in the area produced rich bottomlands, a ready-made mixture of vegetation and mud that could be cut to shape and dried for use in construction. Adobe bricks required the addition of water and a tempering agent such as straw that was packed into special forms to produce bricks. Whether the terrones used in the Vigil House were obtained on site or were carted in from a short distance is unknown. However, the terrones were probably not cut on site, judging from the stratigraphy at adjoining 411 Romero, which contained no evidence of sod. In either case, any mortar that was required in construction would have been mixed on site due to the weight and difficulty in transport of that medium.
Presumably, the hard plaster finish on both interior and exterior walls was also mixed on site.

The term of the lease was three years with Grunsfeld's cost of rental set at $300.00 per year, "payable in equal monthly payments" [$25.00 per month, a nearly inconceivable figure at today's prices] (SRCA, Bernalillo County Records, Book H:112, Roll 6, Frame 610). Further, Grunsfeld was to have the right of first refusal if Santiago Baca should decide to sell the property, "on the condition that he shall be willing to pay as much thereafter as any other person" (SRCA, Bernalillo County Records, Book H:113, Roll 6, Frame 611). Finally either party to the rental of the property was liable to the other in the amount of $500.00 liquidated damages if the terms of the agreement were not met (SRCA, Bernalillo County Records, Book H:114, Roll 6, Frame 114). Grunsfeld occupied the property until 1882 when he moved both his family and the Spiegelberg interests to the New Town area of Albuquerque. According to Johnson (1980:84), Grunsfeld then sub-leased the property on Romero Street while Baca retained ownership.

In the late 1880s, early 1890s Santiago Baca ran into business difficulties. Defeated in a congressional election and faced with embezzlement by an employee, Baca was forced to pledge much of his property to repay the loss. Thus, on September 23, 1893 Baca was forced to sell the present Vigil house (Baxter 1977). However, Baca's daughter, Francisca Baca de Chavez, purchased that portion of Baca's property for $800 (Baxter 1977:2). According to the deed of sale, Francisca Baca also purchased several other parcels at the same time. One of those may be the property at 411 Romero Street subsequently owned by Transito Matta and later sold by Levy Springer to Jose T. Garcia (SRCA, Bernalillo County Records, Reel 26, Frame Nos. illegible, Book 26: 170-173). Santiago Baca, one-time postmaster in Old Town, businessman and entrepreneur, died in 1908 (Johnson 1980:84).

According to John Baxter (1977), only five years later, the remaining title in the Baca/Vigil house was exchanged by the Chavez's to the Bacas for title to the Salvador Armijo house (now the Maria Teresa Restaurant) some 200 yards north of the house that had belonged to Francisca's grandfather. Shortly thereafter the property was sold.

On January 28, 1904, the structure built by Santiago Baca on lands formerly owned by Sophia Carleton was sold to Pilar Vigil although the deed was not recorded until June of 1905. The property boundaries were given as follows:

All that piece or parcel of land containing a house of residence and lying in the old town of Albuquerque, Precinct No. 13 in the County of Bernalillo, Territory of New Mexico, which is more particularly described as follows, to-wit: Containing sixty-nine (69) feet from North to South and Eighty-two (82) feet from East to West, bounded on the North by lands of Piedad A. De Baca, on the East by the Public road or Street, on the South by the alley and on the West by land of Jose Garcia (Vigil Family Abstract; SRCA Bernalillo County Records Book 40:142).

Several years later (1915) Jose T. Garcia and his wife, Juanita Kaslowsky, purchased the remaining portion of present 411 Romero Street from Levy Springer. Although no improvements were indicated in the Vigil Family abstract, the property boundaries were given as, "On the north by property of Pilar Vigil, on the South by property of Meliton Chavez, on the East by the Public road, and on the West by land of Jose T. Garcia" (SRCA Bernalillo County Records Book 48:22).

Subsequently, when Jose T. Garcia died on February 29, 1936, his heirs, Isabel Garcia de Springer, Luciana Garcia de Springer and Martin Garcia filed suit to settle his estate. However, nei-
ther the estate of Jose Garcia, nor that of his wife, Juanita Kaslowsky, was administered in Bernalillo County. That problem was exacerbated by the death of Isabel Garcia Springer in 1938, intestate. It was not until the early 1940s that Antonio Vigil obtained 411 Romero Street (Vigil Family Abstract).

Meanwhile, in 1922 Pilar Vigil deeded the house and lot at 413 Romero Street to his son, Antonio J. S. Vigil, by whose name the property is still known (Vigil Family Abstract; SRCA Bernalillo County Records Book 79:167). According to Baxter (1977) and Johnson (1980:84), Antonio Vigil operated the San Felipe Grocery for many years thereafter in the largest room on the east side of the former Baca/Grunsfeld house. Baxter (1977) also noted that a former garage and chicken house constructed by the Vigil family in the 1920s adjacent to the larger structure was subsequently converted into an apartment. Antonio J. S. Vigil died in 1961 (Baxter 1977; Johnson 1980:84). The properties at both 411 and 413 Romero Street remain in family ownership.

The Antonio Vigil House was nominated to the State Register of Cultural Properties on December 19, 1977. It was placed on the National Register of Historic Places on May 5, 1978. In an interesting aside, in the earlier nomination to the State Register of Cultural Properties (Adams 1976) ownership of the Antonio Vigil house and property was traced through Salvador Armijo instead of Sophia Carleton, Santiago Baca, and Pilar Vigil, probably as a result of confusion with the Salvador Armijo house history. That was not the case, as we have seen.

**TESTING PROCEDURES AND RESULTS**

**Test Trenches**

Three east/west test trenches (Figure 3), 1 m wide by 24 m (Trench A) and 23 m (Trenches B and C) long by 1 m deep (more or less) were excavated with a backhoe. The trenches were opened on May 29 and were not backfilled until the afternoon of June 4. Fortunately, by the morning of June 4, a weekend's having intervened, the trench walls had dried out enough that the lower courses of adobe block walls were apparent.

**Strata**

Table 1 describes the strata, from Stratum 1, the lowest, to Stratum 5, the uppermost stratum. Trash Pit Fill 1 is also described. We should note that Strata 3 and 4, the cultural levels, contained myriad large and small charcoal lenses, flecks, and

---

Figure 3
Schematic of Trenches A, B, and C, showing the 1-m mapping units in each trench, LA 132631.
stains, lenses and lumps of clay that are probably melted adobe, bits of burned adobe, small pockets of gypsum nodules, single gypsum nodules, large and small lenses of gypsum, and trash and food bone. Paula Slavin, geologist, inspected the stratigraphy and made several useful observations. Most of the content of the “Characteristics” column in Table 1 is hers. Her interpretation is that Stratum 1 may represent a sand bar in the riverbed, but neither in the central channel (the

Table 1

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Color (Munsell)</th>
<th>Characteristics</th>
<th>Cultural/Non-cultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10 YR 5/3, brown (dry)</td>
<td>Top stratum over much of site. Apparently imported to site from elsewhere. Contains gravel (pea gravel to large pebbles) and fine, poorly sorted sand.</td>
<td>Non-cultural.</td>
</tr>
<tr>
<td>3</td>
<td>7.5 YR 6/2, pinkish gray (dry)</td>
<td>Dry, light pink/grey/brown silty sand with plentiful charcoal, gypsum, bone, and other cultural contents. Series of sands with charcoal separated by fine-grained sands without charcoal. Still low energy environment (no gravel). Some bedding visible in sand layers without charcoal.</td>
<td>Cultural. Stratum 3 contained most of the artifacts.</td>
</tr>
<tr>
<td>2</td>
<td>5 YR 4/3, reddish brown (damp)</td>
<td>Moist medium brown silty clay with minor sand. Sand channels reaching into clay layer—fine-grained, well-sorted sand. Variable top surface, channelized by overlying layer. Some iron-staining representing traces of roots, but roots no longer visible. Roots of small diameter (2-3 mm), primarily in sand portions.</td>
<td>Non-cultural.</td>
</tr>
<tr>
<td>1</td>
<td>10 YR 6/3, pale brown (dry)</td>
<td>Light brown/tan fine to very fine-grained, well-sorted sand. Grains rounded to subrounded, primarily quartz sand, some iron-containing or stained grains. Dry. No cultural materials or rooting. Interpreted as river-deposited sand, low energy environment, possibly sand bar. No gravel noted. Top surface fairly even, not channelized.</td>
<td>Non-cultural.</td>
</tr>
<tr>
<td>Trash Pit Fill 1</td>
<td>N/A</td>
<td>Trash pit is prominent in west portion of Trench A, but the mixing evident in Units 7-10 in Trench B may also relate to this pit. There is a very sharp, distinct charcoal stain at the bottom of the pit, but there are numerous charcoal flecks, lumps, and small lenses from top to bottom. In addition, gypsum is abundant. A great deal of mixing and stirring occurred in this pit. It is clear that dirt washing in was responsible for much of the fill, but some dumping of charcoal and trash directly into the pit must have occurred, as well.</td>
<td>Cultural.</td>
</tr>
</tbody>
</table>
Adobes

The adobe blocks visible in the trench walls measure 50 cm long by 10 cm high. Dan Stiteler and Erik Stout, crew members on this project, are experienced in adobe construction. They noted that this block size is probably too large for the blocks to have been made elsewhere and brought to the site. It is more likely that they were formed on-site. (It might be worth remarking that the Antonio Vigil house, next door at 413 Romero NW, was built of terrones.)

Gypsum

It is apparent that gypsum plaster was being prepared on-site. There is a great deal of gypsum represented in Strata 3 and 4 and in Trash Pit 1 as white lenses and streaks, as nodules, and even as an inchoative artifact (see “Artifacts,” below). Unfortunately, it is not possible to source gypsum via chemical analysis (Alec Sander and Douglas Irving, mining geologists, Chapman, Wood, and Griswold, personal communication 2001), but gypsum was presumably brought from a local source. The present Centex American Gypsum mine south of San Ysidro is approximately 40 miles northwest of Albuquerque, but Northrop (1996:120) reports exposures between San Antonio and San Antonito in the Tijeras Canyon district approximately 20 mi east of Old Town.

Artifacts

Once the trenches were opened, it became apparent that artifacts were scattered from top to bottom of Strata 3 and 4 (Figures 4-6). Because we could find no artifacts in a context that seemed to relate to a habitation period or even in the clusters that would have resulted as trash was dumped or burned and then dumped or buried, we made no attempt to collect all artifacts. We did not screen fill from the trenches, nor did we recover artifacts from the dirt piles dumped by the backhoe. Instead, with one exception (FS #8), we collected only artifacts that were in situ in the trench walls. This permitted us to take accurate depth measurements and, thus, rely on the artifact dates to test our initial impressions of mixing.

Note: #17 and 18 were in A-1 @ 40 cm below datum. #19 and 20 were in A-2 @ 40 cm and 60 cm below datum. These units were steps and were not mapped.

#17—green bottle kickup (40 cm below datum)
#18—Blue-on-white transfer ware (40 cm below datum)
#19—metal stove part (40 cm below datum)
#20—undecorated Whiteware (ironstone) (60 cm below datum)

Figure 4
Profile of Trench A, showing artifact proveniences.
Dan Scurlock analyzed the artifacts. He identified two Pueblo sherds, 18 Hispanic sherds, eight Euro-American sherds, and four glass fragments (three bottles and one window glass sherd). He believes the collection dates between the late 1700s and the 1870s/1880s.

We also collected an ungulate tooth, a sheep/goat/pig metatarsal(?), and a sample of gypsum nodules (in hopes, vain as it turned out, that we could source them).
Other items we recovered but did not submit to Scurlock for analysis consisted of the following.

A horseshoe. Turned up by the backhoe in the general area of the east end of Trench C, just below the surface. Anthony Vigil, the present owner of the Antonio Vigil House at 413 Romero, told us he remembered a blacksmith shop in the northeast section of the lot when he was a child. Unless the horseshoe relates to the shop, we were unable to find any evidence of a blacksmith operation.

A heavily encrusted flat cast iron object, probably a part from a wood stove, from Unit 2 in Trench A.

Two metates. One, a complete metate of vesicular basalt, lay on top of the ground. This metate measures 42 cm long, 20 cm at the wide end, tapers to 8 cm at the narrow end, and averages 16 cm thick. The other, a fragment from a sandstone metate, was either from the north wall of Unit 5 in Trench C or from the south wall of Units 13 and 14 in Trench C, which contained loose rubble and brick (part of a leach field?). Unfortunately, we didn’t recognize it as a metate until it had been out of the ground for several days, when someone turned it over. This metate measures 25 cm long, 24 cm at the wide broken end, tapers to a point at the end opposite the break, and averages 6 cm thick. This metate fragment has a small grinding basin, 9 cm in dia., at the approximate center of the fragment—thus, a new metate has been made from a broken metate. There is no way of knowing the ultimate origin of the metates.

An object of gypsum, recovered from Unit 14 in Trench C. Since the Chapman, Wood, and Griswold firm is a consultant for the Centex American Gypsum mine at San Ysidro, QRA went to Alec Sander and Douglas Irving for information on gypsum. They said (June 5, 2001) gypsum does not normally cleave in that manner and that a human was responsible for the shape. It is clear that the object was in a state of manufacture, but what it might ultimately have become is not clear. The gypsum object measures 10 cm at the widest point, tapers to 3 cm, and is 2 cm thick.

HISTORIC ARTIFACTS

This report discusses 32 historic artifacts retrieved from excavations in Trenches A, B, and C (Tables 2-5) at the Vigil Site. For analysis, these were separated into two main material classes (ceramic and glass), and the ceramics in turn were subdivided into Pueblo, Hispano, and Anglo. Two sherds were identified as Pueblo-made, 18 Hispano-made, and eight Anglo-made. Three glass bottle fragments and one fragment of sheet glass (windowpane) comprise the remaining artifacts, all probably Anglo in origin, of the assemblage.

<table>
<thead>
<tr>
<th>Field Specimen #</th>
<th>Type</th>
<th>Trench-Unit</th>
<th>Centimeters below datum string</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ranchitos Polychrome(?)</td>
<td>C-1</td>
<td>89</td>
</tr>
<tr>
<td>4</td>
<td>Trios Polychrome(?)</td>
<td>C-3</td>
<td>51</td>
</tr>
<tr>
<td><strong>Total sherds:</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 3
Ceramics: Spanish (LA 132631).

<table>
<thead>
<tr>
<th>Field Specimen #</th>
<th>Type</th>
<th>Trench-Unit</th>
<th>Centimeters below datum string level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Hispanic Redware (rim)</td>
<td>C-20</td>
<td>126</td>
</tr>
<tr>
<td>5</td>
<td>Hispanic Redware (body)</td>
<td>C-20</td>
<td>126</td>
</tr>
<tr>
<td>7</td>
<td>Hispanic Redware</td>
<td>C-20</td>
<td>103</td>
</tr>
<tr>
<td>8</td>
<td>Hispanic Grayware</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>Tan slip (body)</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td>Hispanic Redware</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>11</td>
<td>Hispanic Blackware</td>
<td>B-4</td>
<td>56</td>
</tr>
<tr>
<td>12</td>
<td>Hispanic Grayware</td>
<td>B-7</td>
<td>153</td>
</tr>
<tr>
<td>14</td>
<td>Hispanic Redware</td>
<td>B-7</td>
<td>140</td>
</tr>
<tr>
<td>15</td>
<td>Hispanic Grayware</td>
<td>B-17</td>
<td>63</td>
</tr>
<tr>
<td>16</td>
<td>Hispanic Blackware</td>
<td>B-20</td>
<td>110</td>
</tr>
<tr>
<td>23</td>
<td>Hispanic Blackware</td>
<td>A-5</td>
<td>100</td>
</tr>
<tr>
<td>26</td>
<td>Hispanic Grayware (4 sherds)</td>
<td>A-14</td>
<td>60</td>
</tr>
<tr>
<td>26</td>
<td>Hispanic Grayware</td>
<td>A-14</td>
<td>60</td>
</tr>
<tr>
<td>27</td>
<td>Hispanic Redware</td>
<td>A-22</td>
<td>115</td>
</tr>
</tbody>
</table>

Total sherds: 18

### Table 4
Ceramics: Anglo (LA 132631).

<table>
<thead>
<tr>
<th>Field Specimen #</th>
<th>Type</th>
<th>Trench-Unit</th>
<th>Centimeters below datum string level</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Undecorated Pearlware</td>
<td>C-1</td>
<td>76</td>
</tr>
<tr>
<td>10</td>
<td>Blue-on-white ware (transfer decorated)</td>
<td>B-3</td>
<td>110</td>
</tr>
<tr>
<td>18</td>
<td>Blue-on-white ware (transfer decorated)</td>
<td>A-1</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td>Undecorated Whiteware (Ironstone)</td>
<td>A-2</td>
<td>60</td>
</tr>
<tr>
<td>22</td>
<td>Undecorated Whiteware</td>
<td>A-4</td>
<td>110</td>
</tr>
<tr>
<td>24</td>
<td>Undecorated Whiteware</td>
<td>A-9</td>
<td>110</td>
</tr>
<tr>
<td>25</td>
<td>Decorated Whiteware (Mocha)</td>
<td>A-10</td>
<td>125</td>
</tr>
<tr>
<td>26</td>
<td>Undecorated Whiteware</td>
<td>A-14</td>
<td>90</td>
</tr>
</tbody>
</table>

Total sherds: 8

### Table 5
Glass: Euro-American (LA 132631).

<table>
<thead>
<tr>
<th>Field Specimen #</th>
<th>Type</th>
<th>Trench-Unit</th>
<th>Centimeters below datum string level</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Green bottle (base/kickup)</td>
<td>C-1</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>Clear sheet glass (window pane)</td>
<td>B-3</td>
<td>110</td>
</tr>
<tr>
<td>17</td>
<td>Green bottle (base/kickup)</td>
<td>A-1</td>
<td>40</td>
</tr>
<tr>
<td>21</td>
<td>Brown bottle (body)</td>
<td>A-3</td>
<td>45</td>
</tr>
</tbody>
</table>

Total glass fragments: 4
Pueblo Ceramics

Only two Pueblo sherds, both matte-painted, were recovered. These were tentatively identified as Trios Polychrome and Ranchitos Polychrome. The first sherd, found in Trench C-3, has a tan exterior slip with a black paint, floral(?) design. Harlow (1973:53-54, 84, 232) describes this type of ware as a product of Santa Ana or Zia pueblos with a date range of 1800-1850 A.D. The second identified sherd, recovered in Trench C-1, may be Ranchitos Polychrome, which was manufactured at Santa Ana Pueblo, c. 1760-1810. This type generally has an orange-tan, sand-tempered paste. This specimen has a tan exterior slip decorated with four converging black lines; the interior is red-slipped.

Hispano Ceramics

The identification of this group of 18 sherds as Hispanic was based on the work of Carrillo (1997), who has described more than a dozen type wares manufactured by Spanish potters at various locales in New Mexico and southern Colorado from the late 1700s to the late 1800s. Most of these wares, primarily utilitarian, were previously attributed to Pueblo or Apache potters by virtually all archaeologists in the region. Three distinctive types were identified in this assemblage (Hispanic Redware, Hispanic Blackware, and Hispanic Grayware) based on their sand-tempered pastes, clay types, surface finishes, and styles. Vessel forms include bowls, jars, cooking pots, and possibly soup plates (Carrillo 1997:5-9, 103, 122-141, 205-206). These 18 ceramic artifacts were recovered from all three trenches, ranging in depth from 56 cm to 153 cm (Table 3).

The Redware—formerly known as Casitas Red-on-brown, plain, orange-on-tan, and Red-on-gray—has been found from Spanish archaeological sites from the Mesilla Valley to southern Colorado and dates 1760 to 1840. Temper is generally sandy, but tuff and pumice are sometimes present. Blackware, previously known as Manzano Black and considered Puebloan in origin, has the same geographical range, but this ceramic type was manufactured over a longer period (1730-1880). The third type, Grayware, has a similar distribution and temporal range. In addition to the above characteristics, surface finishes of these three ceramic groups are generally poorly smoothed or polished and the fire clay is more friable than Pueblo pottery.

Anglo Ceramics

Eight glazed sherds, one pearlware, and the remainder whiteware were recovered at the site. Three specimens are decorated; two have an underglaze blue transfer landscape and geometric design, while the other is the shoulder fragment of a Mocha bowl. One of the five undecorated sherds is pearlware, which has a glaze of bluish tint. One thick undecorated specimen has a darker and harder paste and is generally called ironstone (Haecker 1991:5-9).

Although a little Anglo-made pottery from England may have reached New Mexico prior to the lifting of the ban on foreign trade and the opening of the Santa Fe Trail in late 1821-1822, all but one of the eight sherds post-date these two events. Mocha manufacture began about this time and ironstone was not available until the 1850s. The technique of transfer printing was invented in the late 1700s, but the single sherd of this decorative type was probably from a vessel manufactured after 1821. Three whiteware sherds from ring-foot bases of bowls probably date to the 1820s-1850s (Scurlock 1998). Prices for these Anglo wares were generally too high for most New Mexicans early in this period. By the mid-1830s, however, prices for these ceramics were more affordable (C. T. Snow 1993:143).

Glass

Four glass fragments, three from beverage bottles and one from a windowpane, were found in the test trenches. Two are partial kickup bases, from green bottles whose contents were wine, champagne, or brandy. Like Anglo ceramics, these bottled beverages were not readily available until the
Santa Fe Trail trade began in the early 1820s. A brown bottle sherd may also be from a wine bottle that probably dates to the 1820s-1870s (Scurlock 1998; Wilson 1981:19-21).

The first window glass in New Mexico also came over the Santa Fe Trail but generally was not commonly affordable until after the 1840s. Precise dating of sheet glass can only be made if the name and location of the manufacturer is known (Scurlock 1998).

**DISCUSSION**

The recovered artifacts indicate that the site was occupied by Hispanics primarily, or altogether, in the 19th century. These artifacts were found in association with traces of three parallel adobe walls or within a trash pit and other features.

Most of the ceramics recovered were locally made by Spanish potters, while Pueblo pottery was likely acquired through barter. Anglo-made ceramics and glass bottles with alcoholic contents were purchased or obtained in trade. The two Pueblo matte-painted sherd s were recovered from Trench C, one at 51 cm deep and the other at 89 cm deep. Hispanic Redware sherd s were fairly evenly distributed horizontally and vertically. The Ranchitos Polychrome sherd, the undecorated pearlware sherd, and one of the green bottle kick-ups were found in Trench C-1 at depths of 76 to 89 cm. Hispanic Blackware, Anglo whiteware, two of the glass artifacts, and a metal stove part were recovered at various depths from the trash pit in Trench A.

In conclusion, the site was probably occupied by Hispanics between the late 1700s and 1870s or 1880s. The presence of a variety of Anglo ceramics and glass containers suggest these occupants were fairly well to do. All of the artifacts were from items used to store, cook, or serve food.

**SUMMARY AND CONCLUSIONS**

The sequence reflected in our trenches began with a probable sand bar (Stratum 1) in the river, somewhere between the bank and the main channel. Later, the river deposited a silty clay plus a little sand, which created channels in the clay layer (Stratum 2). Kelly (1969:15) believed that the river may have moved to its present location from its old channel between Second and Twelfth streets less than 1000 or 2000 years ago. Thus, if Strata 1 and 2 were deposited as the river moved west, they may be relatively recent and it is not necessary to account for enormous amounts of time.

It is impossible to point to a spot in Stratum 3 and say “This is when human habitation began.” The distribution of the collected artifacts demonstrates that repeated mild flooding and washing occurred, moving the artifacts from their primary (and their secondary, and their tertiary, and their...) points of deposition. Scurlock found that the artifacts date to the late 1700s to the 1870s or 1880s.

The earliest site map we have is in one of the abstracts provided to us by the Vigil family (Figure 2) and forms part of an 1896 warranty deed. The map, which does not scale accurately, shows a small house (13 1/2 ft by 16 ft) in the west portion of the present 411 Romero Street tract. We failed to make this house line up satisfactorily with any of the adobe walls in our trenches. However, the east portion of 411 Romero is labeled “House of T.L. Matta,” and notations at the north and south boundaries of the west lot refer to “the wall of Matta.” If we can place any credence in a not-to-scale sketch map, the east/west measurement of the Matta house was 50 ft, since it matches the Santiago Baca house (now known as the Antonio Vigil House) to the north, which we know to measure 50 ft east/west. This measurement would place the west wall of the Matta house squarely on the line of adobes in Units 15 and 16 in all three trenches. (The north, east, and south walls would have been beyond our tests.)
The adobe wall visible in Units 11 and 12 of Trenches A and C is difficult to see in Trench B, but is possibly represented by lumps of burned adobe. Even more difficult to trace is a continuation in Trenches A and B of the wall apparent in Units 7 and 8 in Trench C. Burned adobe lumps in Trench B and possible adobe melt in Trench A could represent the wall. If these definite and indefinite walls belong together, it would appear that another structure, 15 ft east/west by at least 40 ft long north/south existed on the lot, but the Trench A profile negates that and provides another mystery. The adobe wall in Units 11 and 12 clearly sat at the edge of the trash pit, since the pit slopes down to the west from this wall (Figure 4).

This means that the walls do not represent a single structure, thus leaving the west wall of the presumed Matta house to the east as the only other candidate for a matching wall. We think this is unlikely, but have no further suggestions.

It must be mentioned that yet another wall is visible only in Unit 6 of Trench C and has no counterparts in the other trenches.

The 1942 Sanborn map, updated to 1956 (Sanborn Map Company 1956), shows an adobe house (20 ft by 30 ft) in the west portion of the 411 Romero lot, but no structure in the east half (Figure 7). When this structure is plotted onto our map of the lot, it, like the little house of 1896, fails to line up with the adobes in the trenches. This structure was apparently part of the structure removed in late 2000/early 2001 and its footprint may have vanished when the lot was cleared.

We attempted another way to account for the adobe wall remnants by

Figure 7
Portion of 1942 Sanborn Fire Insurance Map, updated to 1956, showing lot at 411 Romero Street NW. Note that the east half of the lot is vacant, but the west half contains a small (20 ft by 30 ft) adobe structure. This was part of the house demolished in late 2000/early 2001.
consulting Mo Palmer, Photo Archivist at the Albuquerque Museum. She found a photograph of the Huning store but no indication of its location. She then found another photograph (#1978.050.099) of North Romero Street showing a building that had a similar façade beyond a two-story building labeled “U.S. Post Office.” This building could be at 411 Romero, since the 1942/1956 Sanborn map (Figure 7) shows the post office just south of 411 Romero. Since we still could not be certain it was the Huning store, we called Walter Haussamen (donor of the Cobb photographic collection) at the suggestion of Mo Palmer and Dick Ruddy. He was unable to find the location, but said (personal communication 2001) it could have been on James Street. (It should be stressed that the Huning name is absent from the chain of title for the property and it seems highly unlikely that Huning would have built on property he did not own.) We also called Jack Huning. He said (personal communication 2001) he thought that Franz Huning’s store was the present Basket Shop at 301 Romero NW. He thinks his own grandfather, Louis Huning, never had a shop in Old Town. (We should note that both Mo Palmer and Edgar Boles think the Basket Shop is an unlikely candidate for the Huning store, Boles noting that Franz Huning was old by the time the Basket Shop was built.)

To summarize, the benign surface of today’s 411 Romero Street NW hides a tumultuous past of constant building, flooding, rebuilding, and more flooding. The trash pit may have started out as an adobe borrow pit that was then left as a trash pit and, possibly, as a drainage pond. By the time the present Anthony Vigil (now retired) was a child, it had been filled with trash. Mr. Vigil remembers having to circumvent the trash pile on the way to school. As for structures, one would expect the first house to have been built around 1706 (Albuquerque’s founding) or even earlier, but the artifacts indicate the late 1700s as the earliest possible date. We know there was wheeling and dealing in real estate during the Civil War and a brief building boom in anticipation of the railroad’s arrival in 1880, but affixing dates to any of 411 Romero’s structures is impossible.

What is possible is a peek into the lifeway of the residents. House construction apparently consisted of making adobes on-site. Timber would have been brought from the mountains, presumably the Sandias. Gypsum plaster was also made on-site, the gypsum probably coming from Tijeras Canyon. Window glass could have come over the Santa Fe Trail. People used local Hispanic and imported Euro-American ceramics, with perhaps some Pueblo vessels. Bottles of wine, champagne, or brandy would have reached New Mexico over the Santa Fe Trail. At first glance, importing spirits to New Mexico is bewildering, an apparent carrying-coals-to-Newcastle. Dickey (1970:93-96) remarks, however, that even though “New Mexico’s grape brandy was famed the length of the Santa Fe Trail,” and even though New Mexico supported a thriving industry in production of wines, brandies, and whiskey, bottles were rare and were “prized by wealthy rancheros to hold table wine.” He remarks further, “Despite the excellent reputation of local vintages, French wines were imported for the military receptions in Santa Fe, champagne at fifty, and claret at thirty-six dollars the dozen, exorbitant prices a century ago.” As to diet, except for a startling amount of animal bone, there was no direct evidence of food, not surprising for a farming community. It would have been much more surprising to find the hordes of tins and jars of imported food common in mining camps. Many of the imported items could have arrived via the railroad after 1880, but most of the datable imports, and the local ceramics, seem to be a little earlier. The cast iron stove part probably did come by rail.

Cordelia Snow’s assessment of life in New Mexico as being “not all that destitute” is well borne out at 411 Romero. Whoever may have been building the multitudes of houses, it is clear that they were not hastily throwing up shacks and hovels, but could invest the time and expense to build substantial houses, had enough disposable wealth to
buy imported goods, apparently felt affluent enough to slaughter food animals frequently, and

found time to relax with friends over an occasional glass of wine, brandy, or champagne.

REFERENCES CITED

Adams, Lucie E.

Adams, Eleanor B., and Fray Angelico Chavez, editors and translators
1975 The Missions of New Mexico, 1776: A Description by Fray Francisco Atanasio Dominguez with Other Contemporary Documents. University of New Mexico Press, Albuquerque.

Anonymous
1895 An Illustrated History of New Mexico. The Lewis Publishing Company, Chicago.

Baxter, John O.


Bloom, Lansing B., editor

Carrillo, Charles M.

Condie, Carol J. and Cordelia T. Snow
2001 Results of Testing at LA 132631, the Vigil Site, 411 Romero Street NW, and Archival Research for the Vigil Properties, Old Town Albuquerque, Bernalillo County, New Mexico for the City of Albuquerque. Quivira Research Center Publications 428.

Dickey, Roland F.

Haecker, Charles

Harlow, Francis T.
1973 Matte-Paint Pottery of the Tewa, Keres and Zuni Pueblos. Museum of New Mexico, Santa Fe.

Ivey, James E.

Johnson, Byron A.

Kelley, Vincent C.

Northrop, Stuart A.

Pierce, Donna L. and Cordelia Thomas Snow

Sanborn Map Company

Scholes, France V.
Scurlock, Dan

Simmons, Marc

Snow, Cordelia Thomas

Snow, David H.

Thomas, Alfred Barnaby

Wilson, Rex L.
INTRODUCTION

Roc  


	
tock art in dark zone settings of underground caves, where observation is possible only with artificial light, occurs in many parts of North America. Rock art in such settings is well publicized for other parts of the world, but little synthesis has been done for this rather prolific occurrence throughout the New World (Greer and Greer 1995a, 1998).

Several sites with dark zone pictographs are known in New Mexico (Figure 1). Ethnographic accounts mention use of underground caves for seasonal ceremonies by Pueblo Indians in the central part of the state (Ellis and Hammack 1968). We have been told of continued ceremonial use of a small vertical cave in the western part of the state, just west of Zuni. Three other caves, in widely separated areas, were used during late Pueblo times, probably after A.D.1350, as shrine locations where ceremonies were conducted and ritual items were left. U-Bar Cave in the southwestern corner of the state contains a few figures in the main ceremonial chamber, with associated objects initially estimated to date about A.D.1300-1450 (Lambert and Ambler 1961; Harris 1985; Greer and Greer 1996a, 1999). Recent C14 dates of A.D.720-980 on perishable artifacts, however, may relate to this ritual activity (including arrow shrines and rock art), or they may pertain to earlier use. The subject of this report is Surratt Cave in the central part of the state (Caperton 1981:9-10; Schaafsma 1992:136; Greer and Greer 1995c, 1996b, 1997, 2000). Arrow Grotto of Feather Cave is nearby, to the east, and apparently the use of its nearly inaccessible back room was very similar to activities and art at Surratt (Ellis and Hammack 1968; Schaafsma 1992:77, 136; Greer and Greer 1997, 1998). Dark zone rock art in the Guadalupe Mountains of southeastern New Mexico, not far south from Surratt, seems mostly to be associated with water or water-related ritual. The best known example is Slaughter Canyon Cave, with paintings associated with a water source far from the tiny entrance (Bilbo and Bilbo 1993, 1996; M. Bilbo 1992). Ages for the Guadalupe dark zone paintings, at Slaughter Canyon and other caves, seem to date from about the last 5000 years, or from about Middle Archaic through late Pueblo periods (Bilbo and Bilbo 1991; Greer and Greer 1994, 1995b).

Figure 1
Location of rock art caves in New Mexico.
Surratt Cave (LA9045) is located in central New Mexico, and is situated in limestone and gypsum hills overlooking a wide grassy basin. The collapsed sink (Figure 2) cuts about 12-15 meters into the crest and side of a low hill and mostly is rimmed with vertical walls about 5-6 meters high. The bottom of the sink is filled with large breakdown blocks with some enclosed cavities below the rocks.

Two petroglyph panels on upper sandstone walls on the north side of the sink are distinctly different from the underground paintings. These figures are estimated to be about 500 years old and probably are not associated with the underground use of the cave. These open-air petroglyphs consist of human footprints, animal tracks, a human figure, a large mask, and geometric figures. The main figure appears to be a very large face with open circular eyes and may portray the Mesoamerican rain god Tlaloc (Schaafsma 1980:208, 1992:64). The face is also associated with the entrance area of other dark zone sites in New Mexico, and at this site the face overlooks and essentially dominates the entire sink area.

The cave entrance is in the center of the boulder breakdown area and is a small opening about a meter across. The entrance passage drops almost vertically about 5 meters, then turns slightly and descends through a narrow constriction or notch measuring about 20x40 cm. Throughout this area there are no petroglyphs, paintings, or other modifications to mark entrance into the underworld, as there are at other similar sites. Passage through a very small notch or restriction is typical of many dark zone ritual caves containing rock art, not only in North America but also in other parts of the world. It seems that some degree of difficulty of access and a physical constriction to separate the outer world from inner ritual areas were considered necessary natural components for this kind of site.

The cave descends through a series of small rooms and passages into a large breakdown room (Figure 3). Paintings begin at the lower edge of this room and continue down vertical walls in small alcoves, enclosed rooms, vertical cracks, and linear passages into the lowest accessible parts of the cave, to a depth of about 42 meters below the surface. Paintings occur in several fairly well defined areas of somewhat enclosed space, but with adequate area in front of the panels to enable viewing. Each of the areas with painted figures was numbered for this study. Other clean walls suitable for painting, and other ideal enclosed rooms and passages, were not utilized. It is assumed that each of these spaces was intended and used for specific ceremonial activity.
The two lowest rooms in the cave (Rooms 5 and 9) are completely enclosed, with very small entrances. These served a special function and included a greater variety of figures, unique figures, and many more paintings than any other area. The most noteworthy figure in each room is a large serpent (one is clearly a rattlesnake) about 3.5 meters long that runs diagonally from the top of the room to the bottom (Figures 4-5). The Room 5 snake (Figure 5, serpents, lower) emerges from an upper crack at the ceiling and descends into another crack at floor level (or off the lower edge of the rock face), as if descending from the upper world into the underworld. These wide, curved-zigzag lines could represent lightning rather than an actual snake and are produced by blowing on multiple layers of liquid black spatter paint.

Figure 4
Room 9, large serpent and hand print on the wall and other marks on the ceiling.

Figure 3
Plan of the main cave.

Figure 5
Sample of figures in lower parts of the cave system.
In some areas of restricted space containing painted figures, such as the two lowest rooms (Rooms 5 and 9) with intensive painting and in the exterior area of the petroglyphs, walls have been intensively battered. This battering undoubtedly is the result of using the walls as drums to produce a strong, penetrating resonance within a restricted area that would reverberate intensely and stimulate a kind of auditory trance. This kind of activity has been reported around the world for dark zone sites (Greer and Greer 1997).

PANELS

Within the cave there are nine main areas with paintings and indications of concentrated activity. In the following discussion these are designated “wall” when they are located in a larger room or passageway with other unpainted areas. An area is designated “room” if paintings cover the entire enclosed room. These are numbered from higher to lowest elevations in the cave. A sample of painted elements is presented in Figure 5.

Wall 1 (with “right” and “left” parts) is encountered at the lower edge of the large upper room and consists of two intersecting walls forming an open alcove. The walls are mostly covered with numerous torch marks, black charcoal crayon markings and figures, and various forms of thin spatter. Most conspicuous are numerous negative hand stencils, both right and left hand, and apparently mostly from older juvenile to adult males. One hand stencil and at least two other figures are specifically placed on a crack in the wall. One stencil appears to be an adult foot. Solid dots about 6 cm in diameter have been blown onto the wall as controlled spatter and occur in groups of three. This triangular motif (Figure 5, dots) is also present at Feather Cave and, along with other similarities, seems to indicate a strong relationship between the two caves. Dry charcoal crayon (or torch stick) figures include a miniature hooked prayer stick and a miniature bow (Figure 5, utensils), items commonly deposited in ritual caves.

There is at least one crude human mask, and some presently unidentifiable crayon figures may be parts of other masks or large human figures. Bird tracks include at least one roadrunner track (Figure 5, bird tracks), a motif that Pueblo Indians may also use on a house wall as a kind of blessing, as they would a handprint (Ellis and Hammack 1968:35-36). There is a small crayon sun symbol composed of two concentric circles and rays extending out in four directions (Figure 5, symbols), a fairly common motif both in central New Mexico and western Texas.

Wall 2, also at the lower side of the big room, is a small, enclosed alcove next to the cave wall. All markings are dry charcoal and include numerous charcoal torch marks. A crude mask in the southern Jornada style has a flattened head, rounded sides, and elongated chin (Figure 5, masks). Two small hooked prayer sticks (Figure 5, utensils) are objects that may have been used in cave rituals.

Wall 3 is a vertical face descending from the ceiling in a narrow passageway. The single figure is a row of 10 blown dots (Figure 6).

Figure 6
Wall 3, blown dots on ceiling ledge.
Wall 4 consists of a prominent vertical crack (a climb-down) and larger open passageways at the top and bottom. Figures consist of hand stencils, rows of blown dots, and humanoid masks (with a flattened head with rounded sides) made with dry charcoal crayon. Vertical eye pupil slits (Figure 5, masks) presumably are rattlesnake or feline features that pertain to a particular spiritual entity.

Room 5 is a very narrow, fully enclosed room with intensive painting on all surfaces of both walls, the ceiling, and surfaces of descending ledges. Most common are numerous spatter elements that include hand stencils and a club stencil (Figure 7). Solid spatter areas include circular, oval, and irregular shapes, well defined and intentionally applied, but without identifiable form or associated stencil object. Spatter in other areas is mostly fairly light and sparsely applied. As on several panels, some spatter appears almost randomly applied. A large serpent, or perhaps a lightning bolt, is done in blown liquid paint (like stencil) and runs from a ceiling crack down into the floor crack (Figure 5, serpents, lower). A large terrace figure of blown liquid paint, besides its similarity to the usual cloud terrace motif, is similar to the portrayal of pyramids and platforms throughout most of Mexico, the areas of strongest influence in Jornada style rock art (Figure 5, pyramids, left). Fingerlines, mostly in groups of three, are done in thick liquid paint, likely a mineral paint. Dry charcoal figures and torch-stick marks are common. Smears, finger-lines, and small figures also occur in a thick liquid orange paint, as well as dry crayon lines.

Room 6 is a small, fully enclosed room with high vertical walls and a narrow crack entrance. Markings include numerous torch marks and one dry crayon human mask with slit eyes.

Wall 7 is a long narrow passageway opening between the cave wall and the breakdown. Numerous painted elements include large blown dot patterns, hand stencils, and terraces. More recent markings include rain clouds, shield figures (Figure 8), animals, and a bird. Modern initials and symbols are also present.

Wall 8 is an enlargement of the distant end of the passage past Wall 7. A concentration of
Room 9 is a fully enclosed room entered by climbing down from Room 8 into another wide lower-level room, and then down through a small hole into Room 9 (Figure 9). This room is very similar to Room 5 and, likewise, contains a large snake, a positive handprint, and solid spatter areas of blown paint (Figures 6-7). Fingerlines in the characteristic very thick, black liquid paint again occur on the ceiling, but here they occur as a dense clustering of individual, curved and trailing lines in dynamic form. Torch marks and crayon figures are also present.

TECHNOLOGY
Aspects of technological detail generally change through time for any kind of materials, including rock art. Variation also occurs relative to kind of activities being conducted and the people conducting those activities. Some aspects of technology, including paint selection, production, and application methods, as well as manner of application, may be idiosyncratic and apply only to the impromptu or unconstrained actions of an individual painter, or a small group of people cooperating and sharing in the painting. Other applications, however, may be more controlled by the village or cultural group and therefore may be culturally, geographically, or temporally sensitive.

At Surratt kinds of paint include both liquid paint and solid dry pigment applied in various ways. Dry charcoal crayon includes use of torches, burned sticks, and possibly pieces of charcoal. Torch stoke marks, usually short and irregular, indicate an attempt to keep the torch burning. Burned sticks (and perhaps burning torches) were also used to produce small linear figures and medium to large masks. A dense liquid black paint, likely of mineral origin, was used mainly for fingerlines on the ceilings in Rooms 5 and 9. A thinner liquid paint, in most cases presumed to be of charcoal origin, but equally likely a thin liquid mineral paint, was used throughout the cave and was most commonly applied blown, in most instances as if through a bone or cane tube. Stencil paint is generally fairly thin and was used around hands, at least one foot, and a club or shaped stick. Alignments of small blown dots occur in several areas, as do solid spatter areas. Areas of thinner spatter are mostly more irregular in their shape and manner of application. Specific figures of blown paint include cloud or terrace figures and the two large serpents about 3.5 meters long. Orange paint, though rare, occurs as liquid fingerlines and as small lines of dry crayon.
CHRONOLOGY AND DATING

Use of the cave and production of painted figures appear to pertain to more than one period and likely were made and used over a period of time. The earliest figures appear to include most of those in the two lowermost ritual areas of Rooms 5 and 9. Figures include blown snakes, blown terraces, most of the stencil hands (and the club), probably all of the blown solid spatter (or “solid stencils”), short fingerlines and fingerline groupings of thick paint of presumably mineral origin, and the use of dark orange liquid paint and dry crayon. Other related figures of this period probably include all of the small blown dot alignments. Some torch marks and some figures drawn with burned sticks also appear to pertain to this period.

The relative age of use of outline masks in charcoal crayon is uncertain. The lack of interaction of masks in Room 5 with other figures, and their general separation from the most utilized areas of the wall, suggest they are not directly related, whether functionally, temporally, or both. They may be later additions, or unrelated or peripheral to the main activities occurring in this room. The same kind of “independence” also seems to pertain to hand stencils and dot alignments. Still, it appears that dry crayon masks may have begun slightly after initial cave use.

Comparison of Surratt masks and other motifs with other sites suggests that initial painting here probably began around A.D. 1200–1400, with mask use probably dating after A.D. 1300 (Schaafsma 1992:125; Cole 1984 Young 1989; Ellis and Hammack 1968:42). These estimates agree with those for Feather and U-Bar caves.

The latest Indian use of the cave is perhaps modern Pueblo. Drawings consist of dry crayon figures of animals, some other crude figures, and miscellaneous lines. Dimmer, lighter gray fingerline figures may have been drawn with a carbide lamp and include rain clouds, a shield warrior, a concentric-circle shield, and other elements. Dark blue crayon lines are presently of unknown age and could pertain to this period. Modern names, initials, and other graffiti are also present.

MOTIFS

Motifs are figures or elements that recur, both within a site and between sites. This multiple recurrence indicates that the element was a culturally recognized form with an accepted, understood referent or meaning. Such elements are useful for intersite comparison. Several motifs occur in various parts of the cave (Figure 5), and some of the same elements also occur in Feather Cave and other sites. For instance, bird tracks are common, and groups of three fingerlines occur mostly in the lowest part of the cave.

Most numerous are negative hand stencils outlined with blown-on black or grayish paint. None at Surratt is done in white paint, like those at Abo, Feather Cave, or a rockshelter beside Feather Cave. Only one handprint at Surratt has a modified interior, such as one in Feather Cave.

There are several alignments or groups of blown solid dots. These occur in various numbers, kinds of alignments, and configurations. Each dot, however, was produced with consistent technology and form, and the multiple dot patterns obviously had a recognized meaning or function.

Several masks, all done in black crayon, have features typical of Jornada style and late Pueblo masks. General characteristics include an elongated face with curved sides, a somewhat pointed chin, and a flattened top. Eyes are drawn near the top of the head, and vertical slit eyes presumably were intended to portray feline or poisonous snake (or both) features. Portrayal of a human with an arrow sticking in its neck (Figure 5, masks), either horizontally or at an angle, is fairly common in New Mexico and western Texas. Large open eyes, like the main petroglyph in the sink, are typical of the Tlaloc Rain God.
SUMMARY

Surratt Cave and Feather Cave both appear to have been used by local Pueblo Indian groups beginning sometime around A.D. 1350-1450. At Surratt there was continued use probably into the 1500s, and with the latest figures obviously fairly recent. Images are related to local Pueblo art with strong influence from the southern Jornada style typical of southern New Mexico and northern Chihuahua. Dark zone use at both sites, with associated paintings and drawings, appears to be the same. Ellis suggests that rituals at Feather Cave were associated with winter or summer solstice, especially as activities relate to renewed fertility of crops, requests for rain to support those crops, and Pueblo life in general (Ellis and Hammack 1968). Pictographs at Surratt, by comparison, likely were associated with yearly or semi-yearly ceremonial activity relating to renewal and formal requests for rain to help sustain agricultural crops. Variation in the paintings, however, indicate changes through time in ceremonies conducted here. With its abundance of painted figures and different periods, Surratt Cave is one of the best examples of underground rock art recorded in the Southwest.

ACKNOWLEDGMENTS

Special thanks are extended to Don Surratt (deceased), Rick Surratt, and George Cook for access to the site and permission to continue our work. This paper was invited by editor Regge Wiseman to honor the influence of Teddy and Francis Stickney. Francis was a major force (at least on John) since at least 1962 (Mavis did not begin to work with him until the late 1970s). Francis was helpful in archaeological matters, research materials, sites, and contacts, and his stress on good work, details, honesty, and integrity was basic to his life. Of equal importance was his stress on ethnographic fieldwork, of which few people seem to be aware. During John’s early work on ring middens, Francis made available his details on modern sotol gathering and processing in Coahuila, with production resulting in ring middens indistinguishable from those around Carlsbad. His detailed notes and fantastic photos were welcome additions to the research. And throughout later decades of contact, he continued to stimulate our work in western Texas, southeastern New Mexico, and rock art in general. His life in the oil-and-gas business undoubtedly influenced our professional directions, and our lives. It is indeed an honor to participate in a volume dedicated to his work, with an article on an area that he loved and a subject important to him until the end.
REFERENCES CITED

Bilbo, Michael

Bilbo, Michael and Barbara Bilbo


Caperton, Thomas J.

Cole, Sally J.

Ellis, Florence Hawley, and Laurens Hammack

Greer, John and Mavis Greer


1995c Preliminary Observations on Dark Zone Pictographs at Surratt Cave (LA 9045), Lincoln County, New Mexico. Bound report on file with the Archeological Records Management Section (ARMS), New Mexico Historic Preservation Division, Museum of New Mexico, Santa Fe.

1996a Rock Art Inspection of U-Bar Cave (LA5689), Hidalgo County, New Mexico. Bound report on file with the Archeological Records Management Section (ARMS), New Mexico Historic Preservation Division, Museum of New Mexico, Santa Fe.

1996b Dark Zone Rock Art in Surratt Cave, A Ceremonial Site in Central New Mexico. Bound report on file with the Archeological Records Management Section (ARMS), New Mexico Historic Preservation Division, Museum of New Mexico, Santa Fe.


2000 A Brief Visit to Surratt Cave, A Dark Zone Rock Art Site in Lincoln County, New Mexico, December 1998. Bound report on file with the Archeological Records Management Section (ARMS), New Mexico Historic Preservation Division, Museum of New Mexico, Santa Fe.
Harris, Arthur H.

Lambert, Marjorie F. and J. Richard Ambler

Schaafsma, Polly
1980 *Indian Rock Art of the Southwest*. School of American Research and University of New Mexico Press, Santa Fe and Albuquerque.

Young, M. Jane

Mesa Tierra (LA 17220; Figures 1 and 2) is described as a Mesa Verdean site with approximately 30 rooms and four kivas located on an isolated mesa west of Chaco Culture National Historical Park (Marshall et al. 1979:77-80). Roney (1995, 1996) considers it one of a few large isolated sites from this period; most other Mesa Verdean sites in the San Juan Basin appear in widely separated small clusters or as reoccupation of earlier Puebloan sites. Marshall et al. (1979:77) indicate that nine rooms and three kivas at Mesa Tierra were excavated sometime prior to 1950. Because so little is known about single component large sites of this period, any information gained through excavations leads to a better understanding of this late puebloan occupation in the San Juan Basin.

In what follows I suggest that the excavators of seven rooms and two kivas in the western section and one kiva with a large antechamber in the eastern section of Mesa Tierra were Alfred M. Tozzer and William C. Farabee, members of the Hyde Exploring Expedition who worked in this area in 1901 and called the site "Wetherill Mesa Pueblo." Most archaeologists recognize the Hyde Exploring Expedition as the sponsor of work carried out at Pueblo Bonito in Chaco Canyon.
the trading post established nearby by Richard Wetherill (McNitt 1991; Pepper 1920). Snead (1999, 2001) places these archaeological investigations within a framework of shifting professional goals and financial support for scholarly research at the end of the nineteenth century. Mathien (2001) suggests that Frederic Putnam, director of the project, curator at the American Museum of Natural History, and professor at Harvard University and director of its Peabody Museum of Ethnology and Archaeology, may have used his influence with Talbott and Fred Hyde to explore several anthropological questions at this time. Unpublished notes taken by Tozzer and Farabee in 1901 (presented as an independent study project by Anthony Andrews [1970]) confirm the association of these two investigators with Putnam and B. J. B. Hyde. Information gathered by these two investigators is compared with material presented by Marshall et al. (1979) to identify the "Wetherill Mesa Pueblo" as Mesa Tierra and to elaborate on the work carried out at this site.

SITE LOCATION AND DESCRIPTION

Andrews (1970) indicates that Tozzer and Farabee described the large site on "Wetherill Mesa" (so named because only Wetherill had climbed the difficult access) as being 350 yards north of their 1901 campsite that was eight miles west of Pueblo Bonito (Figure 3). The irregular 90 x 160 ft. mesa was high and steep; access was difficult. (Photographs N2358, N2360, and N2361 taken by Tozzer1 illustrate this mesa and access.)

The walls are perpendicular or overhanging except at the northern end where the ancient inhabitants had cut away the rock and made steps in the face of the rock. These had been so weathered away that it was necessary for us to fasten a rope on top by which we could go up and down to our work having first cut new steps or toe-holds in the rock (Farabee 1901b:12).
Marshall et al. (1979:12a) locate Mesa Tierra in the same area; they describe the site as occupying two-thirds of an isolated mesa with vertical cliff sides approximately 30 m in height. Two areas of access (both necessitating a 5 m vertical climb) were noted, one from a saddle on the west, the other a low section of the cliff on the northeast end (Marshall et al. 1979:77).

The map of the site drawn by Farabee does not indicate all the rooms on top of the mesa; it shows only those excavated (Figure 4). Although Farabee estimates the site to contain approximately 40 rooms, only the walls of 25 could be traced. He indicates that erosion had taken place in several areas. At the southern end of the mesa, for example, the outside walls of rooms had fallen. South of Room 7 an area or niche that averaged 5 ft. (1.5 m) had fallen 10 ft. (3 m). A similar large "vacancy" existed in one other place. The map provided by Marshall et al. (1979:78) shows a rectangular pueblo with an internal plaza on the western side of the mesa. Nine rooms along the northern edge are well defined. The one in the northwest corner is larger than the others, as is the one located five rooms further east. There are two kivas (Kiva 3 and Kiva 2) located south of these rooms. On the eastern side of the mesa Marshall et al. (1979:78) indicate the presence of Kiva 1, with a trapezoidal-shaped long room extending further east toward the edge of the mesa. This configuration resembles the map of the rooms excavated by Tozzer and Farabee (Figure 4). The rectangular quality of the western room block as presented by Marshall et al. (1979:78) represents a stylized interpretation of the site because the curvature of the rooms along the north wall of the western section is visible in an aerial photograph (Figure 1), as well as in the one depicted in Marshall et al. (1979:77). Marshall et al. (1979) note that most of the excavated rooms at Mesa
Tierra were on the mesa edge and the fill was dumped over the side. Backdirt did not indicate either sifting or screening, a procedure that would not have been a practice in 1901.

Given the similarity in location, the presence of a Mesa Verde site on an isolated mesa top, and the similarities in configuration of the rooms excavated by Tozzer and Farabee to those located on the map by Marshall et al. (1979:Figure 78), I consider “Wetherill Mesa Pueblo” to be the same as Mesa Tierra.

SITE EXCAVATION

Between September 3 and 7, 1901, excavations at this site concentrated on two small complexes with ceremonial kivas. Farabee’s 1901 field notes provide a room-by-room description of the excavations and a list of the artifacts recovered (Farabee 1901a). His descriptions covered a “West Group” and an “East Group”

The West Group

The West Group included six rooms arranged in a 60 ft. (ca. 18.3 m) long semicircle; these six rooms were considered the best preserved. A kiva fronts these rooms on the south and another circular room is located 6 ft. (1.8 m) further south. For the entire set of rooms and kivas, the walls were badly eroded, but Farabee estimates they had once stood about 6 ft. (1.8 m) high. Table 1 provides measurements for each of the excavated rooms.

(Because the room measurements listed by Table 1)

<table>
<thead>
<tr>
<th>Room No.</th>
<th>North Wall</th>
<th>East Wall</th>
<th>South Wall</th>
<th>West Wall</th>
<th>Average Wall Height</th>
<th>Debris</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6' 8&quot;</td>
<td>8' 6&quot;</td>
<td>8&quot;</td>
<td>18' along mesa</td>
<td>3' 2&quot;</td>
<td>8&quot; dust, 2' 4&quot; debris</td>
</tr>
<tr>
<td></td>
<td>2.0 m</td>
<td>2.6 m</td>
<td>2.4 m</td>
<td>5.5 m</td>
<td>0.97 m</td>
<td>0.3 m, 0.7 m</td>
</tr>
<tr>
<td>2</td>
<td>6' 6&quot;</td>
<td>8' 10&quot;</td>
<td>6' 8&quot;</td>
<td>12&quot;</td>
<td>2' 6&quot;</td>
<td>2'</td>
</tr>
<tr>
<td></td>
<td>1.9 m</td>
<td>2.7 m</td>
<td>2.0 m</td>
<td>3.65 m</td>
<td>0.76 m</td>
<td>0.6 m</td>
</tr>
<tr>
<td>3</td>
<td>6' 9&quot;</td>
<td>10' 2&quot;</td>
<td>6' 4&quot;</td>
<td>10' 2&quot;</td>
<td>2' 6&quot;</td>
<td>2' 5&quot;</td>
</tr>
<tr>
<td></td>
<td>2.05 m</td>
<td>3.1 m</td>
<td>1.93 m</td>
<td>3.1 m</td>
<td>0.76 m</td>
<td>0.7 m</td>
</tr>
<tr>
<td>4</td>
<td>7&quot;</td>
<td>9' 4&quot;</td>
<td>6' 6&quot;</td>
<td>10' 4&quot;</td>
<td>2'</td>
<td>1' 10&quot;</td>
</tr>
<tr>
<td></td>
<td>2.1 m</td>
<td>2.84 m</td>
<td>1.9 m</td>
<td>3.15 m</td>
<td>0.6 m</td>
<td>0.55 m</td>
</tr>
<tr>
<td>5</td>
<td>6' 6&quot;</td>
<td>7&quot;</td>
<td>6' 9&quot;</td>
<td>8' 10&quot;</td>
<td>1' 11&quot;</td>
<td>1' 10&quot;</td>
</tr>
<tr>
<td></td>
<td>1.9 m</td>
<td>2.1 m</td>
<td>2.05 m</td>
<td>2.68 m</td>
<td>0.58 m</td>
<td>0.55 m</td>
</tr>
<tr>
<td>6</td>
<td>12' 9&quot;</td>
<td>9' 7&quot;</td>
<td>12' 4&quot;</td>
<td>10' 7&quot;</td>
<td>1' 10&quot;</td>
<td>2' 2&quot;</td>
</tr>
<tr>
<td></td>
<td>3.88 m</td>
<td>2.95</td>
<td>3.76 m</td>
<td>3.25 m</td>
<td>0.55 m</td>
<td>0.66 m</td>
</tr>
<tr>
<td>7</td>
<td>15' 10&quot;</td>
<td>10&quot;</td>
<td>15' 10&quot;</td>
<td>6' 4&quot;</td>
<td>1' 3&quot;</td>
<td>0.38 m</td>
</tr>
<tr>
<td></td>
<td>4.8 m</td>
<td>3.0 m</td>
<td>4.8 m</td>
<td>1.93 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 (Kiva 1)</td>
<td>13' 2&quot; E-W</td>
<td>12' 6&quot; N-S</td>
<td>12' 6&quot; N-S</td>
<td>2' 8&quot;</td>
<td>0.84 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4.0 m</td>
<td>3.8 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 (Kiva 3)</td>
<td>12' 3&quot; E-W</td>
<td>10' 10&quot; N-S</td>
<td>10' 10&quot; N-S</td>
<td>3' 4&quot;</td>
<td>1 m</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3.7 m</td>
<td>3.3 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 (Kiva 2)</td>
<td>12' 6&quot; diam.</td>
<td>10' 10&quot; N-S</td>
<td>10' 10&quot; N-S</td>
<td>2' 6&quot;</td>
<td>0.76 m</td>
<td></td>
</tr>
</tbody>
</table>

(Kiva 3) 3' 4" 1 m 0.76 m
Marshall et al. [1979:78] are not assigned to a specific provenience, a comparison of room measurements is not possible. Overall, however, there are similarities. There is no mention of the type of wall construction; existing photographs (Tozzer photographs N2352 [reprinted in Mathien 2001:Figure 5] and N2359 indicate the use of irregularly shaped rocks). There is no indication of doorways. None of the roof timbers remains.

**Room 1** includes a fireplace on the west side. It had been built on an uneven spot in the room floor that contained ashes and charcoal. Ten uncharred corncobs (Peabody Museum Catalog No. 01-32-10/57091) were recovered in the ashes behind this fireplace. Farabee considers this an area of domestic use.

**Rooms 2 through 5** were measured, and the heights of the remaining walls were recorded (Table 1). Farabee indicates that other than debris above the floors, nothing else was found in these rooms.

**Room 6** is thought to represent a living area. In addition to ashes and charcoal, two fine-grained sandstone arrow straighteners (Peabody Museum Catalog Nos. 01-32-10/57092 and 01-32-10/57093) were found in the northeast corner. A narrow groove on the edge of one straightener does not entirely cross the stone; it was suggested the stone was used to sharpen other implements.

**Room 9** (Andrews 1970:Figures 44 and 45; Kiva 3 in Marshall et al. 1979:78) is a slightly oval shaped kiva. The floor had been carved into the bedrock and the uneven rock floor had been smoothened in some places. As observed in an open space in the wall under a platform, this represents a foot or more of rock removal. The floor is smooth and polished; it was covered with charcoal and ashes.

Existing walls average 3 ft. 4 in. (1 m) with fragments of adobe plaster at several different locations. Blank spaces in a wall on top of the platform (see below) and in the wall at the side of the passage has stones set on edge.

The platform is located on the southeast side; it is 1 ft. 10 in. (0.57 m) high, 5 ft. 9 in. (1.75 m) from east to west, and 4 ft. 6 in. (1.56 m) from north to south. West of this platform at floor level is a 1 ft. 8 in. (0.5 m) passageway that had the platform on one side and a 5 ft. (1.5 m) high wall on the other side. This passageway leads to a sealed hole under the wall that was 1 ft. 10 in. (0.6 m) high. 1 ft. 8 in. (0.5 m) wide, and 2 ft. 3 in. (0.7 m) long. A small platform or altar built of small stones is located 1 ft. 8 in. (0.5 m) from the entrance to the passageway. Half of this altar is directly in front of the passage; the rest extends eastward. It measures 2 ft. (0.6 m) long, 1 ft. 6 in. (0.45 m) wide, and is 9 in. (0.3 m) thick. Partly solid rock and partly masonry, the inside of the platform was filled with rubbish and covered by an adobe top containing small rounded stones. The walls of the platform are "smoked" and ashes were scattered over it. Andrews compared a passageway in the floor leading to a hole in the wall with the description of one of Judd’s (1964:54, 189) subfloor ventilator shafts.

Marshall et al. (1979:78-79) describe Kiva 3 as an excavated square, keyhole type kiva, with an antechamber located on the southeast. The main chamber is 3.2 m E-W by 4.0 m N-S. The antechamber is 2.3 by 2.0 m in size. The two units are separated by a vertical slab-block wall.

Artifacts recovered in this room include an axe (Farabee Catalog No. 10 – Peabody Museum Catalog No. 01-32-10/57101, Andrews 1970: Figure 51) found on the floor of the passageway; its groove is wide and polished. The pole is worn and the bit is chipped and worn. In the hole under the wall a piece of cord (Peabody Museum Catalog No. 01-32-10/57113) and a reed knob (Peabody Museum Catalog No. 01-32-10/57112) were discovered. The square reed knob is double loop (Andrews 1970:Figure 52). It was made by twisting two cords of vegetable fiber about 1/8 in. (0.6 cm) in diameter.

**Room 10** (located 6 ft. [1.8 m] south of Room 9; Kiva 2 in Marshall et al. [1979:78]) is round.
Remaining wall height is 2 ft. 6 in. (0.76 m). The floor had been covered with 2-to-3 in. (5 to 7 cm) of charcoal (Peabody Museum Catalog No. 01-32-10/57109 is a sample), and in some areas there were ashes on top of the charcoal. A fireplace is located about 2 ft. (0.6 m) south of center of the room. It is 1 ft. 8 in. (0.53 m) in diameter, 1 ft. (0.3 m) deep, and was filled with charcoal and ashes. South of the fireplace is a wall (3 ft. [0.9 m] long, 1 ft. [0.3 m] wide, and 8 in. [0.2 m] high) that runs east to west.

Artifacts recovered from Room 10 include axes, paint balls, a paint mortar, and a piece of slate with scratches. A metate was surrounded by stone slabs set on edge in adobe mortar. The grooved axe (Farabee Catalog No. 11, Peabody Museum Catalog No. 01-32-10/57108; Andrews 1970: Figure 53) has a worn pole, broken bit, and is nearly worn to the groove on one face. Polish marks it as unique from all the other axes found. The sandstone mortar (Peabody Museum Catalog No. 01-32-10/57105; Andrews 1970: Figure 54) is 6.5 by 5.5 in. (16.5 by 13.9 cm) and 3.75 in. (9.5 cm) high. The mortar hole is 4.5 in. (11.4 cm) in diameter and 2 in. (5 cm) deep. A perfectly made slate piece (Peabody Museum Catalog No. 01-32-10/57104) was found south of the wall near the fireplace; it measures 12.25 by 6.75 by 5/6 in. (31 by 17 x 2 cm). The corners are round; edges and surface are polished. The surface is covered with fine straight line scratches. In this room was a double paint mortar 12.5 in. (31.7 cm) long, 5 in. (12.7 cm) wide, and 1 1/8 in. (2.8 cm) thick, and 1/8 in. (0.64 cm) deep (Peabody Museum Catalog No. 01-32-10/57106, Andrews 1970: Figure 55). A second mortar (2 1/4 in. [5.7 cm] diameter and 1/4 in [0.64 cm] deep) and a third mortar (1 ft. 3/4 in. [32 cm] in diameter and 3/8 in. [0.5 cm] deep) were recovered; the latter was covered with red paint. Two small pieces of red ochre (Peabody Museum Catalog No. 01-32-10/57107) were found near that second mortar.

The East Group

The East Group includes two excavated rooms. Room 8 is the circular kiva (Kiva 1 in Marshall et al. [1979:78]; Room 7 is assigned the long trapezoidal extension. Andrews (1970) likens this construction to Kiva 59 at Pueblo Bonito (Judd 1964:189).

Room 7 forms a large keyhole shape for the attached kiva (Room 8) on the west. It was constructed so that the floor is at ground level rather than sunken into the bedrock to match the kiva floor. Little remains of the walls, and there is no evidence of a doorway or wall between Room 7 and Room 8 (Tozzer photograph No. N2352).

In the northwest corner (1 ft. 8 in. [0.5 m] from the north wall and 4 ft. 4 in. [1.3 m] from the east wall), Farabee recovered a metate with its end facing north; it was surrounded by four stone slabs set on edge in adobe mortar (Tozzer photograph No. N2352). The head of the metate was 8 in. (20.6 cm) higher than its base. It measures 18 by 12 in. (45.7 by 30.5 cm); it is 2.5 in. (6.3 cm) thick at the head and 1 in. (2.54 cm) thick at the center. It shows considerable use. Two of the slabs that surrounded it are worn metates. The upright metate was accompanied by a convex mano. On the floor near the south wall was a grooved diorite axe (Peabody Museum Catalog No. 01-32-10/57097). Its cutting edge is badly chipped from use. One face is ground; the other is rough. Dimensions are 3.5 in. (8.8 cm) long, 2.5 in. (6.3 cm) wide at the bit and 2 in. (5 cm) wide at the pole, with thickness being 1.25 in. (3.2 cm).

Room 8 is a circular structure that had been cut 2 ft. 4 in. (0.7 m) into the bedrock; the floor of the kiva is 2 ft. 10 in. (0.88 m) below the floor of Room 7. A rock wall was constructed to a height of 2 ft. 8 in. (0.84 m); estimated wall height is 6 ft. (1.8 m) above ground. Slightly south of the center of the kiva are two arms of a wall set at a right angle, each 3 ft. (0.9 m) long, that form a flank on two sides of the fireplace. This wall is 10 in. (25.4 cm) wide and 12 in. (30.5 cm) thick. The fire-
place contained ashes and charcoal. At the northern edge of the fireplace is a square pit (1 ft. 5 in. [0.45 m]) with imperfect corners that had been excavated an additional 1 ft. 3 in. (0.38 m) further into the bedrock. It had been filled with charcoal which covered the remains of a human skull (Peabody Museum Catalog No. 01-32-10/57100) and a few other human bones (cervical vertebrae and rib fragments—Tozzer photographs N2536 to N2538); the rest of the skeletal material was missing.

In addition to the work in these rooms, some "general digging" was conducted, but there is no information as to where these excavations took place. The artifacts recovered are included in the next section.

**THE ARTIFACTS**

Artifacts taken back to the Peabody Museum include materials from five other sites in the area that had been excavated by Tozzer and Farabee in 1901 (Andrews 1970; Mathien 2001). Andrews (1970) indicates which items belonged with the Wetherill Mesa Pueblo (Table 2).

Based on his analysis of the ceramic material, Andrews (1970:17) concludes that the Wetherill Mesa Pueblo (Mesa Tierra) was the latest of the six excavated sites; it differs from the other sites in this area by the presence of Mesa Verde sherds, as well as the placement of an unusual skull in the hearth in the kiva (Room 8). Other than the few imported sherds, which included Pinedale Polychrome and St. Johns Polychrome and thought to be indicative of trade, Andrews does not see any reason to place this site's use during the Pueblo IV period. Because all other earlier sherd types usually found in the six excavations, except for two Basketmaker III sherds, were not found among the collection from Wetherill Mesa Pueblo, Andrews considers this a late site. Ceramics from a 2 x 2 m sample area northeast of the house mound at Mesa Tierra reported by Marshall et al. (1979:79) all date to the middle-to-late Pueblo III period or from about A.D. 1200 to 1325. Types include corrugated-indented, Mesa Verde Black-on-white (most common), Wingate Polychrome, St. Johns Polychrome, and a Kwakina style polychrome. This sample resembles Andrews' (1970) description of the pottery collected at Wetherill Mesa Pueblo.

**HUMAN REMAINS**

As a physical anthropologist, Farabee was most interested in comparing the data he collected during 1901 with that from other southwestern sites. Although only one skull was available from Wetherill Mesa Pueblo, it is unlike the others recovered in the four small mounds located to the south of the site which date earlier or from those of Cibolan and Salado populations on which he had measurements. He describes this skull (Peabody Museum Catalog No. 01-32-10/57100) as a male in middle life. Skull capacity was measured by filling it with shot while covering the hole with a pad; the 1280 cc volume is considered low when compared with 1313 cc for Saladoans. Table 3 provides other comparative information obtained. The presence of Inca bones is not unusual in the Chacoan population, but this skull has many small Wormian bones and the sutures are very irregular. A supernumerary bone at pterion extends 18 mm along the coronal suture and 9 mm along the squamous suture. In this aspect the skull resembles Farabee's Saladoan sample. Recent re-examination of this skull by Peabody Museum staff identifies it as a female estimated to be between 24 and 30 years of age. The individual is different from other Chacoan individuals, but the size of the sample is not indicated.
Table 2
List of material recovered from Wetherill Mesa Pueblo (Mesa Tierra).

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Object description</th>
<th>Room No.</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>01-32-10/57091</td>
<td>Corn cobs</td>
<td>Room 7</td>
<td>10 recovered in ashes behind fireplace, <em>Zea mays</em></td>
</tr>
<tr>
<td>01-32-10/57092</td>
<td>Arrow straightener 1</td>
<td>Room 6</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57093</td>
<td>Arrow straightener 2</td>
<td>Room 6</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57094</td>
<td>Bone awl (mammal radius)</td>
<td>Room 7</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57095</td>
<td>Bone awl (mammal ulna)</td>
<td>Room 7</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57096</td>
<td>Bone scraper</td>
<td>Room 7</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57097</td>
<td>Stone axe (no. 9)</td>
<td>Room 7</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57098</td>
<td>Metate, large</td>
<td>Room 7</td>
<td>Surrounded by four stones on edge. Head of metate 8 in. higher than foot. “Rubber” with it.</td>
</tr>
<tr>
<td>01-32-10/57099</td>
<td>Metate</td>
<td>Room 7</td>
<td>Found with above. “Rubber”</td>
</tr>
<tr>
<td>01-32-10/57100</td>
<td>Skull (no. 9)</td>
<td>Room 8</td>
<td>Found with jaw (Photos N2536, N2537, N2538) and two vertebrae, fragments of ribs, all in firehole</td>
</tr>
<tr>
<td>01-32-10/57101</td>
<td>Grooved axe (no. 10)</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57102</td>
<td>Bone awl (dog tibia)</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57103</td>
<td>Bone awl (deer metacarpal or metatarsal)</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57104</td>
<td>Slate, rectangular</td>
<td>Room 10</td>
<td>12 in. long, 6 3/4 in. wide, and 1/4 in. thick</td>
</tr>
<tr>
<td>01-32-10/57105</td>
<td>Mortar</td>
<td>Room 10</td>
<td>Painted balls (57107) associated with it.</td>
</tr>
<tr>
<td>01-32-10/57106</td>
<td>Mortar, double paint</td>
<td>Room 10</td>
<td>Two crimson colored, with double paint mortar (57106)</td>
</tr>
<tr>
<td>01-32-10/57107</td>
<td>Balls, painted</td>
<td>Room 10</td>
<td>Oval, full-grooved</td>
</tr>
<tr>
<td>01-32-10/57108</td>
<td>Axe, grooved (no. 11)</td>
<td>Room 10</td>
<td>Elsewhere listed as 1 mano, convex</td>
</tr>
<tr>
<td>01-32-10/57109</td>
<td>Charcoal</td>
<td>Room 6</td>
<td><em>Zea mays</em></td>
</tr>
<tr>
<td>01-32-10/57110</td>
<td>Metate, rubber</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57111</td>
<td>Corn, charred</td>
<td>Room 9</td>
<td>Small rope</td>
</tr>
<tr>
<td>01-32-10/57112</td>
<td>Reed knob</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57113</td>
<td>Rope</td>
<td>Room 9</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57114</td>
<td>Hammers, stone (5 total)</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57115</td>
<td>Bone awls (split bone, 4 total)</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57116</td>
<td>Bone implements (deer metacarpal or metatarsals)</td>
<td>General digging</td>
<td>Dog, rabbit, bobcat, and others</td>
</tr>
<tr>
<td>01-32-10/57117</td>
<td>Pipe stem, broken (terracotta)</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57118</td>
<td>Animal bones</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57119</td>
<td>Wood fragments (3 total, possibly cedar)</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57120</td>
<td>Pottery fragments</td>
<td>General digging</td>
<td></td>
</tr>
<tr>
<td>01-32-10/57160</td>
<td>Pottery fragments</td>
<td>General digging</td>
<td>Collected by Putnam (August 1901)</td>
</tr>
<tr>
<td>01-32-10/57161</td>
<td>Pottery disc</td>
<td>General digging</td>
<td>Collected by Putnam (August 1901)</td>
</tr>
</tbody>
</table>
Table 3
Data from Farabee regarding Mesa Tierra skull comparisons.

<table>
<thead>
<tr>
<th>Field</th>
<th>Specimen #</th>
<th>Type</th>
<th>Trench-Unit</th>
<th>Centimeters below datum string level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td></td>
<td>Hispanic Redware (rim)</td>
<td>C-20</td>
<td>126</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Hispanic Redware (body)</td>
<td>C-20</td>
<td>126</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Hispanic Redware</td>
<td>C-20</td>
<td>103</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Hispanic Grayware</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Tan slip (body)</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Hispanic Redware</td>
<td>C-21</td>
<td>N/A</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Hispanic Blackware</td>
<td>B-4</td>
<td>56</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Hispanic Grayware</td>
<td>B-7</td>
<td>153</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Hispanic Redware</td>
<td>B-7</td>
<td>140</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Hispanic Grayware</td>
<td>B-17</td>
<td>63</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Hispanic Blackware</td>
<td>B-20</td>
<td>110</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Hispanic Blackware</td>
<td>A-5</td>
<td>100</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Hispanic Grayware (4 sherds)</td>
<td>A-14</td>
<td>60</td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Hispanic Grayware</td>
<td>A-14</td>
<td>60</td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>Hispanic Redware</td>
<td>A-22</td>
<td>115</td>
</tr>
</tbody>
</table>

Total sherds: 18

COMMENTS
The late Puebloan occupation of the San Juan Basin provides a link between people who participated in the earlier Chacoan system with those of the protohistoric and historic periods whose 21st Century descendants are showing active interest in the archaeological remains of their ancestors. As McKenna (1991) and Roney (1996) indicate, much of the A.D. 1200s use of the eastern San Juan Basin suggests ties with the Mesa Verde core area and migration through the Basin toward the Rio Grande. The populations are usually considered small, a point that McKenna (1991:133) thinks may be erroneous if the known sites represent a short period of occupation rather than decreased use of the area. The lack of pottery types other than Mesa Verde Black-on-white at Mesa Tierra does not suggest a long-term occupation at this site.

Although I thoroughly agree with Roney (1996:156) that there has been much too little survey in the area around Mesa Tierra to determine whether or not an associated community existed, we have a few hints about sites existing in this area. Marshall et al. (1979:79-80) identify eight features located below the mesa; however, not all are necessarily contemporary or even of the same culture. Until additional survey is completed, we will not know the extent of the Mesa Verdean occupation in this area.

Relationships between Mesa Tierra and other Mesa Verdean sites in Chaco Canyon and on Chacra Mesa are not well understood (McKenna 1991:132-133; Roney 1995). Roney (1996:156) considers the pueblo on Mesa Tierra to be similar to other large sites dating to Pueblo III (circa A.D. 1200 to 1275, and abandoned by 1300 or 1325) in that they are situated in defensive locations. Like Kin Nazhin, Mesa Tierra is perched on top of a sheer-sided mesa. Its protected location and difficult access suggest a defensive posture. The only burial from this site is probably a secondary internment. Its intentional placement in the bottom of the firepit and covering with ashes mark it as unusual. No evidence of violence is reported.

McKenna (1991) proposes that Mesa Verde ceramics are a continuation of a long Anasazi black-on-white tradition. If so, possibly other evidence from Mesa Tierra could support this continuity. The presence of the bin-housed metate in
Room 7 indicates dependence on corn agriculture. McKenna (1991:136) suggests the use of bin-housed slab metates may suggest a change in the type of corn being processed in Chaco Canyon. If McKenna’s suggestion that flour corn is related to the bin-housed slab metates, then an examination of the corn cobs recovered from Room 7 behind the fireplace (Peabody Museum Catalog No. 01-32-10/57091) may shed light on this question.

Although this report is only summarial, identifying the Wetherill Mesa Pueblo as Mesa Tierra provides some data from the Mesa Verde phase of the area around Chaco Canyon. The unusually large keyhole (Room 7) for Kiva 1 (Room 8) and the burial in the kiva fireplace suggest that additional study may be warranted, as would studies of corn cobs to determine whether the type of corn being processed in the site is different from that recovered from earlier sites in the area. Although the data were recovered a century ago, they could prove useful in understanding this lesser known period.

ENDNOTES

1 The following is a list of photographs of Mesa Tierra and the artifacts recovered. Eleven photographs were taken by Tozzer in 1901 and four by Andrews in 1970. All are curated by the Peabody Museum of Ethnology and Archaeology, Harvard University. Catalog numbers for photographs and artifacts are included here for use by future investigators.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2359</td>
<td>Wetherill Mesa, looking southwest</td>
</tr>
<tr>
<td>N2358</td>
<td>Wetherill Mesa ascent</td>
</tr>
<tr>
<td>N2360</td>
<td>Wetherill Mesa ascent from adjacent mesa, looking northwest</td>
</tr>
<tr>
<td>N2361</td>
<td>Camp with Wetherill Mesa in background</td>
</tr>
<tr>
<td>N2362</td>
<td>Camp after sandstorm - shows mesas in background</td>
</tr>
<tr>
<td>N2354</td>
<td>Skull (01-32-10/57100) in pit in Room 8</td>
</tr>
<tr>
<td>N2535</td>
<td>Skulls, showing Inca bones (01-32-10/57100 compared with 5 others)</td>
</tr>
<tr>
<td>N2536</td>
<td>Skulls, front view (01-32-10/57100 compared with 01-32-10/57033)</td>
</tr>
<tr>
<td>N2537</td>
<td>Skulls, vertical view (01-32-10/57100 compared with 01-32-10/57033)</td>
</tr>
<tr>
<td>N2538</td>
<td>Skulls, lateral view (01-32-10/57100 compared with 01-32-10/57033)</td>
</tr>
<tr>
<td>N2352</td>
<td>Metate (01-32-10/57098) in situ in Room 7, East group</td>
</tr>
<tr>
<td>Andrews (1970) Fig. 11</td>
<td>Full-grooved hammerstone (01-32-10/57108) from Room 10</td>
</tr>
<tr>
<td>Andrews (1970) Fig. 22</td>
<td>Split bone awls (01-32-10/57115) from general digging</td>
</tr>
<tr>
<td>Andrews (1970) Fig. 23</td>
<td>Bone awls (01-32-10/57102, Room 9; 01-32-10/57095, Room 7; and 01-32-10/57103, Room 9)</td>
</tr>
<tr>
<td>Andrews (1970) Fig. 24</td>
<td>Various bone implements includea deer metacarpal or metatarsal (01-32-10/57116)</td>
</tr>
</tbody>
</table>
REFERENCES

Andrews, Anthony
1970 The Chaco Canyon Project: The Tozer-Farabee Expedition, 1901. Archive 2128J, Chaco Culture NHP Collections, University of New Mexico, Albuquerque.

Farabee, William C.

1901b Peabody Museum Exploration to Chaco Canyon, New Mexico, August-September 1901. Field Notes. Accession file 01-32, Peabody Museum Collections Department, Harvard University, Cambridge.

Judd, Neil M.
1964 The Architecture at Pueblo Bonito. Smithsonian Institution Miscellaneous Collections 147(1). Washington, D.C.

Marshall, Michael P., John R. Stein, Richard W. Loose and Judith E. Novotny
1979 Anasazi Communities of the San Juan Basin. Public Service Company, Albuquerque, and New Mexico State Historic Preservation Bureau, Santa Fe.

Mathien, Frances Joan

McKenna, Peter J.

McNitt, Frank

Pepper, George H.

Roney, John R.


Snead, James E.

Located on an alluvial fan adjacent to the floodplain of the Rio Grande and in northwest El Paso, Texas, the Keystone Dam Site was the subject of intensive surface collection and mapping and limited subsurface testing in 1979. This investigation identified an Archaic occupation that was radiocarbon dated between about 1500 and 2500 B.C. and distinguished by numerous small, ephemeral structures (O'Laughlin 1980). These were the first structures to be identified for the Archaic period in the El Paso area, and data from this site have been much used in assisting the definition of temporal periods and settlement patterns of the region (see Anderson 1993; MacNeish 1989).

In 1984, an opportunity was provided to examine in detail one of the tested structures at the Keystone Dam Site and gather information on site structure. This report describes that structure, House 3, and associated features and deposits and is an edited version of a paper presented in 1985 at the Fourth Jornada Mogollon Conference in Tularosa, New Mexico.

THE 1979 INVESTIGATION

The initial investigation of the Keystone Dam Site revealed stratified deposits and occupations that spanned thousands of years (O'Laughlin 1980). Zone 4, of interest here, had five associated wood charcoal dates, the most recent of which was 1590 B.C. +/- 210.

A total of 23 structures was recognized for the Zone 4 deposits, and given the interval of subsurface testing, it was estimated that there might have been as many as 41 structures. Most of the structures were identified through soil augering that revealed the presence of dark, carbonaceous soil that was generally much darker than surrounding soils. Only 12 of these features were tested by hand excavation, in many cases only by a single one m square. In addition to the discoloration of the soil, burned roofing clay was found in many of the excavations and assisted in the recognition of the probable former presence of a structure. These structures were characterized as huts and by their small size (ca. 3 m diameter), shallow, saucer-shaped and unplastered floor (ca. 10 cm depth), flimsy construction of a thin mud plaster over an unframed brush and grass dome, informal hearth, and probable east entry.

Structures were not randomly distributed across the site. Isolated huts were identified, but most seemed to cluster in groups of two to five huts. Limited excavations around the huts also revealed the presence of trash-filled pits, and a few small features with fire-cracked rock were located more distant from the huts and near the periphery of the site. Spatial patterning in huts and other features was interpreted as indicative of multiple occupations of some duration.

The mud coating of huts suggested that they were occupied during the colder part of the year, while the fire-cracked rock features, bird egg shells, and botanical remains (principally seeds and fruits of tornillo, goosefoot, amaranth, and prickly pear)
were interpreted as evidencing possible occupation during the spring, summer, and fall. It was suggested that the huts may have been utilized throughout the year, perhaps as infrequently visited cache or storage sites during the late spring, summer, and fall and as dwellings during the winter and possibly early spring in an economic regime based on a central-based, wandering pattern. This is a pattern recognizable in the ethnographic and historic sources of the area and consonant with the seasonal availability of resources (Basehart 1973; Bolton 1952; Hammond and Rey 1929; Schroeder 1974). Trash was allowed to accumulate on the floors of some of the huts, and in a few instances there was evidence of two floors or occupational surfaces separated by accumulations of sand. These observations were interpreted as supportive of a non-permanent, base camp utilization of the site.

Chipped stone was the most numerous class of artifact and was fairly abundant in the deposits of Zone 4. The assemblage was comprised principally of locally available materials, and the reduction technology appeared to have been oriented toward the expedient production of tools. However, there was also some evidence for bifacial thinning and tool resharpening activities. Low percentages of tools and cores were reported and taken to indicate the curation and maintenance of tools and the retention of cores for further reduction, a pattern reflected in assemblages from other residential sites of the region. In general, tools were relatively small and were inferred to evidence a range of activities. Taken together, these observations tended to back the argument that the Zone 4, Archaic occupation was of some duration, though probably intermittent, and characterized by generalized, maintenance and supportive activities.

THE 1984 INVESTIGATION OF HOUSE 3

House 3 was a structure isolated from the main portion of the Keystone Dam Site by recent arroyo cutting. A backhoe trench intersected dark soil above this structure in 1979, and hand excavation within the trench confirmed the presence of a structure. Wood charcoal from this feature produced a date of 2090 B.C. +/- 90 (O’Laughlin 1980). In 1984, the City of El Paso negotiated an exchange of land with a private developer that enhanced public holdings of the main portion of the site but transferred to the private sector the isolated portion with House 3. With concurrence of the Texas State Historic Preservation Officer and following the transfer of the land, the area of House 3 was excavated by members of the El Paso Archaeological Society under supervision of the writer. Dr. Rex E. Gerald of the University of Texas at El Paso served as principal investigator.

Testing in 1979 had revealed that House 3 and associated features were buried by some 85 cm of alluvial sand and gravel and up to 40 cm of aeolian sands. Surface mapping and subsurface testing of soils above the layer with House 3 had also documented intact to deflated fire-cracked rock features. One small fire-cracked rock hearth was radiocarbon dated to A.D. 550 +/- 120, and a larger feature of fire-cracked rock was dated to 160 B.C. +/- 220 (O’Laughlin 1980). Surface and subsurface artifacts occurred in very low density and with ceramic materials suggesting occupation as recently as A.D. 1200-1400. It was believed that the only significant archaeological remains in the area were those of House 3 and a bulldozer was used to remove the alluvium above this structure.

During the removal of the overburden, small areas of dark soil were encountered some 35 cm below the surface. The use of the bulldozer was temporarily suspended, and a 7-10 cm level in a 35 sq m area was subjected to hand excavation. This revealed an ephemeral Mesilla phase structure and associated features dating to about A.D. 500-900.
(Foster 1988). Following this excavation, the bulldozer was again used to strip soils until the darker soils of House 3 began to show.

Excavation with the bulldozer ceased at about 5.7 mbd (meters below datum). From this point, excavation proceeded by one m squares and natural or arbitrary levels that never exceeded 10 cm. The upper 5 to 15 cm was a light colored sand with few artifacts and an occasional sherd. The transition to the light to dark gray sands of the House 3 occupation was fairly clear and the deposit ranged from 10 to 20 cm in thickness, with most artifacts concentrated in the lower 5 to 10 cm. Near House 3, excavations ceased at high points of 5.85-5.9 mbd. The occupational surface sloped to the west and south from House 3 to a maximum of 6.1 mbd.

Above the transition to the darker soils of the House 3 occupation and at 5.78 mbd in square 335N/455E, a burned corn cob was found and that has a C-13 adjusted (-10.8 permil) AMS date of 1290 B.P. +/- 140 (AA-953, University of Arizona). At approximately 5.8-5.85 mbd, just within the darker soils of the House 3 occupation, in the fill above Feature 13, and within 335N/452E, a small number of burned mesquite seeds were recovered that provide a C-13 adjusted (-17.5 permil) AMS date of 1470 B.P. +/- 100 (Beta Analytic-12713). These two AMS dates are comparable to the other two radiocarbon dates from above the House 3 occupation and clearly reference Formative period occupation. However, the corn cob and mesquite seeds were recovered in very good condition and not at all like the weathered and degraded charcoal of the House 3 occupation layer. The much older date for House 3 is from wood charcoal that potentially could have been from wood much older than the occupation of House 3. Nevertheless, all evidence suggests that the House 3 occupation is part of the Zone 4 occupation at Keystone Dam and of late Archaic age. Additionally, no ceramics were recovered from the occupation layer of House 3, and no corn pollen was observed in 23 samples reviewed by James Schoenwetter and analyzed by Jane Bradley (personal communication 1985). The absence of both corn pollen and ceramics would lend credence to the 2090 B.C. +/- 90 date.

Excavation was begun in the area of House 3 and extended outward through the excavation of every other square. This leapfrog method of excavation continued until there was little or no discoloration of the soil and when the number of artifacts per sq m dropped below three. An exception to this method was the termination of excavations in the southern portion of the study area where the effects of erosion and topography resulted in the mixing of materials from the occupation of interest with those of later occupations. Even so, it was apparent from soil color and artifact and feature distributions that the occupation would not have been much beyond the limit of excavation. Finally, additional squares were excavated to fully expose the hut and adjoining areas. A total of 93 sq m was excavated, with soils passed through 1/8-inch mesh.

FEATURES

Twenty-three features were identified in the 1984 excavation. They include House 3, a variety of features in close proximity to the hut, and a few more distant and to the southwest. Excavated squares and numbered features are shown in Figure 1.

Feature 1 is House 3, the hut. It is a saucer-shaped depression of 5-8 cm with a floor area of approximately 7.3 sq m. The floor was apparently intentionally leveled, for there is a 3-8 cm high ridge of soil around the north and east sides of the hut. No sockets for leaners could be located with confidence in the sandy soil. Within the structure are Features 2 and 3, probable hearths or heating pits. They are basin-shaped, 5 and 10 cm deep and were filled with charcoal and dark carbonaceous soil that was darker than the fill of the structure. Figure 1 shows the distribution of dark soils of this occupation, and soils were noted to be most dark
within an immediately around the hut. In addition, Figure 1 has 5 items per sq m density contours for clay with impressions of grass and small branches. These pieces of clay are concentrated in and near the hut and are believed to be the remnants of a plaster coating of the hut. Dark soil and roofing clay are two attributes used to identify the locations of Zone 4 huts in the previous 1979 testing, and their coincidence with Feature 1 adds value to the earlier use of these criteria.

Features 4, 5, 6, 7, 12, and possibly 8 appear to be extramural hearths with dark soils, lens-shaped cross-sections, and shallow depths of 5 cm or less. These features are in relative proximity to the hut and tend to be south to southeast of the hut. They generally reference an arc of activities involving hearths around the northwest to southeast sides of the hut and a pattern also evident in other features and artifacts. The southern to southeastern distribution of most of these features may indicate a similar direction for the entry to the structure.

Features 9, 10, 11, 13, 14, and 15 are pits of irregular outline and depth. They range 8-15 cm in depth and include some of the larger extramural features. These pits are part of the arc of features in proximity to the hut, have a dark soil like the hearths, but contain a few more artifacts. Their irregular outlines and depths suggest multiple

---

**Figure 1**
Plan of House 3, Keystone Dam Site, with numbered features and density contours for roofing clay at 5 pieces per sq m increments.
episodes of use that culminated with a little trash deposition.

Features 16, 17, 18, 19, 20, 21, and 22 are not part of the arc of features in proximity to the hut; rather, they are strung out to the west and southwest of the hut. They are 5-10 cm in depth, basin to lens-shaped in cross-section, and generally regular in outline. They contain dark soil but are most readily distinguished from other features by small, but significant, accumulations of fire-cracked rock in, near, or around these features. These features are interpreted as having had multiple uses, perhaps as hearths or roasting/baking pits and possibly as loci for stone boiling. The two latter functions are termed messy by Binford (1983) and frequently have space or time requirements that encourage placement away from structures or multiple activity areas.

The last feature is Feature 23. It is roughly cylindrical with a diameter of 60 cm at the top and 65 cm at the bottom and a depth of 1.8 m. It was excavated through sands and gravels and into an underlying clay layer. A feature like this one was located in the northern portion of the Keystone Dam Site and was interpreted as a water well (O’Laughlin 1980). Both of these features are also comparable to other Southwestern examples (Evans 1951; Haury 1957). The Keystone Dam Site is on the leading edge of an alluvial fan that rests on the floodplain of the Rio Grande, and today water is impounded in a wetland area below the site and at a level comparable to the bottom of Feature 23.

Feature distribution illustrates a decreasing intensity or frequency of activity radiating out from the hut, with activities involving time, mess, and perhaps bulk processing located most distant from the hut. The close proximity of features to this hut may indicate a perceived temporary occupation by the inhabitants and little concern for the maintenance of a substantial work area around the hut. Seasonal or limited activity sites of the Pithouse and Pueblo periods of the Jornada region exhibit a comparable pattern of features in close proximity to structures while more permanently occupied pueblos show a different organization of space with extramural features generally at greater distances from structures (see O’Laughlin 2001; Whalen 1994).

Biological materials that might aid in assessing feature function, as well as subsistence activities and season of occupation, were sorely lacking. Faunal remains were not recovered from the layer associated with House 3, and soil flotation samples were uniformly disappointing. Twelve soil flotation samples of one to two liters in size and from a variety of contexts were examined and produced no evidence of seeds, fruits, or other edible plant parts. As previously mentioned, the charcoal of the House 3 deposit appeared weathered and much reduced in size. No more than small pieces of wood charcoal remained, and only mesquite and an occasional piece of four-wing saltbush could be identified.

The poor preservation of biological materials may be attributed to site exposure for a considerable time, short duration of occupation, limited resource procurement and processing, lack of sweeping, collecting and dumping activities, or a combination of factors. The poor preservation of charcoal for the House 3 deposit again suggests that the better preserved mesquite seeds and corn cob from the juncture of this and upper deposits are best attributed to the more recent occupations, possibly to the Mesilla phase structure above House 3.

**CHIPPED STONE DEBRIS**

Unmodified flakes (including angular debris) number 429 for the layer associated with House 3. The average number of pieces per sq m is 4.6; however, the distribution is anything but even.

Density contours at 3 pieces per sq m for unmodifieded flakes with any dimension greater than 1 cm are shown in Figure 2. The distribution of these
flakes and features is relatively distinct and amounts to some 120-150 sq m. The spatial extent of these remains is comparable to Yellen's (1977) Limit of Most Scatter, a measure related to length of occupation of Bushmen camps. A scatter of cultural materials the size of House 3 would be the equivalent of a 40 day occupation by a single social unit of Bushmen. Although it is not possible to define with certainty the length of occupation for House 3, the distinct and limited distribution of features and artifacts would suggest that the occupation was limited.

The distributions of unmodified flakes pictured in Figure 2 can be interpreted through a seated worker behavioral model developed by Binford (1978, 1983). For a seated worker, small items tend to be “dropped” in front of and beneath the worker, while larger objects are “tossed” some distance to the front or sides. The distribution and density of small and large items can, then, be used to define drop and toss zones.

A toss or discard zone can be visualized from the southeast to the south to the west sides of the hut. This arc is comprised principally of chipped stone with dimensions greater than 2 cm and is interrupted on the south to southeast side of the hut. Presumably, the southern side of the hut was sheltered from prevailing winds, warmed by the morning sun with cool season occupation, and maintained free of trash and features for a variety of activities.
Between the two hearths of the hut and extending to the south side of the hut, there is a concentration of flakes that are mostly 1-2 cm in size. This concentration is believed to mark the approximate location of the entry for the hut and defines an apparent drop zone. It would not be difficult to image a person in the cooler months seated and knapping near the hearths or in the entry for good light and warmth.

Four concentrations of flakes are associated with Features 8, 16, 17, and 20. They are localized concentrations that follow Binford's (1978, 1983) model of a seated worker at a hearth, and one, Feature 16, even has a nice butterfly distribution illustrating combined drop and toss zones. These concentrations are all on the west sides of features, the side from which the prevailing winds come and where a worker would have been seated. Additionally, these concentrations include the larger flakes over 2 cm and may indicate heavy or primary knapping. This kind of activity creates a lot of mess, thus, possibly explaining their distance from the hut.

For flakes with a dimension greater than 1 cm, the last concentration is associated with Feature 23, the well. This collection of flakes is believed to have resulted from the aggregation of materials with erosion into this deep feature.

Figure 3 shows the density contours at 3 pieces per sq m for unmodified flakes with no dimension greater than 1 cm. Two concentrations of small flakes are evident. One occurs at Feature 23, and as mentioned above, is the probable result of erosion of materials into this feature. The other concentration is coincident with the aforementioned concentration of mostly 1-2 cm flakes at the presumed entry to the hut. Light knapping indicative of maintenance activity or the final stages of stone reduction is suggested by the accumulation of small flakes in this area. Again, the location of a drop zone within the entry of the hut may reflect occupation during cooler part of the year. Additionally, the concentration of small and larger flakes within the structure may be the result of maintenance or reduction activities in anticipation of a residential move and future needs. That is, the materials were allowed to accumulate within a space that would otherwise likely have been cleaned of debris. Thus, the concentration could be viewed as the result of an abandonment activity.

**CORES, TOOLS, COBBLES AND FIRE-CRACKED ROCK**

There are relatively few objects in addition to the unmodified flakes. These include 11 cores, a core tool, nine flake tools, one well-used slab metate, 18 unmodified cobbles, and 82 pieces of fire-cracked rock. The distribution of these objects is illustrated in Figure 3. There are discrete and patterned distributions of some objects that would appear to reference dropped and tossed objects. Some objects are feature associated, and others would appear to be placed objects.

Fire-cracked rock is found principally to the west of the hut. As remarked earlier, it is associated with Features 16, 17, 18, 19, 20, 21, and 22 that are at greater distances from the hut than other features. Features 20 and 22 have a substantial number of pieces of fire-cracked rock within them, and an apparent pile of fire-cracked rock may have resulted from the removal of rock from Feature 17, perhaps with stone boiling. The general scatter of fire-cracked rock in the area would suggest use and reuse of these features.

Additionally, flake tools, a core, a core tool, and the metate occur near the above features and suggest either multiple functions of these features or activities spatially associated with these features. In the latter case, concentrations of unmodified flakes have been noted for the west sides of Features 16, 17, and 20 where knapping and other production or maintenance activities probably took place. Feature 8 lacks fire-cracked rock but also has a concentration of unmodified flakes as...
Cores, some flake tools, and a small number of fire-cracked rocks are distributed in an arc around the hut. This arc of larger objects corresponds to the described toss zone for larger unmodified flakes and would represent a variety of activities centering on the hut. Also around the hut but not entirely within this toss zone are unaltered cobbles of problematic use. The larger stones are of sufficient size to have been used as anvils or seats, and it is probable that the larger cobbles were purposely placed rather than tossed.

As a final note on the spatial distribution of objects, it should be noted that there is an area of about 4 sq m at the rear of the hut with no objects. This is an apparent sleeping/temporary storage area that is of sufficient size for two adults and perhaps a few children (see Binford 1983; Yellen 1977).

Excluding unmodified cobbles and fire-cracked rock, there is a single piece of ground stone and only 450 pieces of chipped stone for the House 3 occupation. Although only two thirds to perhaps one half of the area of occupation was excavated,
doubling the number of artifacts would not change the impression that the occupation was of limited time. Of the 450 pieces of chipped stone, tools account for 2.2% of the assemblage. The few recovered tools would suggest that they may have been curated. The percentage of tools is comparable to previous findings for the Zone 4 occupation, similar to other residential sites of the region, and much lower than limited activity sites (O’Laughlin 1980). Additionally, the tools that were recovered, with the exception of a single flake with a retouched edge, are all utilized flakes and a utilized core with minimal investment of energy in production. Missing are the extensively worked and bifacial tools.

CONCLUDING REMARKS

The excavation of House 3 and associated features and deposits provides important information on late Archaic residential sites in the Jornada region and adds considerably to the findings from previous testing at the Keystone Dam Site. There have been few opportunities for the formal investigation of Archaic residential sites along the Rio Grande (see also Greiser 1973; Honea 1966), and only Keystone Dam has given evidence of numerous structures and a well-preserved site organization. This site has served and will continue to serve as the key example of a residential base camp for settlement system studies of the late Archaic (Anderson 1993).

Interpretations of season of occupation and feature function, as well as giving meaning to spatial patterns in features and artifacts, are difficult and sometimes problematic. Undoubtedly, other interpretations could be proffered for observations presented here. The point is that an analysis of site structure provides one more dimension and a different scale for the study of archaeological sites. For example, the visual inspection of the distribution of size classes of unmodified flakes has suggested that different steps in the reduction of stone for tools were taking place in different places. A simple statistical analysis of the same data reveals significant (p=.05) correlations in the distribution of size classes of unmodified flakes, a finding that obscures the previous observation without additional information. Also, tools and cores are significantly correlated, but only through the inspection of the figures can one reason whether this is related to manufacture, use, cura­tion, or discard. The spatial relationships among features and artifacts presented here for House 3 will hopefully assist others in similar and comparative studies within the region.

The excavation of the occupation of House 3 has contributed substantially to observations restricted previously by the limited testing of the Keystone Dam Site. Certainly, the findings do not contradict the earlier conclusion that Zone 4 features and artifacts illustrate a variety of subsistence and maintenance activities consonant with a residential site and that these activities most probably occurred over a short span of time during the colder part of the year. However, the demonstrated spatial congruence of dark soils and clay with grass and branch impressions with remains of a hut further corroborates the use of dark soils and roofing clay as criteria for the recognition of a hut location. Twenty-three locations of possible huts were identified in 1979, many through the occurrence of dark soils and roofing clay. Thus, a sizeable number of Archaic structures lie buried at the Keystone Dam Site and remain protected as a resource for future studies.
REFERENCES

Anderson, Sally

Basehart, Harry W.

Binford, Lewis R.
1983 In Pursuit of the Past, Decoding the Archaeological Record. Thames and Hudson, New York.

Bolton, Herbert E.

Evans, Glen L.

Foster, Michael S.

Greiser, T. Weber

Hammond, G. P. and Agapita Rey
1929 Expedition into New Mexico Made by Antonio de Espejo. Quivera Society, Los Angeles.

Haury, Emil W.

Honea, Kenneth H.
1966 The Caballo Highway Salvage Project. Laboratory of Anthropology Note No. 35. Museum of New Mexico, Santa Fe.

MacNeish, Richard S.

O'Laughlin, Thomas C.


Schroeder, Albert H.

Whalen, Michael E.

Yellen, John
INTRODUCTION

The bison, or American buffalo, never inhabited the Largo - Gobernador Canyon country and yet the animal is frequently portrayed in the rock art of the area. Indeed, *Bison bison* is not known to have been present in the San Juan Basin nor in traditional Navajo country as defined by the Four Sacred Mountains, but the animal plays a significant role in Navajo ceremonialism even as practiced today. This phenomenon has not previously been examined. Perhaps such a study, based on rock art evidence and collected anthropological data, can give interesting clues as to the prehistory and history of the people who once inhabited this area.

The Largo - Gobernador Canyon country is a very large area of northwestern New Mexico covering well over one million acres and characterized by the arroyo drainage systems formed by these and other canyons. Defined geographically by a northern border roughly outlined by the New Mexico - Colorado boundary, its eastern limits follow the Continental Divide south to present day U.S. Highway 550 (Previously N.M. Highway 44). Tracing that highway west and north to Aztec, New Mexico, the western edge follows the Animas River back to the state lines.

This is the land the Navajos call Dinétah, or "Among The People", and the land considered by them to be their traditional homeland. Figuring large in their creation story, two Dinétah mountains, now known as Gobernador Knob and Huerfano Mesa, are central to this legend. The cardinal Four Sacred Mountains, Blanco Peak near Alamosa, Colorado, Mount Taylor near Grants, New Mexico, the San Francisco Peaks near Flagstaff, Arizona, and the La Plata Mountains near Durango, Colorado, make up the borders of Diné Bikéyah, or "Beneath the Feet of the People." This is the land considered Navajo Country for at least the last two and one half centuries.

Dinétah is well known for its Navajo era rock art (e.g. Brugge 2001; Copeland and Rogers 1996; Hadlock 1979, 1980; Olin 1979, 1984; Rogers 2001; Shaafsma 1963, 1966, 1972, 1980; and many others). Bison representation has been noted by several of these authors but only as a casual reference. This paper will examine the subject in some detail and hopefully stimulate discussion among archaeologists, anthropologists, ethnologists and even Navajo traditionalists.

BISON ECOHISTORY

As noted above, bison never inhabited traditional Navajo country but a brief summary of buffalo ecohistory will prove helpful in understanding many of the problems arising in the study of Anasazi and Navajo era rock art and present day Navajo ceremonialism. Almost all of what we know about the prehistoric presence or absence of buffalo in a given area has been determined by archaeology. Bison are rather large animals and, after a kill, one does not throw the beast over one's shoulder and carry it many miles back to...
one's permanent home. Instead, the Plains Indians moved their homes to follow the bison and camped nearby when the animals were taken. The kill site, or close proximity, was where the butchering and processing took place. Once skinned and the meat removed from the bone, these products of the hunt could be handled in a more convenient location. Thus, the presence of many bones with typical butchering marks suggest that the animal was killed near that spot and so was once present in the area. Once processed, the hide, horns, meat, and bone tools could be used or traded and thus widely distributed.

After the extinction of the great bison, such as *Bison antiquus*, at the end of the Pleistocene Era, the smaller *Bison bison* rapidly took their place on the great American prairie. Dillehay (1974) studied many archaeological reports from the southern plains of Texas and New Mexico and noted two periods of bison absence. The first, from 5000 B.C. to 2500 B.C., needs not be discussed in this study of rock art but the second, from A.D. 500 to A.D. 1200–1300, is important.

Working at a well-stratified site in west central Texas, Creel, Scott, and Collins (1990) were better able to define this period. Their work showed that bison were present up to A.D. 900. They were then absent (or present only in very small numbers) until A.D. 1200 and population frequency then increased until A.D. 1600 – 1650 when occupation of the site ended. This four hundred year or more period of absence coincides with the rise and fall of the Chacoan empire in the San Juan Basin and is one likely explanation for the absence of bison artifacts in the Chaco inventory. The return of the buffalo in the thirteenth century also coincides with the migration of the Anasazi to the Rio Grande corridor and the beginning of the Pueblo IV era. This should not be construed, however, to suggest that bison population movements influenced those events.

Gunnerson (1972) points out that droughts in the 1400’s probably kept bison numbers in check but, with the return of normal rainfall in the early sixteenth century, numbers rapidly increased, and Coronado and his army saw countless buffalo on the New Mexico plains in 1541. They also encountered hunters of those bison, whom they called Teyas and Querechos.

Gunnerson (1956) has argued convincingly that the Querechos were Athabascans and she summarizes archaeological and documentary evidence indicating that they were newly arrived in the pueblo area. Feared by the Puebloans because of their warlike ways, these Querechos also possessed the skills to successfully hunt the mighty bison and navigate the endless prairies. Thus began a cautious relationship between the Puebloans and the Plains Apaches, which included trade for the much-desired buffalo hides.

Fray Marcos de Niza had observed what were surely bison hides in northern Mexico on his journey of 1539 and he heard tales of the great Seven Cities of Cibola (Bolton 1964:28). These tales of riches prompted Coronado’s expedition the following year. Cibola, or shiwina in the Zuni language, means bison, and the Zuni pueblos were undoubtedly trade centers for buffalo robes, turquoise and other products from the north, and feathers, shells and other exotic materials from the south. The Indians of northern Mexico would have seen these pueblos as “treasure houses” and so a legend arose which would change the history of the American Southwest forever.

The route of the Athabascans who would be later known as Navajos into northwestern New Mexico has long been debated. Whether they came down from Canada by the Great Plains along the eastern slope of the Rockies, or whether they came by intermountain trails, or even through the Great Basin, they would have had knowledge of bison by contacts in the north. Regardless of their travels, Athabascans were in Dinétah in the spring of 1541, at the same time that Coronado was venturing onto the plains (Hancock 1997).
Even though the horse and gun markedly improved the Plains Indian hunting abilities, buffalo thrived on the New Mexico prairies but were never known to be present west or south of the Rio Grande. The southern herd increased in spite of hunting, and bison numbered in the millions by the beginning of the nineteenth century (Roe 1951: 441). By the twentieth century there would be none, but that need not concern us because the bison images had already been placed on the cliff walls of Dinétah.

**BISON IMAGERY OF THE ANASAZI ERA**

Bison representations in Ancestral Puebloan rock art of the Largo – Gobernador are rare. No thorough study of Anasazi rock art in the San Juan Basin has been carried out and much more interest has been shown in the more artistic and ethnologically relevant Navajo images. Harry and Sally Hadlock recorded many Ancestral Puebloan sites and their records are on file at the San Juan County Museum, Salmon Ruins, Bloomfield, New Mexico. Smith did a survey and stylistic analysis (1974) but his work was done under the auspices of the Hadlocks and included no new sites. By far the most inclusive study to date is that by Schaafsma (1963).

Schaafsma’s study was carried out along the San Juan River in the area to be flooded by the Navajo Reservoir and included all rock art sites of every culture. At one site (LA 3016) she recorded a bison image on a rock art panel containing mixed Anasazi and Navajo petroglyphs. While she did not identify the animal and did not state that it was part of the Anasazi work, she implied that it was of Anasazi origin (Shaafsma 1963: 15).

This mixture of cultures on a single panel has been a problem for other observers. Only one Ancestral Puebloan site containing a possible buffalo image and made up of purely Anasazi elements is presently known (LA 83536) (Figure 1).

One zoomorph has inward curving horns and a long tail, and is suggestive of a bison. At LA 78129 (Figure 2) there are several bison portrayed which have identifiable bison characteristics of short, curving horns, humped backs and the notable beards. Although some Athabascan hunting imagery is present, almost all of the other elements on the panel are of Anasazi origin.

**Figure 1**
LA83536. Anasazi panel, Largo Canyon, Rio Arriba County, New Mexico. Bison and other zoomorphs and Basket Maker anthropomorphs are shown.

The Anasazi bison images at LA 78129 are quite similar to the one recorded by Schaafsma at LA 3016. Crudely drawn to Eurocentric eyes, they have straight, stick-like legs and lack the dynamism of later Navajo rock art images. There is enough anatomic detail present, however, to be certain that bison are the animals intended for portrayal.
Schaafsma (1963: 26-34) compared her San Juan River rock art with other reports and concluded that it was probably of the Basket Maker II era (A.D. 0 – A.D. 700) but she felt that the presence of bows might date it later, in the Basket Maker III – Pueblo I times (A.D. 700 – A.D. 1050). If these bison images are truly of Anasazi origin, and obviously I believe they are, then her designation of Basket Maker II is correct. As we have seen above, bison were gone from the New Mexico prairies after A.D. 500 (Dillehay 1974), and absent from the southern plains in general by A.D. 900 (Creel et al. 1990).

We may infer that at least some of the Anasazi hunters traveled the long distance to the plains east of the Rio Grande and observed buffalo, for the rock art imagery seems too accurate for a "word of mouth" description. Whether they hunted them or not is presently moot. Until bison teeth, horns, bone tools or other artifacts are found in a Basket Maker II context, this must remain speculative at best.

Bison artifacts have been extremely rare discoveries in San Juan Basin archaeology. Morris (1939:119) reported a bison tooth from his Site 41 (LA 5631), and several suspected cervical vertebrae and a scapula at other sites in the La Plata Valley, but gave no cultural context or other details for his finds. Extensive archaeological investigations in the last four decades are not known to have produced further identified bison remains but there have been very few excavations of Basket Maker II sites. Most of the sites recently excavated have been those of the Basket Maker III – Pueblo I and II eras and bison artifacts would not be expected in this cultural context.

**BISON IMAGERY IN THE NAVAJO ERA**

Bison appear often in the rock art of the Navajo era in the Largo – Gobernador Canyon district. This rock art is thought to date between A.D. 1600 and A.D. 1750 (Copeland and Rogers 1996) and is contemporary with bison presence on the southern plains. The Navajo bison is portrayed with short, curved horns, a humped back with the heavy hair on the shoulders and upper back often depicted, a moderately long tail, and bent legs giving the impression of movement (Figure 3). An arrow commonly pierces the animal (Figures 3, 4). The legs often terminate in a 'y' or 'v' pattern, described by Grant (1978:182) as "crab claws" (Figure 3). A study of a great deal of rock art suggests that this pattern denotes the cloven hoof of this ungulate. This hoof pattern is found in both Anasazi and Navajo rock art and is present with other zoomorphic images such as deer, elk, antelope, and bighorn sheep as well.
Footprints on the Rock: The Ancestral Navajo, or Dinésazi, was a hunter by trade and tracking was essential to his craft. Animal tracks are a frequent theme of Navajo era rock art and prints of both predator and prey often appear on both hunting and healing ceremonial panels (Rogers 2001). These track images are so well drawn that the animal intended can often be identified. While size is often exaggerated, deer prints are quite narrow, elk prints are narrow but more rounded than deer, and some prints are portrayed as quite round (Figure 5). These latter, rounded tracks are quite possibly intended to portray the prints of bison. Dust from a buffalo’s track is used in present day Navajo ceremonials and animal tracks were important in hunting ritual in the past.

In a study of Navajo symbolism, Newcomb, Fischler and Wheelwright (1956:34) wrote:

When a sandpainter wishes to show who or what lived on a certain mountain, or walked in a certain direction, the tracks of that person, animal or bird will be drawn in the proper position. These track symbols are considered as powerful for exorcism as the sketch of the person, animal or bird would be. Those most often used are the pollen tracks of the immortals, star crosses of the sky forces, rainbow spots, human footprints, the prints of wolf, bear, cougar, eagle and hawk paws and claws.

In a similar vein, Gladys Reichard (1964:149) noted, “a symbol for a power is the power.” Therefore, the track of the bison symbolizes the bison, and the symbol of bison power is that power.
The Horns of Power: Another example of bison motifs in Navajo era rock art is the horns found on images of some deities (Figure 6). The most powerful animal in the Southwestern Native American world must have been the buffalo. Weighing over 2000 pounds at maturity and capable of killing horse or man, the bison must have been visualized as the epitome of dangerous strength and, at the same time, of ultimate benevolence in producing things useful for human consumption.

Reichard (1964:565) wrote:

Horns are an evidence of power. Sun may be depicted as a disc with a face, feathers, lightning and rain, but he is considered more powerful if he has horns: the same is true of Moon, Dark Wind and Yellow Wind, Water Monster, Water Horse, Sky and Earth. Snakes of the Wind chants are horned; those of the Shooting Chants are not. Possibly horns represent shine, glint, or the control of lightning.

In each of the examples Reichard cited, the horns are the short, upward curved ones of bison and not the branched antlers of elk or deer nor the downturned horns of mountain sheep. Bison symbolism is indeed “an evidence of power”.

To close this section on Navajo era rock art, the reader is referred to Figure 7. Here the artist has portrayed all of the bison motifs discussed. The animal itself appears as a zoomorph, the horned circle is present, and a line of rounded, cloven ungulate tracks cross the panel. To this artist of the distant past, the author of the present paper is eternally grateful!

**BISON IN RECORDED NAVAJO CEREMONIALISM**

The Navajo word for bison is ‘ayání', roughly translated as “the one who eats continuously” and appears to be common, with minor variations, to
young and Morgan (1980:836) also cite words for buffalo hide (‘ayanikăgi), buffalo mane (‘ayánî bitsiz sół) and buffalo robe (ch’idi). This latter word, ch’idi, is no longer recognized by most Navajos without extensive ceremonial knowledge as denoting buffalo robe, but instead is commonly used to refer to something ‘itchy’ or ‘scratchy.’ Could it be that all that remains of the memory of bison robes as warm bedding or winter clothing is the reminder that bedbugs, lice or other vermin may have infested such objects?

Fischler (1955) recorded tales from his informants indicating Navajo bison hunting well into the nineteenth century and a familiarity with the animal long after the Navajos had established themselves among the Four Sacred Mountains. Navajos would travel in groups, often in the company of Ute allies, to the eastern plains where the animals could be taken. Hunting methods and hunting ritual have not been recorded.

Trade with the Utes and others was also carried out, for bison robes would have been desirable for winter wear and sleeping, hides important for manufacturing shields and footwear, and the meat for human consumption. After the return from Fort Sumner and once trading posts were established on the reservation in the 1870’s, these prosaic needs no longer existed, but, by then, the buffalo were gone.

Bison continue to play an important role in Navajo ceremonialism today. Two chantway myths, Shooting Way and Flint Way, include significant reference to buffalo. The hoof rattle used in Flint Way should include a piece of buffalo hoof and the rattle used in Shooting Way should be made from the tail of a bison (Kluckhohn et al. 1971:348-352). These animal parts are no longer readily available and so the hooves and hoof fragments of other game animals and hides of horses and domestic cattle are used today. The old artifacts are still in use, however, and are highly prized.

Bison appear in the dry paintings of both Shooting Way and Plume Way. Those from Shooting Way are especially well known and have been illustrated by Newcomb and Reichard (1975: Plates XXIII-XXVII), Reichard (1977: Plates XXII-XXIV) and Wyman (1983:37). The animals are depicted with constricted bodies indicating restoration, heart lines and, when representing Buffalo People, square heads suggesting feminine traits of gentleness and passivity. Their homes are conical and are recognized as tepees by the Navajo ceremonialists.

CONCLUSIONS

For many years, rock art was the stepchild of archaeology. Difficult to date and hazardous to interpret, petroglyphs and pictographs were
assigned to the category of random doodlings that added nothing to the scientific record. This thinking has experienced a dramatic change in the past several decades as serious researchers have studied the rock images. As Schaafsma has written, "rock art is an artifact of ideas" (Muench and Schaafsma 1995:16). This is notably demonstrated in the depiction of bison in the Gobernador – Largo Canyon country of northwestern New Mexico. As the animal was never present in the area, its imagery cannot be based on casual everyday observation but, instead, on some sort of memory or idea.

The presence of bison imagery in Anasazi rock art helps to date these petroglyphs. Based on work done elsewhere in New Mexico and on the Texas plains, these images cannot have been done much after A.D. 900 and are perhaps several centuries earlier than that date. Using this knowledge, other information can be gathered.

Slifer (1998:61-62) illustrates a bison petroglyph from Rio Grande County, Colorado that he identifies as either Archaic or early Basket Maker based on an apparent atlatl. While such an interpretation can be questioned, his illustrations show rock art compatible with an early date. LeBlanc (1999:101) states that the bow was introduced into the American Southwest at about A.D. 200 and the Anasazi panel shown in Figure 1 includes an anthropomorph holding a bow. Knowing the period of absence for buffalo, this firmly places the panel in the Basket Maker II period.

The broad-shouldered, trapezoidal-bodied anthropomorphs appearing in Figures 1 and 2 have long been associated with the Basket Maker II period. Kidder and Guernsey (1919:198) first noted this during their work in northeastern Arizona. About these square-shouldered figures they wrote: "These large and very peculiar anthropomorphic representations we believe to be of Basket Maker origin, because we found them on the walls of the strictly Basket Maker Cave II and because at Ruin 4, where they are very abundant, they and their attendant hand prints are obviously older than the Cliff-house structure." Other workers have since confirmed this impression. The presence of bison in the Largo – Gobernador panels in association with these humanoid figures simply adds further evidence to this cultural association.

Bison imagery is common in the rock art of the Navajo era in the Largo – Gobernador district. Although buffalo paintings have been found in the kiva art of Pueblo IV times (Dutton 1963:73-75), and buffalo dancers appear in the public ceremonies of some pueblos, bison representation in Pueblo IV-V rock art is quite rare (P. Schaafsma, personal communication 1996). It seems strange then, that one of the largest concentrations of buffalo petroglyphs and pictographs in New Mexico occurs where the animal never existed.

The Navajo ceremonial system has been recorded by outside observers for some one hundred and twenty five years. While Athabascan in its primary make up, there is significant Pueblo and Plains Indian influence and this is present in the Dinétah rock art as well. Many of the Ye'i or Holy People images are suggestive of those of the Katchina cult and shield figures are found on plains rock art panels from Canada to New Mexico.

Olin (1984) has pointed out similarities between Largo – Gobernador petroglyphs and recorded dry paintings, suggesting a continuity of symbolism for the last three centuries or more. This is apparent when the bison rock art images are compared to the dry painting reproductions cited above. While none of the rock art panels show the radial composition or symmetry of the dry paintings, the analogous imagery suggests a continuity of representation.

The route that led the Athabascans who would be later known as Navajos into northwestern New Mexico has long been debated. Whether they came down from Canada by the Great Plains along the eastern slope of the Rockies, or whether...
they came by intermountain trails, or even through the Great Basin, they would have had knowledge of bison by contacts in the north. Regardless of their travels, Athabascans were in Dinétah in the spring of 1541, at the same time that Coronado was venturing onto the New Mexico plains (Hancock 1997).

Bison lore may well have accompanied the people now known as Navajo when they entered northwestern New Mexico or it may have been introduced after their arrival. The Navajo creation story as recorded by Matthews (1897:135-147) and others relates that the original Navajo clans, created by Changing Woman from her own flesh, were joined over time by other Athabascans, Puebloans, Utes and other groups and these outsiders were assimilated into the tribe by marriage. Any of these outsiders could have brought bison mythology with them. A tale recorded by Opler (1994:250-253) from the Jicarilla Apache is quite similar to that of the Navajo (Haile 1943:179-213; Reichard 1977:68-73).

Regardless of its origin, bison mythology is reflected in the rock art of Dinétah and in the present day ceremonies of the Navajo. Dinétah rock art therefore serves as an important record of past ritual that can be related to present day practices. Among the zoomorphs found drawn on the canyon walls, bison imagery is perhaps unique in this regard, for we have an easily identified animal with a well-established ecohistory that excludes it from the locale.

ACKNOWLEDGEMENTS

My son, Dave, has often accompanied me on “buffalo hunts” and shares my enthusiasm for Dinétah rock art. Dale Anderson and Daniel Hite of Aztec Media assisted in preparation of the photographs. James M. Copeland and David M. Brugge have shared their knowledge of archaeology and anthropology. Many Navajos have traveled the canyons with me, explaining the symbolism they see. My especial thanks go to Ned Benally, Blessing Way singer and herbalist from Kayenta, Arizona, who has patiently tried to teach me the meaning of buffalo to the Navajo People. If his efforts have been in vain, it is the fault of the student.
REFERENCES

Bolton, Herbert Eugene

Brugge, David M.

Copeland, James Matthew and Hugh C. Rogers

Creel, Darrell, Robert F. Scott IV and Michael B. Collins

Dillehay, Tom D.

Dutton, Bertha P.

Fischler, Stanley A.

Grant, Campbell

Gunnerson, Dolores

Hadlock, Harry L.


Haile, Father Berard

Hancock, Patricia M.

Kidder, Alfred Vincent and Samuel J. Guernsey

Kluckhohn, Clyde, W. W. Hill and Lucy Wales Kluckhohn

LeBlanc, Steven A.
1999 Prehistoric Warfare in the American Southwest. The University of Utah Press, Salt Lake.

Matthews, Washington

Morris, Earl H.

Muench, David and Polly Schaafsma

Newcomb, Franc Johnson, Stanley Fischler and Mary C. Wheelwright

Newcomb, Franc J. and Gladys Reichard
Olin, Caroline B.


Opler, Morris Edward

Reichard, Gladys A.


Roe, Frank Gilbert

Rogers, Hugh C.

Schaafsma, Polly

1966 Early Navajo Rock Paintings and Carvings. Museum of Navajo Ceremonial Arts, Santa Fe.


1980 Indian Rock Art of the Southwest. School of American Research, Santa Fe, and University of New Mexico Press, Albuquerque.

Slifer, Dennis

Smith, Howard Norman

Wyman, Leland C.
1970 Sandpaintings of the Navajo Shootingway and the Walcott Collection. Smithsonian Contributions to Anthropology, No. 13.

1983 Southwest Indian Drypainting. School of American Research, Santa Fe, and University of New Mexico Press, Albuquerque.

Young, Robert W. and William Morgan
CLASSIC PERIOD SMALL STRUCTURE FUNCTION AND VARIABILITY ON THE PAJARITO PLATEAU

Excavation data from small structures allow us to explore issues related to the role of these structures in the larger settlement system. Subsistence is an important related issue since small structures often are assumed to be field houses, implying an agricultural function. Lacking any evidence for an agricultural function in the form of associated agricultural features with some of these structures, subsistence data may provide evidence for the association of small structures with agricultural activities. Small structure function can also be addressed by considering differences in material assemblages between these structures and larger pueblos. The overall goal is a better understanding of small structure variability and what this variability tells us about the human behaviors associated with these structures.

Excavation data from small structures were obtained from the Subsurface Heating Effects (SHE) Study, which was conducted in 1997 and 1998 in Bandelier National Monument, New Mexico, to contribute to a scientific understanding of the effects of fires on cultural resources (Ruscavage-Barz 1999). Small structure function and variation represented a secondary research emphasis for the SHE study. The current study focused on architectural features designated as “small structures” by the Bandelier Archaeological Survey (BAS) because these most likely represent special use structures as opposed to long-term habitations. The BAS arbitrarily defined a small structure as “a masonry structure with five or fewer rooms” (Powers et al. 1999:122). The SHE study excavated portions of four small structure sites: LA 3839, LA 71144, LA 115152, LA 118345. Two pueblo sites are used for comparison. Excavations in two rooms from Shohakka Pueblo (LA 3840) were part of the SHE study. Portions of the second pueblo site, LA 65617, were excavated as part of the 1997 Emergency Data Recovery (EDR) project at Bandelier.

The BAS project, which surveyed 43 percent of the Monument and recorded 959 sites (Powers and Van Zandt 1999), defined eleven different time periods for the BAS sites (Orcutt 1999a:115) (Table 1). The BAS chronology was developed using data from both survey and excavated sites with absolute dates. The time periods represented by the current research are those which span the early and middle classic Periods (i.e. periods 7-10).

Table 1

<table>
<thead>
<tr>
<th>BAS Period (Orcutt 1999a)</th>
<th>Date Range</th>
<th>Northern Rio Grande Chronology</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1150-1190</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1190-1220</td>
<td>Early</td>
</tr>
<tr>
<td>3</td>
<td>1220-1235</td>
<td>Coalition</td>
</tr>
<tr>
<td>4</td>
<td>1235-1250</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1250-1290</td>
<td>Late</td>
</tr>
<tr>
<td>6</td>
<td>1290-1325</td>
<td>Coalition</td>
</tr>
<tr>
<td>7</td>
<td>1325-1375</td>
<td>Early</td>
</tr>
<tr>
<td>8</td>
<td>1375-1400</td>
<td>Classic</td>
</tr>
<tr>
<td>9</td>
<td>1400-1440</td>
<td>Middle</td>
</tr>
<tr>
<td>10</td>
<td>1440-1525</td>
<td>Classic</td>
</tr>
<tr>
<td>11</td>
<td>1525-1600</td>
<td>Late Classic</td>
</tr>
</tbody>
</table>
THE STUDY AREA

Bandelier National Monument, located on the southern Pajarito Plateau, serves as the study area for the current research (Figure 1). The Pajarito district is one of six archaeological districts that comprise the Northern Rio Grande region (Crown et al. 1996), arbitrarily defined by the New Mexico-Colorado border to the north, the Galisteo Basin to the southeast, the southern end of the Pajarito Plateau to the southwest, the Sangre de Cristo Mountains on the east, and the Jemez Mountains on the west. The Pajarito district extends north-south from Santa Clara Canyon to Cochiti Canyon, and east-west from the Rio Grande to the Jemez Mountains. This district definition is based on geographic and ethnohistoric criteria, and roughly coincides with the boundaries delineated by the earliest researchers on the Pajarito (Bandelier 1892; Hewett 1906).

The Classic Period (A.D. 1325-1600) on the Pajarito Plateau is characterized by a shift toward plaza pueblo village layouts, although linear, L-shaped, and U-shaped roomblock layouts continue during the first part of the early Classic (A.D. 1325-1375). By the start of the fifteenth century, most of the Pajarito population were living in single or multiple plaza villages ranging from 50 to several hundred rooms (Orcutt 1999b; Preucel 1987). Many of the higher elevation areas were abandoned in favor of lower elevations between 5,700-5,800 ft (Orcutt 1991; Preucel 1987). A prolonged drought during the middle of the fourteenth century (Ensey 1997:49) may have necessitated a move to lower elevations. The settlements remaining in the higher elevations would have continued to rely on rainfall for dry farming. There is a decline in the number of settlements in the northern part of the Plateau at this time, with a concomitant increase in the number of southern Pajarito settlements (Crown et al. 1996; Orcutt 1993). While many habitation sites moved from higher to lower ele-
vations, higher elevations continued to be regularly exploited, as evidenced by the proliferation of field houses in these areas (Van Zandt and Powers 1996). Field houses/small structures first occur during the Coalition Period (A.D. 1150-1325), albeit in smaller numbers and closer to habitation sites than their Classic Period counterparts.

**SMALL STRUCTURE RESEARCH OBJECTIVES**

Although small structures are recognized as an important component of the settlement system on the Pajarito Plateau (Powers and Orcutt 1999; Preucel 1990; Snead 1995), we know very little about their variability in terms of function, layout, and material culture. In addition, small structures potentially provide chronological and subsistence data useful for understanding seasonal cycles of use and changes in subsistence strategies. All of these issues are addressed in the research domains presented below.

**Site Function**

The issue of small structure function has received limited attention in the Southwestern literature in favor of a focus on large habitation sites. Some recent investigations have attempted to remedy this imbalance (Kohler 1992; Preucel 1990; Snead 1995; Stone 1993; Ward 1978), and these studies shed some light on the role of small structures in regional settlement, subsistence, and ritual systems. Small structures most likely served a variety of functions; however, many of these structures probably had a primary function (such as agriculture) that could be evident in the archaeological record. Small structures are often assumed to be field houses by many Southwestern archaeologists, even in the absence of archaeological or other data that would attest to the presence of fields or agricultural implements. Wilcox (1978) cautions against such an assumption by pointing out a number of alternative uses for small structures including hunting camps, gathering stations, shrines, and year-round habitation. These alternatives, along with the field house function, provide the basis for investigations of small structure function.

The first possibility to be considered is that some of the small structures indeed served as field houses. These structures could have served as storage areas for agricultural tools and produce as well as providing shelter for individuals working in nearby fields. A small structure that served as a field house could be expected to be associated with natural or cultural terraces, stone hoes and axes, and other items associated with agricultural production. Thus, the presence of these objects in or around a structure provides another line of evidence for positing use of the structure as a field house.

Small structures may also have functioned as "blinds" for hunting, camps for hunting expeditions, and work stations for the production and maintenance of hunting and butchering tools (Haecker 1987; Wilcox 1978). Evidence for this function might include lithic debitage indicating tool manufacture and maintenance and possibly the tools themselves, particularly if they were cached in or around the structure.

If a small structure functioned as a gathering station for wild resources, we would expect to find implements associated with processing of these resources and/or evidence of stored resources from botanical samples. This evidence may not result in a straightforward interpretation of site function for several reasons. First, the implements used for resource collection may not have been cached in the structure but, instead, may have been removed from the site. Second, if the collected materials were not processed in the structure, then botanical evidence would be lacking or minimal. Finally, if perishable materials, such as baskets, were used for resource collection, then it is unlikely that these materials would have been preserved in the archaeological record. Given these problems, it would be difficult to determine with any
degree of assurance whether a structure functioned primarily as a gathering station.

A final issue of small structure function is that of boundary maintenance. These sites may have served to demarcate boundaries between areas inhabited by different social groups. These “boundaries” may be economic, in that the areas demarcated are wild resource procurement or agricultural zones (e.g., Kohler 1992), or they may be social, in that the areas demarcated symbolize the extent of the social and/or ritual community (e.g., Snead 1995). The evidence for small structures as boundary markers is purely inferential and based on small site distribution in relation to larger architectural sites. Thus, excavation data would not resolve the issue of the symbolic role of small structures in boundary maintenance. It is worth noting, however, that the symbolic function of small structures may have dictated their placement on the landscape and the resource procurement functions they served. In fact, the symbolic role of these structures may have superseded their assumed economic role, in which case only ambiguous evidence of primary structure function would be recovered through excavation.

Site Structure and Layout/
Organization of Space

Excavation of portions of structures and refuse scatters can contribute to understanding both architectural variation among small structures and use of space within and around those structures. Current information available for small site structure in Bandelier comes from excavations in the flood pool of Cochiti Lake, where Alamo Canyon meets the Rio Grande (Hubbell and Traylor 1982). Small structures of one to three rooms exhibit a range of architectural as well as interior spatial variability, indicating that not all small structures are the same in spite of their apparent redundancy when viewed from the surface. Features found inside small structures include hearths, bins, and ash pits; some of these features, however, have also been found immediately outside the structures (Zier 1982). Ramadas occur at some structures, as evidenced by a single wall attached to the exterior of the structure. The number and placement of interior features varies across structures, and some structures lack interior and exterior features entirely.

Typical small structure features noted by Preucel (1990) during the course of the Pajarito Field House Project include hearths, bins, and post molds recorded for some small structure interiors; other structures lack any interior features. One hearth was discovered outside of a structure; however, the extramural areas of all structures were not systematically investigated. Like the Cochiti Flood Pool structures, Preucel’s structures are characterized by architectural variability as well as some variability in internal features.

Material Culture

Excavation of small structures provides an excellent opportunity to obtain a representative inventory of the artifacts and features. As the discussion of site function indicates, material culture may provide the most important evidence for determining primary function of small structures. In a review of small structure studies from the Southwest, Stone (1993) found that artifact assemblages were key in determining not only site function, but also duration of site occupation. Site size and architecture were less helpful in addressing these issues.

Subsistence

Excavation data from small structures has the potential to provide useful information regarding the diet of Ancestral Puebloans who occupied the Pajarito Plateau. Ecofactual remains, such as pollen, carbonized macrobotanical remains, and faunal bone contribute valuable information about types of available and utilized resources. The presence of tools used for hunting and food processing also provide clues to the subsistence regime of small structure occupants. Subsistence information from small structures, in particular, is necessary for comparison with excavated samples from Shohakka Pueblo, a Classic Period site, to
provide a more complete picture of the yearly subsistence regime. If small structures were occupied primarily during the summer months and pueblos during the winter months, then we might expect different subsistence resources (as well as the tools associated with those resources) to occur at the different site types.

RESEARCH RESULTS AND INTERPRETATIONS

Prior to discussing the results of investigations within each of the research domains presented above, it is necessary to consider what the chronological data tell us about the occupational history of each site. The BAS assigned preliminary dates to each of the project sites based on the proportions of surface ceramic types (Orcutt 1999a). Although several samples were submitted for dating via various chronometric techniques as part of the SHE study, the results were somewhat ambiguous. Only one of the two pueblo sites yielded chronometric samples. For Shohakka Pueblo, a reliable archaeomagnetic date could not be obtained from the hearth sample, although a date range between A.D. 1250 and A.D. 1450 provides a rough estimate (Cox 1999). Only one wood sample yielded a date, which was a non-cutting date of 1441 (Dean 1999). A radiocarbon sample from the Room 3 hearth provided a calibrated calendar date of A.D. 1420 to 1650 (2 sigma, 95% probability). The approximate dates from tree ring and archaeomagnetic samples, along with the more reliable radiocarbon date support the temporal placement of Shohakka Pueblo at the end of the fourteenth through the beginning of the fifteenth centuries, as originally determined by ceramic data and previous investigations (Kohler and Linse 1993).

The small structure at LA 115152 produced a radiocarbon sample with a calibrated calendar date of A.D. 1280-1425 (2 sigma, 95% probability). This date is consistent with the ceramics from surface and subsurface contexts, which suggest an ephemeral Coalition Period occupation and more frequent use during the early, and perhaps middle, Classic Periods.

The small structure at LA 118345 did not yield any temporally diagnostic artifacts; therefore, we had to rely solely on radiocarbon dates. Four samples produced calibrated dates ranging from the tenth through fifteenth centuries. Three of the dates span the Developmental through Coalition Periods, and the fourth date spans the Coalition through Classic Periods. It is difficult to assess which of these dates most reliably reflects the period of site occupation without other diagnostic materials for comparison. The lack of surface and subsurface artifacts at the site argues against continual use of the structure over a broad time period, since we would expect refuse to accumulate if the structure was regularly reused over time.

Site Function

Some of the potential functions of small structures include field houses, hunting blinds, and gathering stations. Small structures probably serve as loci for a number of activities, rather than for one activity exclusively, although some of these structures may have a primary function (such as agriculture) for which they initially are built. Small structure function is evaluated using archaeological data from the SHE project. Evidence for each of the three potential functions is discussed separately below.
FIELD HOUSES

A small structure that served as a field house should be associated with some features and materials used for agricultural production. These include natural or cultural agricultural features such as terraces, grid gardens, or water control devices; two-hand manos and trough metates, stone hoes; and cultigens. All of these indicators need not be present to assign a field house function; however, the presence of a few of these indicators is enough to suggest activities associated with agricultural production.

No agricultural features are present in the vicinity of LA 3839 and LA 118345. On-site cultivation is suggested for LA 71144, which has a single rock alignment north of the structure. A set of three short rock alignments is located 15 meters south of this site, which could easily have been managed by the LA 71144 occupants. Some potential terraces are present near the structure at LA 115152. A small set of definite cultural terraces is located on the saddle immediately below this site. Two small structures and another potential terrace occur within 50 meters of LA 115152. Several terraces occur at the Coalition pueblo site, LA 65617, while no agricultural features are located in the vicinity of Shohakka Pueblo.

LA 3839 is the only site to yield two-hand manos. One-hand manos occur at all of the other small structures, as well as at the pueblos. Trough metates are not identified at any of the project sites, although this form may be represented by some of the metate fragments. The near absence of milling implements traditionally associated with intense maize processing does not necessarily mean that cultigen processing did not occur at most of the project sites. The other processing tools present at the sites (one-hand manos, slab metates) could be used to process a range of subsistence resources, including cultigens. Availability of suitable raw material, frequency of processing activities, and degree of reliance on cultigens also could influence the form of milling implements. A possible hoe is the only other tool indicative of agricultural activity, but this is from Shohakka Pueblo; similar tools were not recovered from any of the small structure sites.

Maize pollen was recovered from three of the small structures (Smith 1999), indicating a direct association with cultigens. While maize pollen was lacking from LA 118345, macrobotanical samples yielded charred maize cupules along with a fragment of squash/pumpkin rind (Puseman and Ruggiero 1999). Pollen and macrobotanical data from the pueblo sites indicate direct association with cultigens as well.

Pollen and macrobotanical data provide the strongest evidence for a field house function for small structures. Association of LA 71144 and LA 115152 with agricultural features strengthens the argument for a field house function for these two particular structures. The presence of maize in association with two-hand manos at LA 3839 suggests maize processing which is congruent with a field house function. Maize cupules in the structure at LA 118345 may indicate storage of this resource since processing tools and associated agricultural features are absent.

HUNTING BLINDS

Small structures may have served as loci for activities related to hunting or as hunting blinds themselves. If a structure served such functions we might expect evidence of tool manufacture and maintenance, the presence of hunting tools, and/or the presence of faunal materials if game was processed inside the structures.

A high percentage of cores and core tools at LA 3839 suggests a focus on tool manufacture. This site is adjacent to Capulin Creek, which would have provided a ready source of raw materials for tool production. Complete cores, core fragments, and/or core tools occur at LA 71144 and LA 115152, but in smaller proportions. LA 118345 did not yield any evidence for tool manufacture as only a single flake was recovered from excavation. LA 71144 is the only small structure site to yield
projectile points. Two points, one obsidian and one chert, occur at this site. Both pueblo sites yielded projectile points.

Faunal remains only occur at the pueblo sites, suggesting either that game was not processed at small structures in general or hunting activities did not occur at any of the SHE project structures in particular. If the small structures were used as hunting loci, it is likely game would have been transported back to habitation sites for processing.

Minimal evidence exists for assigning hunting as a primary function to the small structures from the SHE project. Although tool manufacture at LA 3839 and projectile points at LA 71144 might be indicative of hunting activities, these activities probably are of secondary importance at small structure sites in general.

GATHERING STATIONS

Small structures may have served as the loci for gathering and processing of wild resources. These functions are evidenced by a predominance of one-hand manos and slab metates, along with paleobotanical signatures dominated by wild resources. Keep in mind that milling tool form is not a definitive indicator of the type of resource being processed, since most milling tools can be used to process both wild resources and cultigens.

As already noted above, groundstone assemblages from all but LA 3839 are characterized by one-hand manos and slab metates. But because this line of evidence by itself is ambiguous, we need to consider the paleobotanical data, which provide more definitive evidence of the types of economic resources at a site.

Paleobotanical data from all of the small structures indicate economic use of wild plants (Puseman and Ruggiero 1999; Smith 1999). Economic taxa at LA 3839 include Cheno-Am, grasses, sunflower, beeweed, and peppergrass. A narrower range of economic taxa occur at LA 71144; these include prickly pear and cholla cacti. Economic taxa at LA 115152 include Cheno-Am, beeweed, and peppergrass. The economic taxa from LA 118345 include cholla, grasses, and piñon pine.

The evidence above indicates wild resource processing or collection occurred at each of the small structures in the study area. Most of these resources currently grow in and around the sites and, if present in the past, could have easily been collected by the occupants of the small structures.

SUMMARY

We do not advance archaeological interpretation by considering small structures as serving a single function. In all likelihood these structures served a number of functions as evidenced by the above evaluations. There is strong evidence for interpreting LA 71144 and LA 115152 as field houses; however, there is also evidence that hunting activities occurred at LA 71144 and wild resource procurement and processing at both. The structure at LA 3839 is not associated with any field features, but the groundstone assemblage and paleobotanical data suggest cultigens, along with wild resources, were processed at the site. Moreover, tool manufacture seems to have been more prevalent at this site compared to the others, although all but LA 118345 have evidence for tool manufacture. LA 118345 may have been used to store wild plants and cultigens, although the single mano fragment found on the surface suggests limited processing occurred here.

Wilcox's (1978) caution against assuming all small structures are field houses is born out by the results presented above. The small structures investigated by the SHE project served a variety of functions including field house, hunting stand, and gathering station. It is difficult to determine which of these is the primary activity at the structures, although the data suggest hunting as a secondary focus. If we think of site function in singular terms, then we miss the full range of activities carried out at these sites and provide only a partial construction of the role these sites played.
in Ancestral Pueblo settlement and subsistence systems.

**Site Structure and Layout**

All of the small structures are constructed of shaped and unshaped masonry blocks and all have one or two rooms. Room sizes ranged from 3.2 to 6.2 m², fairly comparable in size to the pueblo rooms measuring 4.1 to 6.7 m².

Tested rooms at LA 115152 and LA 118345, both one-room structures, lack interior features. The tested room at LA 3839 has a hearth against the middle of the east wall. The hearth is stone-lined with one upright basalt cobble embedded in the rim opposite the room wall. No other features occur in this room. A pit occurs adjacent to the north wall in the tested room at LA 71144. This basin-shaped pit is adobe-lined and is noticeable harder than the surrounding sediment. The pit is not very deep and would not be good for storage. The lack of burning around and in the pit indicates it is not a hearth.

The paucity of features in small structures contrasts with the prevalence of features in pueblo rooms. An adobe storage bin and a hearth occur in Room 3 at Shohakka Pueblo, although Room 4 lacked features. Seven subfloor pits occur in the excavated room at LA 65617. This contrast is expected since pueblo rooms were occupied over greater periods of time and also served as the focus for a wider range of activities.

LA 71144 and LA 115152 are the only small structures with associated refuse scatters. The refuse scatter at LA 71144 is located east of the structure, while the scatter at LA 115152 surrounds the structure. Limited testing around structure exteriors did not reveal any external features except for a possible pit south of the tested room at LA 71144.

**Material Culture**

The types of material culture items found in small structures is discussed in the above section on structure function. Here we compare the types of items found in small structures vs. pueblos and also examine ceramic and flaked stone densities between the different site types. While greater numbers of artifacts occur in pueblos, the proportions of different artifact types do not differ greatly between the two site types. Figure 2 shows the proportions of different artifact types for small structures and pueblo rooms. This graphic indicates pueblos do not have consistently higher proportions of decorated ceramics, utilized flakes, or milling implements than small structures. LA 115152 has the highest proportion of decorated ceramics, while LA 3839 has the highest proportion of milling tools. In general, two of the small structures (LA 3839
and LA 71144) and one of the pueblos (LA 65617) have similar proportions of the five material culture classes examined. LA 115152, a small structure, and Shohakka Pueblo are somewhat similar in terms of proportion of the five material culture classes. From these distributions we see that striking differences in material culture do not exist between pueblo and small structure sites in general, although there is variability among the small structures and between the pueblos.

If we examine flaked stone and ceramic densities between the two site types, we see some differences between small structures and pueblos (Figure 3). LA 3839 and 71144 have very low ceramic densities and only slightly higher flaked stone densities. Pueblos have the highest ceramic densities, although the ceramic density from LA 115152 is similar to that from the Coalition pueblo at LA 65617. The flaked stone density for Shohakka Pueblo, the larger of the two pueblos in the sample, is similar to the densities for LA 3839 and 71144. Artifact densities at LA 115152 are transitional between the low densities of the other small structures and the higher densities of the pueblos.

Subsistence

Results from pollen and flotation studies are discussed in the above section on structure function and will be only briefly reviewed here. All of the project sites have evidence for use of cultigens, particularly corn. Squash is the only other cultigen identified for the project sites, and this occurs at LA 3840 and LA 118345. These data indicate corn is an important part of the subsistence regime, however judging from the diversity of wild plants in paleobotanical assemblages from all sites these resources also are as important, if not more important, than corn in the diet. The range of wild plants represented at small structure sites include cacti, grasses, Cheno-Ams, sunflower, beeweed, and peppergrass/wallflower. This mixed diet of wild and cultivated resources also is reflected at the pueblo sites. Wild resources at Shohakka Pueblo include grasses, beeweed, cacti, parsley family, and purslane. Beeweed and Cheno-Ams are the only wild resources identified for the Coalition pueblo at LA 65617.

Faunal data are only available from the pueblo sites (Duncan 1999). Economic species from the Coalition site, LA 65617, include turkey, cottontail rabbit, ground squirrel, woodrat, weasel, squirrel, unidentified bird, and New World rats/mice. Shohakka fauna include turkey, deer, pocket gopher, unidentified fish, badger, and rattlesnake. Turkey is the only common faunal resource between the pueblo sites. This lack of comparability between the pueblo sites may be due to the different time periods in which these pueblos are occupied.

![Figure 3](image)
*Flaked stone and ceramic artifact densities from small sites and pueblos.*
CONCLUSIONS

The results of this study provide information about small structure function and variation specifically, as well as general information about Coalition and Classic period subsistence. Small structures serve a variety of functions including loci for processing and gathering of wild resources, and activities associated with agricultural production. Tool manufacture and maintenance also occurs at small structures, although to a lesser degree. While some of these structures do serve as field houses, indiscriminate labeling of all small structures as field houses obscures the full range of activities carried out at these structures. Our constructions of how these structures are used are limited if we simply apply the “field house” label and move on.

The number of rooms, and types and locations of features vary among small structures. This variability is related to duration, intensity, and season of occupation which themselves are determined by structure function. These axes of variability, while difficult to infer from limited archaeological data, should be the focus of future small structure studies.

The subsistence data obtained from small structures and pueblo sites indicate the importance of wild resources in the Ancestral Pueblo diet. Although corn is a dietary staple, it does not replace wild resources or curtail their use. This mixed subsistence strategy has implications for pueblo mobility and the locations of habitation and non-habitation structures on the landscape. Perhaps we need to reevaluate old notions about corn as the driving force in the daily lives of Pueblo populations and consider how the needs for both wild and cultivated resources are integrated into the overall pattern of pueblo lifeways.

The 1996 Dome Fire provides us with an opportunity to investigate not only the effects of a wildfire on archaeological materials but also to reevaluate pre-existing notions about small structure function and variation. As we approach a better understanding of what small structures really are and how they function in Ancestral Pueblo society, our constructions of the past will reflect the dynamic nature of this society rather than simply providing static typologies. Hopefully, the information gained from the SHE project will take us in this direction.

REFERENCES

Bandelier, A. F.

Cox, J. R.

Crown, P. L., J. D. Orcutt and T. A. Kohler

Dean, J. S.
Duncan, G. A.

Ensey, M. M.
1997 The Late Holocene Environment of the Jemez Mountains, New Mexico. M.A. thesis, Department of Anthropology, Washington State University, Pullman.

Haecker, Charles M.

Hewett, E. L.

Hubbell, Lyndi and Diane Traylor (editors)

Kohler, T. A.

Kohler, Timothy A. and Angela R. Linse (editors)

Orcutt, J. D.


Powers, R. P. and T. Van Zandt

Powers, R. P., T. Van Zandt, J. Vint and G. Head

Preucel, R. W.


Puseman, K. and L. Ruggiero
Ruscavage-Barz, S. M.

Smith, S.

Snead, J. E.

Stone, T. T.


Ward, A. E. (editor)

Wilcox, David

Zier, A.H.
INVESTIGATING SOCIAL ORGANIZATION AT AZTEC RUINS USING DETERMINANT RATIO ANALYSIS

Understanding the importance of prehistoric social and community organization is a central goal among many southwestern archaeologists. Social, economic, political and biosocial interaction, both within and among communities, are all based on the framework of integration provided by social organization. The various components of Puebloan social organization such as clans, moieties, phratries, ceremonial organization, kinship structure, and postmarital residence form a complex network important for maintaining solidarity both within and among communities. Each of these components overlaps with others in terms of membership, integrating each individual into a complex social unit (Eggan 1950:116). The primary function of social organization among the present-day Pueblo Indians, therefore, is social integration.

Since initial attempts to investigate various aspects of social organization such as kinship structure and postmarital residence in the prehistoric Southwest using archaeological evidence (e.g. Clemen 1976; Ember 1973; Hill 1966, 1970; Longacre 1964, 1966; see also Longacre 2000 for historical perspective on research on social organization in the Southwest), this topic has received only limited attention (but see Birkby 1982; Howell and Kintigh 1996; James 1994, Perigrine 2001; Schillaci and Stojanowski 2000). The present research investigates one aspect of social organization – postmarital residence – of the Pueblo III occupation of Aztec Ruins in northwestern New Mexico using biological data.
ceramic and tree-ring dating (Morris 1924a; see also Lister and Lister 1987; Robinson et al. 1974). Other researchers, however, believe there may have been virtually continuous occupation of the northern San Juan region by transitional or intermediate groups (see Stein and McKenna 1988:79, for discussion). It was this second presumably Mesa Verdean, occupation that resulted in virtually all of the burials recovered at Aztec by Morris (1924a).

ARCHAEOLOGY AS ANTHROPOLOGY AND THE USE OF BIOLOGICAL VARIATION TO INVESTIGATE POSTMARITAL RESIDENCE

Deetz (1960, 1965) was first to examine the relationship between artifact variability in the archaeological record and prehistoric postmarital residence. Through his research, Deetz (1960, 1965) proposed that preferences for matrilocal residence

Figure 1
Map showing location of Aztec Ruins.
were indicated archaeologically by non-random clustering of ceramic attribute combinations across a site. He reasoned that because matrilocal households often consist of multiple generations of related females, the knowledge of ceramic production – assumed to be a female occupation – would be passed down from mother to daughter with little innovation or change. Similarly, variability in lithic artifacts has been used to examine postmarital residence in prehistoric societies (Binford 1962; Deetz 1968). Another approach to investigating prehistoric social organization was proposed by Ember (1973) who used cross-cultural data to investigate the relationship between house size and preferred residence practices. Ember showed that matrilocal societies typically have larger living floors (>550-600 ft²) compared to patrilocal societies (also see Divale 1977).

In the Southwest, Longacre (1964, 1968) investigated postmarital residence at the Carter Ranch site in eastern Arizona (ca. A.D. 1100-1250) by documenting the nonrandom distribution of ceramic design motifs across the site. In this study, he found that specific design elements seemed to cluster in specific rooms. Assuming ceramic production was a female activity, Longacre concluded that these clusters represented lineal descent groups composed of related females and their husbands, a pattern consistent with matrilocal residence. Hill (1966, 1970) used a similar approach to investigate prehistoric postmarital residence at Broken K Pueblo in eastern Arizona (ca. A.D. 1200-1300) by looking at the distribution of artifact classes and architectural features. Through analogy with the present-day Hopi and Zuni people, Hill concluded the residents of Broken K Pueblo were probably matrilineal with matrilocal residence.

Although these studies were initially well received, they were later criticized for a number of reasons (see Allen and Richardson 1971; Dumond 1977; Lischka 1975; Plog 1978; Stanislawski 1973). For example, Allen and Richardson (1971) proposed that studies such as these rely on an overly simplistic view of residence, and that the ethnographic record indicates postmarital residence is often more complicated than adhering to a single residence rule. Furthermore, these authors point out that postmarital residence is only tangentially related to craft production. Perhaps most importantly, models such as these must rely on the assumption that the division of labor is known without error and is strictly practiced.
Biological Variation

Because the transmission of genetically determined biological, or phenotypic, variability is governed by the principles of trait inheritance and heritability (Hartl and Clark 1989), sex-specific patterns in variance and covariance across traits can be used to estimate prehistoric postmarital residence preference. Both metric and nonmetric traits of the craniofacial skeleton have been shown to be moderately heritable, and therefore useful for genetic distance studies, or studies of within- and between-sex biological variance (Cheverud 1988; Devor 1987; Sjøvold 1984; Suzanne 1977). Because environmental effects influencing craniometric variation by way of differential natural selection were likely minimal between male and female members of the same population, differences between the sexes in phenotypic variance are then reasonably assumed to be genetic in origin. Similarly, the effects of cranial deformation are not expected to differentially affect the males and females.

Lane and Sublett (1972) were the first to examine formally within-group patterns of biological variability to estimate postmarital residence among five Seneca cemeteries in New York using cranial nonmetric traits (but see Hulse 1941; Lewis and Lewis 1961). The authors of this study compared within- and between-cemetery sex-specific similarities and found males to be dissimilar between cemeteries and similar within cemeteries — a pattern consistent with a male-based system of postmarital residence. Spence (1971, 1974a,b) used a similar method in his study of postmarital residence at a Cape Kialeagak Eskimo site in Alaska. For this study, Spence compared sex-specific univariate variances for a series of metric traits and found that females were more variable for 26 of 30 traits, with five of these comparisons statistically significant. These results indicating greater female heterogeneity were interpreted as evidence for an exogamous virilocal society at this site.

More recent studies have relied on multivariate statistical methods for investigating postmarital residence using biological data (e.g. Konigsberg 1987, 1988; Stefan 1999; Raemsch 1995; Schillaci and Stojanowski 2000). Because the overall pattern of variation and covariation among physical traits best reflects a group's underlying genetic structure, multivariate methods that utilize a variance-covariance matrix are superior to univariate comparisons when between-group differences in genetic variation are being studied. Recent studies have demonstrated that the phenotypic variance-covariance matrix is proportional to the genotypic variance covariance matrix (see Cheverud 1988; Konigsberg and Ousley 1995), and therefore ideal for studying within- and between-group genetic variation.

Assumptions

The use of sex-specific differences in phenotypic variance to estimate postmarital residence patterns relies on several important theoretical, as well as methodological assumptions: 1) for within-site analyses, the sex with the greater variability is the more mobile sex, 2) the sex of each individual is estimated without error, and 3) the individuals buried at the site were members of that community without any post-occupational burials. Of these, the first assumption represents the theoretical basis for estimating residence using biological data. For example, a condition of greater male variability is consistent with the in-migration of unrelated males coincident with matrilocal residence, assuming non-prescribed group exogamy. The non-mobile sex, females in this example, is assumed to be comprised of related individuals that tend to exhibit similar phenotypic variance and covariance across all genetically determined traits due to common descent (see Lane and Sublett 1972; Spence 1974; Konigsberg 1987).

Although between- and within-site phenotypic variance has been used to investigate postmarital residence elsewhere (cf. Konigsberg 1987; Lane and Sublett 1972; Spence 1971, 1974a,b; Stefan 1999), only limited research has been conducted on Southwest skeletal samples (see Birkby 1982; Schillaci and Stojanowski 2000). The purpose of
the present research is to investigate postmarital residence at Aztec Ruins by statistically comparing male and female variation across seven craniometric traits using both univariate and multivariate methods.

MATERIALS AND METHODS

Data Collection

The skeletal sample used for this analysis consists of both males (n=9) and females (n=11) originating from Aztec’s West Ruin. The data set consists of seven craniofacial metric variables (Table 1; Figure 3) taken on the skeletal sample housed at the American Museum of Natural History. Measurements were taken using Mitotoyo digital calipers. All measurements were taken by one of us (MAS) using the same set of calipers over a two day period to avoid the potential effects of intra- and inter-observer error. The sex of each individual was estimated with the methods presented in Buikstra and Ubelaker (1994) using the secondary sexual characteristics of the cranium. Again, all sex estimates were made by MAS to avoid inter-observer error.

UNIVARIATE DATA ANALYSIS

Standard deviations and coefficient of variation (CV) values were calculated for both males and females for all traits. The significance of the observed differences in the standard deviations between males and females was estimated using a standard F-test. The F statistic, which is calculated as the proportion of the larger to the smaller variance (the square root of the standard deviation), is compared to an F-distribution with n_1-1 and n_2-1 degrees of freedom. Within-sex estimates of CV values were adjusted for small sample bias using methods presented in Sokal and Rohlf (1995:58) and the following equation.

\[ CV_A = (1-1/n_i)CV_i \]
Where \( CV_A \) is the bias-free estimate of the coefficient of variation and \( n_i \) is the sample size of group \( i \). The standard deviation, coefficient of variation, and F-test were chosen for this analysis because they are easy to calculate, well understood, and relatively easy to interpret. As discussed earlier, the sex exhibiting greater variation, as described by either of these univariate measures, presumably represents the more mobile sex.

**Multivariate Determinant Analysis**

To assess differences between male and female phenotypic variability across all seven measurements traits, we used a determinant ratio analysis (cf. Konigsberg 1988; Raemsch 1995; Stefan 1999). The determinant is a matrix scalar value which serves as a measure of variability within a sample variance-covariance matrix (see Green 1976). We used the RANDET2 randomization program provided by Dr. L. Konigsberg for all determinant calculations. The RANDET2 program calculates the determinant \( |C| \) of the variance-covariance matrix for each sex separately and then calculates the natural log of the ratio of the male to female determinants: \( \ln(|C_{\text{male}}| / |C_{\text{female}}|) \). This ratio is expected to be one when equal mobility between males and females exists (Konigsberg 1988). When a condition of greater male mobility exists, as is the case among matrilocal societies, a ratio greater than one is expected. When patrilocality is indicated, a ratio less than one is observed. In order to assess the significance of the observed ratio, the observations are resampled (500 iterations) after random shuffling to create a randomization distribution of pseudo-determinant values. The \( p \)-value is provided by the proportion of pseudo-determinant values greater than or equal to the observed ratio.

As discussed earlier, multivariate methods such as the determinant ratio analysis used here are superior to univariate methods because they allow comparisons of the within-sex pattern of variation and covariation across multiple traits simultaneously. It is this pattern of variation and covariation that best reflects the underlying within-group genetic structure. We chose the determinant ratio analysis because it is considered to be the best means of comparing within-sex variation in variance and covariation across multiple traits (see Konigsberg 1988; Stefan 1999).

**RESULTS**

**Univariate Comparisons**

The results of the univariate comparisons of male and female phenotypic variability were equivocal. Males exhibited greater \( CV \) values for four of the seven traits included in this study (Table 1). A qualitative comparison of male and female mean \( CV \) values also indicates slightly greater average male variability over all seven traits. These results are mirrored by the formal comparisons of male and female standard deviations (Table 2). Similar to the comparison of \( CV \) values, males were more variable for four of the seven traits with none of these comparisons significant at the .05 level. The average male standard deviation was slightly greater than the female average indicating greater phenotypic variability, and presumably genetic heterogeneity, among males, but again, this difference was not significant (\( F = 1.145, p > .10 \)).

**Multivariate Comparisons**

The results of the determinant ratio analysis comparing male and female patterns of variation and covariation across all seven traits included in this study were not in agreement with the univariate comparisons previously described. The calculated natural log of the determinant ratio was significantly less than one \( (\ln(|C_{\text{male}}| / |C_{\text{female}}|) = -16.05; p = .004) \). These results indicate there was considerably greater female heterogeneity in genetically determined variance and covariation consistent with a male-based system of postmarital residence.
Table 2  
Univariate comparison of male and female craniometric variability.

<table>
<thead>
<tr>
<th>Trait</th>
<th>CV1</th>
<th>SD</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>male (n=9)</td>
<td>female (n=11)</td>
<td>male (n=9)</td>
<td>female (n=11)</td>
<td>F Statistic</td>
<td></td>
</tr>
<tr>
<td>Upper Facial height</td>
<td>4.434</td>
<td>5.014</td>
<td>3.070</td>
<td>3.321</td>
<td>1.170</td>
<td></td>
</tr>
<tr>
<td>Palate breadth</td>
<td>7.239</td>
<td>8.569</td>
<td>2.621</td>
<td>3.083</td>
<td>1.384</td>
<td></td>
</tr>
<tr>
<td>Palate length</td>
<td>5.565</td>
<td>7.274</td>
<td>2.481</td>
<td>2.902</td>
<td>1.368</td>
<td></td>
</tr>
<tr>
<td>Nasal height</td>
<td>5.759</td>
<td>3.496</td>
<td>2.789</td>
<td>1.619</td>
<td>2.968</td>
<td></td>
</tr>
<tr>
<td>Nasal breadth</td>
<td>9.421</td>
<td>8.003</td>
<td>2.174</td>
<td>1.901</td>
<td>1.308</td>
<td></td>
</tr>
<tr>
<td>Left Orbital height</td>
<td>7.448</td>
<td>4.925</td>
<td>2.499</td>
<td>1.635</td>
<td>2.336</td>
<td></td>
</tr>
<tr>
<td>Upper Facial breadth</td>
<td>4.314</td>
<td>4.228</td>
<td>4.308</td>
<td>4.177</td>
<td>1.064</td>
<td></td>
</tr>
<tr>
<td>Average</td>
<td>6.311</td>
<td>5.930</td>
<td>2.849</td>
<td>2.663</td>
<td>1.145</td>
<td></td>
</tr>
</tbody>
</table>

1 Bias adjusted values presented

DISCUSSION

Although the results of the multivariate determinant ratio analysis indicating greater female genetic variation are incongruent with the univariate comparisons indicating greater male variation, we believe the inhabitants of Aztec likely had a preference for a male-based pattern of postmarital residence. While the formal comparisons of univariate variability were nonsignificant, the result of the multivariate determinant ratio analysis indicating greater female variance was highly significant ($p = .004$). Because phenotypic variation and covariation across multiple traits – as described by the phenotypic variance-covariance matrix – better reflects the underlying structure of genetic variation than do univariate variances, the determinant ratio of the female to male variance-covariance matrices is a better comparison of within-sex genetic variation.

Within an ethnohistoric context, patrilocal residence at Aztec Ruins is inconsistent with the western Pueblo pattern of matrilocality seen among the Hopi and Zuni Indians (see Eggan 1950), but is more consistent with the patrilocal/bilocal pattern seen historically among the Tewa Pueblos of the northern Rio Grande area (see Ortiz 1966). If Mesa Verde people were in fact ancestral to the present-day Tewa, as reported by oral tradition, then our results would suggest that at least some portion of Tewa social organization developed among Mesa Verdean communities in the northern San Juan Basin prior to their migration to the northern Rio Grande.

Limitations to the Study

We temper these conclusions with the understanding that our analysis provides only a small glimpse of postmarital residence during the Pueblo III period in the San Juan Basin. This glimpse is based on only one community, Aztec Ruins, which may or may not be representative of other contemporaneous communities in the San Juan Basin. It is important to note that the diversity and complexity of prehistoric social organization in the San Juan Basin might have been great, and that evidence for patrilocal residence at Aztec Ruins does not constitute evidence for a region-wide pattern of postmarital residence. Future research incorporating ethnohistorical, archaeological, as well as biological perspectives is needed before we can begin to accurately characterize the
regionally diverse social organization of the prehistoric Pueblo world.

Final Conclusions

The results of our multivariate determinant ratio analysis indicate the residents of Aztec Ruins likely conformed to a socially prescribed pattern of patrilocal postmarital residence, perhaps similar to that seen among the present-day Tewa Pueblos, but dissimilar to the matrilocal pattern seen among the Western Pueblos. These results are incongruent however with the results of formal univariate comparisons of within-sex phenotypic variation. These conclusions are tempered with the understanding that the pattern of prehistoric social organization among and within communities of the San Juan Basin was likely complex and regionally diverse.

ENDNOTES

1. In order to assess the explicit assumption that each individual was correctly sexed, we conducted a discriminant analysis using PROC DISCRIM in SAS (SAS 1989). All seven traits included in our analysis were used, and prior probability of group inclusion was set to 0.5. A misclassification rate of 0% was achieved, indicating the assumption that each individual was correctly sexed is likely reasonable. The original sex estimate based on the secondary sexual characteristics of the cranium and pelvis, as well as the posterior probability of group inclusion based on the linear discriminant functions are listed below. The assumption of homogeneous within-sample (i.e. within-sex) variance-covariance matrices typically required when using discriminant functions for classification was tested using PROC DISCRIM in SAS. This assumption is satisfied (p = 0.6319, df = 28).

<table>
<thead>
<tr>
<th>AMNH Cat#</th>
<th>Estimated Sex</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>7727</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>7728</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>8070</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>8071</td>
<td>M</td>
<td>0.9980</td>
<td>0.0020</td>
</tr>
<tr>
<td>8220</td>
<td>M</td>
<td>0.9958</td>
<td>0.0042</td>
</tr>
<tr>
<td>8325</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>8847</td>
<td>M</td>
<td>0.9966</td>
<td>0.0034</td>
</tr>
<tr>
<td>9347</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>9348</td>
<td>M</td>
<td>1.000</td>
<td>0.000</td>
</tr>
<tr>
<td>7909</td>
<td>F</td>
<td>0.0002</td>
<td>0.9998</td>
</tr>
<tr>
<td>7942</td>
<td>F</td>
<td>0.000</td>
<td>1.0000</td>
</tr>
<tr>
<td>7971</td>
<td>F</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>7974</td>
<td>F</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>7980</td>
<td>F</td>
<td>0.0001</td>
<td>0.9999</td>
</tr>
<tr>
<td>7981</td>
<td>F</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>8074</td>
<td>F</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>8327</td>
<td>F</td>
<td>0.0308</td>
<td>0.9692</td>
</tr>
<tr>
<td>8846</td>
<td>F</td>
<td>0.0000</td>
<td>1.0000</td>
</tr>
<tr>
<td>9346</td>
<td>F</td>
<td>0.3024</td>
<td>0.6976</td>
</tr>
<tr>
<td>9349</td>
<td>F</td>
<td>0.0015</td>
<td>0.9985</td>
</tr>
</tbody>
</table>

2. Because the F-test can be affected by within-sample non-normality, this standard assumption was evaluated for all variables using a Wilk-Shapiro test in SAS. The p-values listed below suggest all variables were normally distributed for both sexes.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Facial height</td>
<td>0.440</td>
<td>0.150</td>
</tr>
<tr>
<td>Palate breadth</td>
<td>0.252</td>
<td>0.109</td>
</tr>
<tr>
<td>Palate length</td>
<td>0.162</td>
<td>0.744</td>
</tr>
<tr>
<td>Nasal height</td>
<td>0.816</td>
<td>0.199</td>
</tr>
<tr>
<td>Nasal breadth</td>
<td>0.640</td>
<td>0.779</td>
</tr>
<tr>
<td>Left Orbital height</td>
<td>0.481</td>
<td>0.807</td>
</tr>
<tr>
<td>Upper Facial breadth</td>
<td>0.164</td>
<td>0.581</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

We would like to thank K. Mowbray from the American Museum of Natural History for facilitating this research. We are grateful to Dr. L. Konigsberg and Dr. C. Raemsch for providing the RANDET2 program used in this analysis. Finally, we would like to thank T. Windes for his support of this project. Although this research has benefited greatly from their help, responsibility for any and all interpretations, errors, and omissions lies solely with us. A portion of this research was funded research grants from the Arizona Archaeological and Historical Society and the New Mexico Archaeological Council.

REFERENCES

Allen, William L. and James B. Richardson III.

Bass, William M.

Binford, Lewis R.

Birkby, Walter H.

Buikstra, Jane E. and Douglas H. Ubelaker

Cheverud, James M.

Clemen, R.T.

Deetz, James


Divaile, W.T.

Dumond, Don E.

Eggan, Fred

Ember, Melvin.

Green, Paul E.

Hartl, Daniel L., and Andrew G. Clark
Hill, James N.


Howell, Todd L., and Keith W. Kintigh

Howells, Willian W.

Hulse, Frederick S.

James, Steven R.

Konigsberg, Lyle W.


Konigsberg, Lyle W., and Stephen D. Ousley

Lane, Rebecca A., and Audrey J. Sublett

Lewis, Thomas M.N., and Madeline K. Lewis

Lischka, Joseph J.

Lister, Robert H., and Florence C. Lister

Longacre, William A.


Martin, R., and K. Saller

McKenna, Peter J.


Raemsch, Carol A. 1995 Craniometric Variation Within Skeletal Samples of Diverse Biological Composition. Ph.D. dissertation, Department of Anthropology, State University of New York, Albany.


Stein, John R., and Peter J. McKenna

Susanne, C.

Vivian, Gwinn R.

White, Tim D. and Pieter A. Folkens
As I look back over the past forty-five years (and take the privilege of a first person account) it is still amazing to me to see the number of now recognized, highly respected professionals in the discipline of archaeology that got their start (at least their excitement and dedication for their future careers) from “arrowhead hunting” the sand dunes of southeastern New Mexico and West Texas (Western or far West Texas was considered anything on the “other side” of Guadalupe Peak). Collins, Roney, Burns, Wiseman, and many others in different parts of the country became interested enough in pursuing answers to the myriad of questions generated from the artifacts being discovered that they became good “amateurs” and eventually attained degrees and became leaders in the field.

Although I do not include myself in this most distinguish/august group of real pros as I took a slightly different path to merit some sort of livelihood, I do know how significantly my early attempts to create some sort of chronological sequence of the prehistoric peopling of the region influenced my life. As I approach retirement with the potential of investing much more of my physical and mental resources into trying to answer some of those questions that still linger, it becomes clear that I am coming full circle in trying to recall, as we all do on occasion, our first impressions of a site or type or raw material or...whatever.

We were all privileged during that period to be able to roam the ridges and hollows and collect flakes, sherds, and, of course, the projectile points, scrapers and an occasional knife, as well as the numerous unknown objects that seldom had references or distinct affiliations.

Although my desire to learn more about what I was finding was insatiable as I wore out the covers on the old 1954, Vol. 25, Bulletin of the Texas Archaeological Society Handbook of Texas Archaeology and Marie Wormington’s fifth edition of Ancient Man in North America when it became available in 1964. I do not believe I would have done much more than just collect had it not been for the formation of the old Lea County Archaeological Society and the training I encountered from its early members. Every opportunity found me exploring the area for new locations where signs of ancient habitation occurred but as I received guidance, particularly from John Corley and Bus Leslie, I began to direct my attention to recording each site and every artifact.

I proudly proclaimed on a regular basis that I was the second member to join the LCAS in 1957 and often during those early years lamented that I had not been the first. Literally hundreds of hunters and gatherers of cultural material were out almost every weekend in search of special or unique finds they could bring to the meetings to discuss and/or have identified.

However, patterns were becoming apparent, associations were evident and an attempt to put the information on paper resulted in the LCAS Archaeological Survey AND Map! Many of the amateurs were considered hoarders of both their
knowledge about the context in which they had found certain artifacts as well as any information they might have related to access or particulars about specific sites. But, through the leadership and example of Corley and Leslie, the organization became a model of sharing what we each knew for the common good. Well over two hundred sites were charted and a "Projectile Point Types of Extreme Southeastern New Mexico", published. Correlations and concepts were reported as an occasional "educational series" of papers, and "bulletins" published as a result a new pottery type (Ochoe Indented) and a new projectile point (Maljamar) were described. Several sites were excavated, including the Merchant Site, Boot Hill and Indian Hill (by the Lovington Junior Archaeological Society) and by the mid 60's the LCAS reached its zenith with over 60 adult members.

Since few professionals had visited the area and fewer still made any meaningful comments about its archaeology the amateur organizations became the primary sources of establishing cultural sequences, amazingly, based primarily on surface finds as almost all of the sites that had any depth to them were recent in origin. Leslie even went on to establish an arrow point-pottery type correlation, which to some skeptical professionals was challenging to say the least until they saw/experienced the volume of his expertise. By the mid 1960s there were quite a few very active societies including Hobbs, Lovington, Portales, El Paso, Midland, Andrews and Lubbock.

It was decided that there were extensive/multiple connections between the normal "ranges" established by the hunter-gatherers (both prehistoric and modern as day trips often limited the extent of travel even with motorized vehicles) and that we should get to gather on a regular basis to expand our knowledge base.

Thus, the Southwestern Federation of Archaeological Societies was organized and had its first meeting in Hobbs, New Mexico, in 1965 with the second one being held in Midland in 1966. The convocations included some extraordinary avocational archaeologists like Vernon Brook, Emmitt Shed, Jay Blaine, Jim Warnaic, John Runyan, the Stickneys, Jack Hedrick, Aaron Riggs, Jim Word, Les Davis and many others presented papers and became the experts in specific geographical areas and/or certain cultural connections. Many annual meetings followed with the proceedings dutifully being published. The profession was beginning to take note of the professionalism with which the studies were being conducted and the information that was being brought to light and respect ensued.

Occasionally, some members of these groups would venture further afield and participate in much more private "digs" which included "pot hunting" on both private and public lands. Unfortunately at the time there was little or no management, control, or enforcement on those sites which were producing many artifacts but very little scientific knowledge.

As the legal restrictions increased and examples were made of those who had used heavy equipment to rape and pillage productive sites on federal lands, surface hunting became less and less overt and excavating except by permit pretty well ceased. Societies died and those who continued to hunt for artifacts were afraid to share anything about their finds for fear of being fined or arrested. My dad, who discovered the hand dug well at Rattlesnake Draw and contributed much to the knowledge of Paleo Indian in Southeastern New Mexico, experienced this pursuit first hand on one occasion. Although he had been designated as one of BLM's original "card-carrying" resource persons, he found himself being followed and observed one day while legally hunting deer off the western edge of the Caprock between Hobbs and Carlsbad. His car was searched and he was treated as a suspect thought to have been "collecting" on public land.
After graduation from ENMU, I returned to Hobbs to create the Southeastern New Mexico Museum Association and become the first curator for the Museum of Southeastern New Mexico. Leslie, Runyan and I were appointed to BLM’s SENM Archaeological Inventory Group, which allowed us to follow up on reports of discoveries in the area and to continue to investigate certain sites to further the knowledge of archaeology on BLM lands, which encompassed most of the Roswell District. We encountered numerous individuals who were still collecting but had no incentive to share their knowledge for fear of retribution.

Even the past year, I met a gentleman in Hobbs who wanted to show me some items he had found in the sandhills. While he was aware there could be consequences for collecting he considered this his only vice and vital to his stability, mentally and physically.

Admittedly, those of us who were able to seek evidence of earlier life in the 1950’s and 60’s were encapsulated in a much simpler era, some of us, most of us, took seriously the documentation of what we were finding and shared it with one another. There was much more trust by governmental agents in that what we were doing was assisting in unraveling some of the issues related to the “surface archaeology” of the region.

When some of the members began to cross the line and collect for personal reasons the credibility of most of the amateur societies began to crumble. As entities they had little or no recourse (or authority) and thus many members decided to no longer be associated with those who were going beyond the boundaries of professionalism.

The other more poignant reason for decline of many of the organizations “dedicated to the preservation of our archaeological heritage” was that they tended to “outgrow” the incoming neophytes. The original members had come a long way in the educational process and not only knew the “language” but also most of the finer points of the methodology and even technology accompanying the profession. Thus, the older, more experienced group tended to converse with others of the same expertise and rarely took the time to train the newer recruits and bring them into the fold.

So, we still have individuals who look for evidence of past cultures but are doing so in defiance of the existing laws and without direction or encouragement to share the information that their fines impart.

So what are the possible solutions to this current dilemma? One, certainly, would be to put more officers in the field and cite the offenders but this would be expensive and probably not practical considering the spaces involved.

Another scenario would be to “license” those individuals who are interested in avocational archaeology. Actually the approach would be to “enlist” participants to assist in helping the profession identify new sites, types, raw material sources, etc. This could be accomplished by sending those who “subscribe” literature about what is generally known about the archaeology of the region, common artifact types, as well as including those sites that are currently being researched and could be visited but not hunted, what questions are still unanswered, a bibliography and how the “volunteer” could be an asset to the studies being conducted, and just as importantly how they could become an advocate in educating others (especially those individuals they encounter in the field) about the program and all that it offers to those desiring more knowledge about the past.

And how would this effort be funded? Ideally it would be a joint venture between the State Preservation Office, the BLM and the Archaeological Society of New Mexico with SOME (hopefully a substantial portion) of the expense of the program being offset by the fees collected for the enforceable/renewable/annual licenses. Much like the Department of Game and Fish, an annual report would be required, in this
case identifying their finds, new sites, correlations/associations, even total days hunted, in which areas, etc. In some cases certain artifacts might be borrowed by the sponsoring agencies for photographing or casting. They might even be required to become a member of the state Society or at least encouraged to be associated with some recognized/respected group that has some type of training program.

OR we could simply ignore these perpetrators since they are not doing that much harm to the area's overall archaeological environment. But the other side of that proverbial coin is how much could they potentially contribute over time even in calling attention to “accidental discoveries.” Quite a few of those original “arrowhead hunters” have made major advances to the field and in some cases even to the future of archaeology itself so it could be assumed that SOME of these 21st Century amateurs could catch the “bug” and become specialists in their own right.

I have heard many discussions about leaving everything in situ for future/further research but two arguments against that concept particularly in the region being discussed are: 1) very little surface material remains in its original context because of the mobility of the dunes and erosion-al processes on the “hard pan”; 2) the mobility of the dunes lessens the opportunity for repeated discoveries; and 3) those individuals will continue to pick up artifacts anyway so why not direct their energies in a team effort to benefit everyone.

Recognizing the probability of my naivété in making this proposal and taking into consideration my unfailing trust in the human response to be of service, especially in something they might view as vital to understanding and preserving our cultural heritage (which has been spiritual/sacred for some), I still believe this idea is worth considering.

The final proposition to my colleagues is for those of us who did collect and record during the early years to join my Dad and me in donating our collections to the Southwestern Archaeological Research/Resource Center which is being incorporated into the new museum at New Mexico Junior College in Hobbs.

This new facility should be in operation in the near future and is established specifically to preserve “amateur” collections. This effort has been close to three decades in the making and consid- ered (and reconsidered) at several locations but it appears we finally have a home. Many (maybe most) of those original collections have either been purchased by some of the major “buyers” or have gone on the auction block as one of the partners passed on. The goal of the SWAR/RC is to bring together all of the material culture possible that was accumulated through the years for reference and research... in perpetuity.

Most of the early “arrowhead hunters” were concerned about what would happen to their collections and I think all of them would have been proud to have their finds utilized for continuing educational purposes. Simply knowing that all their interest, physical and fiscal expenditures were not in vain would make their legacy worthwhile. If you are interested in donating a collection or making a financial contribution or know someone who would be willing to do either or both or serve on the advisory board of the SWAR/RC, please contact me, but be willing to work to preserve our archaeological heritage.

ACKNOWLEDGEMENTS

These thoughts are dedicated to the Stickneys, Francis and Teddy Lou, who were not only an encouragement and resource to me from the earliest days of our efforts to organize ourselves into meaningful and productive members of the archaeological community but also leaders and examples for avocational archaeologists everywhere and one of my major professors, the late Dr. George Agogino, who believed in and encouraged amateur archaeologists throughout his entire career.
Landscape, a creation of human culture, can be read like an historical text. Henri Lefebvre, a landscape theorist, describes how history is encoded in the images of such sites when he writes:

The historical and its consequences, the ‘diachronic’, the ‘etymology’ of locations in the sense of what happened at a particular spot or place and thereby changed it—all of this becomes inscribed in space. The past leaves its traces; time has its own script. Yet this space is always, now and formerly, a present space, given as an immediate whole, complete with its associations and connections in their actuality (Lefebvre 1991:37).

He would categorize rock art sites, such as Abo Pueblo, as representational spaces, which “need obey no rules of consistency or coherence. Redolent with imaginary and symbolic elements, they have their source in history—in the history of a people as well as in the history of each individual belonging to that people” (Lefebvre 1991:41-42). Humans imbue certain physical features with meaning, creating a visual text of sorts by building structures or marking sites of religious or economic importance such as mountain passes, perennial springs, or high peaks.

Despite the number of archaeologists and historians who have studied the site of Abo Pueblo and its surrounding landscape, there exists no comprehensive written history. This paper will briefly outline the long cultural history of this place, with emphasis on the 2,300 rock art images carved or painted on stone surfaces around the village site and will provide a synopsis of the widely scattered scholarly sources, consisting of

**Figure 1**
Location of Abo Pueblo.
both archaeological and textual documents. A discussion will then follow on how the rock art reveals a relationship between the various cultural groups who have left their marks on this landscape.

Abo Pueblo is located at the eastern end of a pass between the Manzano Mountains to the north and the Pinos hills to the south (Figure 1). Abo Wash is the water course cutting east to west and is joined by the Saladito Wash from the south and Espinoso Creek from the north, both of which are ephemeral streams. An important feature of this site is the perennial spring that emerges from sandstone bedrock near the pueblo site. This site has probably been an important route since humans first arrived in the Paleo-Indian period, as mountain passes tend to constrict and channel travel. Today, a modern highway and railroad flank Abo Wash through the pass, connecting the Rio Grande river valley and the high eastern plains.

### Table 1

<table>
<thead>
<tr>
<th>Culture Period</th>
<th>Rock Art Styles</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>PaleoIndian</td>
<td>Not Applicable</td>
<td>10,000 - 6,000 B.C.</td>
</tr>
<tr>
<td>Archaic (includes Basketmaker)</td>
<td>Archaic</td>
<td>6,000 B.C. - A.D. 1,000</td>
</tr>
<tr>
<td>Pueblo I</td>
<td>Early Pueblo</td>
<td>A.D. 700 - 900</td>
</tr>
<tr>
<td>Pueblo II</td>
<td>Early Pueblo</td>
<td>A.D. 900 - 1100</td>
</tr>
<tr>
<td>Pueblo III</td>
<td>Early Pueblo</td>
<td>A.D. 1100 - 1300</td>
</tr>
<tr>
<td>Pueblo IV</td>
<td>Late Pueblo</td>
<td>A.D. 1300 - 1600</td>
</tr>
<tr>
<td>Pueblo V</td>
<td>Late Pueblo</td>
<td>A.D. 1600 - 1800</td>
</tr>
<tr>
<td>Abandonment of Abo</td>
<td>Mixture of Historic Puebloan and non-Puebloan</td>
<td>A.D. 1671 - 1673</td>
</tr>
<tr>
<td>Pueblo Revolt</td>
<td></td>
<td>A.D. 1680 - 1692</td>
</tr>
<tr>
<td>Post-Revolt Presence</td>
<td></td>
<td>A.D. 1692 - 1800</td>
</tr>
<tr>
<td>Hispanic and American Presence</td>
<td>European</td>
<td>A.D. 1800 - Present</td>
</tr>
</tbody>
</table>

Stretching from the PaleoIndian era to contemporary twentieth-century habitation, Abo’s history can only be partially reconstructed from archaeological investigations and historical documents written by Spanish and American observers. The rock art present at this site is also an historical source. The history of this region is generally organized into several time periods, essentially corresponding to the Pecos sequence but also including phenomena unique to Abo Pueblo (Table 1). No single chronological sequence has been established for the Abo region, nor have any of the proposed sequences been adhered to by the many scholars who have worked in this region (Tainter and Levine 1987:75). The time depth of cultural interaction recorded in rock at this site extends well beyond the chronological parameters of the associated pueblo ruins. The chronological structure and rock art styles of Table 1 frame the following discussion.

### PALEOINDIAN AND ARCHAIC PERIODS

In his archaeological surveys of the Abo Pass in the early 1980s, Stuart Baldwin did not find any sites dating from the PaleoIndian period but postulated their presence in the region due to their proximity in nearby survey areas (Baldwin 1983:3). However, rock art is not commonly dated to the PaleoIndian period.

Archaic sites are more frequently reported by various scholars from the Abo Pass region as well as the surrounding areas. Baldwin reports evidence of an Archaic presence in Abo Pass, primarily in the form of rock shelters, lithic scatters and rock art. He suggests that the cupules, or shallow cup-shaped depressions, found on boulders at Abo and other sites in the pass date to the Archaic period because they are associated with shelters that include lithic scatters characteristic of Archaic
culture (Baldwin 1983:3-4). However, this is problematic. Many of the petroglyph panels possessing cupules betray an singular artistic interest in design and composition unusual in Archaic period art. Compositions of this period typically appear crowded, and bear visual evidence of multiple efforts to compose the overall panel. A key characteristic of Archaic rock art is an apparent lack of concern with how the image is framed by the rock face, or how the motifs are set against one another in a dynamic visual tension. While not all petroglyph, or rock carving, panels containing cupules are Archaic Style, there are several panels at Abo I would agree date to this period. Figure 2 illustrates a typical petroglyph I propose dates to the Archaic period. The images include an undulating line measuring 72 cm in length, another approximately 20 cm long, and a deeply pecked circular form with two triangular elements projecting from the rim towards the edge of the flat rock face. Some of the dimples created when the designs were pecked are still visible, but they are deeply weathered. I suggest it dates to the Archaic period due to the geometric simplicity of the designs, the lack of contrast between the patina of the virgin rock surface and that of the images, and the presence of lichen, as well as its similarity to rock art panels at other sites dated by scholars as Archaic.

EARLY PUEBLO

Following the Archaic period would be the archaeologist's Pueblo I, Pueblo II, and Pueblo III periods indicated as the Early Pueblo style in Table 1 above. As this is the period when Abo Pueblo is built and enlarged, it is not surprising much of the rock art in the surrounding area corresponds to this style. Baldwin dates the beginning of Mound J, a pueblo room block immediately adjacent to the historic Spanish Colonial mission church, to circa A.D. 1275, whereas Bertha Dutton dates the initiation of construction to circa A.D. 1150. (Baldwin 1982:1; Dutton 1981:193).

Owing to the dearth of absolute dating techniques for rock art, it is quite difficult to refine the dates for specific panels to the relatively short time spans used in the Pecos Sequence. Because it is possible to discern a gradual change in iconography and technique over time, early periods can be separated from late periods in art. Elsewhere I have defined the Early Puebloan style as having a broad range of subject matter, and loosely organized into accretional compositions with no discernible single intent behind the final results (Smith 1998:94).

Figure 3 is an example of a petroglyph panel I have suggested dates to the Early Pueblo period. It includes a linear area pattern composed of virtually a single line pecked in a tightly controlled meander, creating a remarkable textile- or pottery-like design. Above this petroglyph is a solidly pecked animal paw print with five pointed digits. Another linear meander partially frames the bottom portion of the panel. Lighter areas on this rock face appear to be pecked in a more random manner. While the two geometric designs are clearly similar, they bear no apparent relationship with the animal print. They are also done with differing techniques, indicating more than one artist, and/or creation at separate times.
THE ARCHAEOLOGICAL SOCIETY OF NEW MEXICO: 28

LATE PUEBLO

Following the Early Pueblo style, the Late Pueblo style is markedly different in iconography, technique, and composition. This style encompasses both the Pueblo IV and Pueblo V periods and is characterized by new iconography—specifically intricate mask forms, a greater degree of complexity in continuing motifs, and a tendency to place those elements on the design surface so as to dominate the whole face, and setting up a visual tension. In most cases, it is impossible to discern whether a rock art panel was painted or pecked before or after European intrusion into the Rio Grande area.

Figure 4 is an example of the Late Pueblo style. The petroglyphs are closely grouped on the rock face, and consist of three highly stylized flying birds, one quadraped and a group of connected linear forms that seem to resemble a plant form. They are all oriented in the same direction and possess the same degree of repatination. Due to these factors and the high degree of representational quality, I have suggested they date to the Late Pueblo period. Another example would be Figure 5. This petroglyph panel consists of two forms created by pecking a deep U-shape, then closing off the opening and adding internal features. In the case of the figure on the right, external linear elements were also added. While generally very careful to identify any design as that of a face or mask, I have suggested that these figures do indeed represent such. Due to the choice of rock surface with its close framing edges, the resulting tension of the compositional design and the clarity of the motifs, I have suggested this panel is also later in date than many petroglyphs at Abo. This panel is also a good example of how difficult it is to date petroglyphs to the pre-contact (Pueblo IV) or post-contact (Pueblo V) period. The iconography could easily be pre-contact, but the light value of the patina in the pecked areas suggests this panel was created more recently, perhaps in the historic period.
Panels such as that illustrated in Figure 6 are less ambiguous. Located within a shallow rock shelter near the modern highway, this pictograph panel illustrates a round form superimposing a human figure, near what appears to be a representation of a European-style sword. Both paintings are executed in the exactly the same pigment, which would suggest they were done by the same artist(s) at one time. Both could be interpreted as being related to war: the round form being a shield carried by the human figure. Because of the sword, there is little question that this is an historic panel. However, it is unknown whether this panel was painted before or after Abo Pueblo was abandoned by its Tompiro builders and their Spanish priests.

When and why Abo Pueblo was abandoned plays some part in the dating and function of the nearby rock art. Spanish sources credit the depredations of “Apache” (referred to herein as Athapascan) raids and frequent droughts in the seventeenth century for the failure of the local economy and abandonment of the pueblos. Many scholars have supported this hypothesis. Bandelier, for example, reported “non-Pueblo points” in the area (Bandelier 1892:11). But raids and drought were undoubtedly part of the archaeological past. What concatenation of events in the seventeenth century forced Abo’s Tompiro people to return to the Rio Grande Valley? Amy Earls suggests:

[As] the old trade patterns broke down and the Franciscans gained tighter control over food distribution, Athapascons found friendly barter inadequate. When drought swept New Mexico, conditions became intolerable for all people, the bartering relation ended altogether, and the raids became more frequent ... The abundance of maize in Pueblo territory must have always been tempting to the Athapascons, but with the coming of the Franciscans the storing of it became more and more concentrated as well as tempting... Surprisingly, the two regions which suffered the greatest damage from the Athapascons between 1668 and 1680 were the Piro and Tompiro areas. The explanation probably lies in the fact that the Spaniards, after crushing the rebellions of these tribes, destroyed their alliances with the Apaches and used Piro and Tompiro warriors in campaigns against the Athapascons. Thus the Athapascons would have regarded their former allies as traitors and enemies to be destroyed with the Europeans (Earls 1992:16).

Baldwin posits a slightly different view of the situation, based on trade economics. Plains peoples, known as Jumanos to the Spanish, had been the
major eastern trading partners of the Tompiro, but were gradually pushed south by encroaching Athapascans, eventually severing trade connections (Baldwin 1988:276). The Athapascans, ancestral to both Apache and Navajo peoples, replaced the Jumanos in the network, but other events conspired against the success of their relationship with the Tompiro. Archaeological evidence and historical Spanish accounts corroborate what has been realized to be a world-wide phenomenon known as the “Little Ice Age.” Beginning approximately A.D. 1300, a cooling trend in local weather patterns deepened to a maximum cold period between 1600 and 1750, followed by a warming trend. This weather pattern would have limited Tompiro corn production and may have encouraged them to trade heavily with their lowland Piro relatives for agricultural products. The period of maximum cold between 1600 and 1750 contributed to the famines of 1658 to 1659, 1668 and 1670. The imposition of a state-level Spanish economy with tributes paid in food led to artificially-caused famines such as that of 1600 to 1601. Tributes in foodstuffs sapped internal reserves, thus weakening the Tompiros’ ability to trade. Spanish demands for tribute paid in clothing items such as cotton blankets, hides and stockings struck at utilitarian goods that could have been traded for food. The net effect was that the Tompiro were impoverished and could not trade for what they needed (Baldwin 1988:65-66, 274). The Athapascans were also affected by the famines, as their attacks on the Tompiro pueblos coincided with the 1658 and 1668 famines (Baldwin 1988:278). Further evidence of internal friction and strife is found in Spanish records of increasing accusations of witchcraft among the people of the Salinas Pueblos (Tainter and Levine 1987:86).

The date Abo Pueblo was abandoned has been a matter of some fervent discussion in the scholarly literature. Spanish manuscripts are the only historical documents of the period, and they do not precisely pinpoint the date when the population of the village left to join their relations and neighbors in the Rio Grande Valley. Minutes from a 1672 chapter meeting of Franciscan friars in the Salinas area list fathers attending from Abo Pueblo, from which it is inferred that at least some parishioners remained in the pueblo if the priests were still serving there. But by 1679, when Fray Francisco de Ayeta wrote his petition to the Viceroy of New Spain, Abo Pueblo had been abandoned (Scholes and Mera 1940:283). Baldwin suggests that the people of Abo could have left all together or piecemeal over several years between 1672 and 1678 (Baldwin 1988:278). However, the people of Abo probably began leaving somewhat earlier. Bandelier reports that marriage documents from the El Paso area reveal many Abo Pueblo people living there in 1671 (Bandelier 1892:273).

POST ABANDONMENT

It has often been assumed in the scholarly literature that once Abo had been abandoned by the Spanish priests and their parishioners, Pueblo people never returned to the pass area. Once the Tompiro joined their relatives in the Rio Grande Valley, the Spanish do not seem to have separately recorded their presence; all accounts name only the Piro. It is assumed that the populations fused by 1680 (Baldwin 1981:29). During the Pueblo Revolt in 1680, 317 “Piro” people retreated with the Spanish to El Paso (Leap 1972:330). When the Spanish attempted a military reconquest, they attacked Isleta Pueblo on December 6, 1681, finding five hundred Isleta and Piro defending the pueblo. When the Spanish retreated on January 2, 1682, 385 “Isletans” went to El Paso with them. Piro people who did not go to El Paso probably took refuge at Isleta and Acoma, as well as in pueblos located in the Fra Cristobal range east of modern Elephant Butte Lake (Tainter and Levine 1987:91-92). During his Reconquest in 1692, Don Diego de Vargas brought back one hundred refugees from the El Paso area (Jones 1966:38). There is a distinct possibility that Piro and Tompiro people were included in this group.
They would have augmented the Piro population that had remained behind as refugees in other pueblos. Governor Vargas also used Pueblo auxiliaries—which may have included some Piro/Tompiro warriors—in his campaigns against the Faraon Apaches in the Sandia Mountains in 1704.

This practice was followed later by Governor Velez Cachupin during his first term in office, 1751 to 1754, and perhaps in his second term, 1762 to 1767 (Jones 1966:128-129; Ivey 1988:236). According to Spanish manuscript sources, he:

...maintained a continuous summer patrol of forty Indians from the six Keres pueblos [San Felipe, Santo Domingo, Cochiti, Santa Ana, Zia, and Acoma] and, when practicable, two squadrons of soldiers from the presidio [in Santa Fe]... They were stationed at “Coara” [Quarai, 16 air miles from Abo] and Tajique in the “ancient missions in the cordillera of the Sandia Mountains.” Such outlying patrols were to inspect all the terrain in their vicinity and to reconnoiter the entrances used by the Apaches, to gain access to the Rio Abajo region (Jones 1966:128-129).

These documents establish a Puebloan presence in the Abo area, particularly in the pass regions which served as entrances for raiders into the Rio Grande Valley. Given Abo’s proximity to one of the most heavily traveled passes from the valley to the plains, it is logical to conclude that these Pueblo auxiliaries did patrol in the entire Abo area, possibly camping in the pueblo ruins as did later American soldiers. Joseph Toulouse noted the presence of Puname Polychrome and Acoma Polychrome sherd s in his excavations of San Gregario de Abo, which indicated to him an eighteenth-century presence of Pueblo people. Rather than representing habitation, these sherd s could be remains from temporary camp sites (Toulouse 1940: 100). Whether any of the Pueblo auxiliaries from the Keresan pueblos were descendants from Piro/Tompiro refugees is impossible to prove. What is important is that Pueblo people, particularly warriors, were present in the Abo region in the mid-eighteenth century. It is at least possible that they were responsible for much of the warrior iconography in rock art panels such as in Figure 6.

NON-PUEBLOAN

Another warrior group may also have made their mark at Abo. Quoting repeated statements in Spanish documents of the period, scholars have long assumed that the Tompiro of Abo abandoned the area to the “Apache,” who then maintained a presence in the pass region until they were expelled by Spanish homesteaders in the nineteenth century. The problem with this identification is that the Spanish applied the term “Apache” to all of the raiders sweeping into the Rio Grande Valley from the eastern high plains. For my purposes here, I will simply identify this group as “non-Puebloan” as these raiders could easily have been Navajo, Comanche, or Kiowa, as well as any of several different bands of Apache people. Baldwin records an Apache presence in the archaeological sites of Abo and Tenabo, but such remains are tenuous. Dated broadly from 1675 to 1850 C.E., “Apache” buildings are described as rockshelters with drywall structures, two stone circles and one rock-lined cache (Baldwin 1983:3, 17-18). The Apaches raiding the Rio Abajo region were entering through Abo Pass but stopped for a brief time during a truce with Governor Velez Cachupin from 1749 to 1754. They began raiding again after 1754, implying travel through the pass, and continued to be a problem as late as 1791 (Jones 1966:118, 122, 166). Even in 1853, Brevet Major James Henry Carleton led an expedition into the Salinas area to scout for Apache Indians “who often infest that portion of the territory.” (Carleton 1965:7).

Figure 7 is an example of the few images found at Abo that I could identify as non-Puebloan. All
such images at this site are pictographs. They are identified primarily on the basis of the pigment used, in this case a creamy white. This is different from the pink-white used in pictographs that are clearly Puebloan in origin. Identifying non-Puebloan images based on iconography is much more tentative. However, it has been suggested by previous scholars, to include Polly Schaafsma, Sally Cole and Helen Crotty that the paintings of fringed leggings, such as the five found in the lower portion of Figure 7, are probably Plains in origin. In addition to the fringed leggings, one full and one partial handprint are found, as well as three solid white disks arranged in an inverted triangular composition. Included in this panel as well are two yellow and red mask or face pictographs and some red lines that are remnants of other paintings. The mask or face motifs are probably date to the Late Pueblo period. Schaafsma and M. Jane Young have both discussed how artists from one culture group will sometimes create paintings near or on top of earlier images by another—perhaps hostile—group as a means of claiming the site or otherwise asserting their own power (Schaafsma 1985; Young 1988). This panel clearly demonstrates images from two separate groups, and could refer to a larger relationship between their respective cultures.

HISPANIC AND AMERICAN PRESENCE, 1800-1994

Shortly after 1800, non-Puebloan peoples were displaced by Hispanic homesteaders and ranchers returning to exploit the resources of the Salinas area. Bartolome Baca received the Torreon Grant which included the ruins of Abo in 1819 (Ivey 1988:241). A rancher, he employed some 2,700 herdsmen to shepherd 40,000 sheep, 300 mares and 900 cattle on pastures in the Manzanos Mountains (Tainter and Levine 1987:111). Due to its proximity to the Manzanos pastures and the perennial spring near the pueblo ruins, Abo may have been visited by these herdsmen, some of whom were Pueblo people. This is a tenuous supposition, but there is a possibility that Pueblo people were still camping in the Abo area in the early nineteenth century. Either they or their Hispanic counterparts could have been responsible for the Christian motifs found in the rock art of Abo, such as in Figure 8.

In the middle decades of the nineteenth century, the Hispanic ranchers and their Pueblo employees maintained only a tenuous presence at Abo. Navajo raiders caused all Hispanic settlements east of the Manzanos to be abandoned between 1822 and 1833, save for the town of Manzano, but shepherds continued to visit the water sources at Abo through the 1830s (Tainter and Levine 1987:241). Major Carleton’s expedition in 1853...
was the first American effort to pacify this area for Hispanic, and later American, settlement. This mixture of Hispanic and Anglo-American ranchers occupy the pass region today. In addition, the ruins of Abo Pueblo and its Spanish Colonial church have been developed as a unit of the Salinas Pueblo Mission National Monument managed by the National Park Service. Tourists from all over the world now visit the site.

People have been living or camping at Abo since the Archaic period. Hunters and travelers may have left their marks upon the landscape, but certainly the farmers of the Early Pueblo periods (Pueblo I - Pueblo III) were responsible for the increase in numbers and the change in iconography of rock art images at Abo. During the Late Pueblo periods (Pueblo IV - Pueblo V), Abo reached its greatest population level, so it is logical to find rock art from this time frame. Even after the abandonment of the region, Pueblo people continued to foray into the pass, leaving images on the rocks to record their presence and territorial boundaries. But non-Puebloans also lived and camped in the area, making their marks, perhaps as a way of recording their historical claims. This layering of visual images encodes information that can serve to supplement archaeological and historical documentation.

REFERENCES

Baldwin, Stuart J.
1981 Piro and Tompiro Ethnography: First Draft. Manuscript on file, Museum of New Mexico, Laboratory of Anthropology, Santa Fe, New Mexico.


Bandelier, Adolph F.

Carleton, John H., Major

Dutton, Bertha

Earls, Amy.
Ivey, James

Jones, Oakah L., Jr.

Leap, William L.

Lefebvre, Henri

Schaafsma, Polly

Scholes, France V. and H.P. Mera

Smith, H. Denise

Tainter, Joe and Frances Levine

Toulouse, Joseph H., Jr.

Young, M. Jane
INTRODUCTION

The early anthropologists and archaeologists who worked in the semi-arid environment of New Mexico dismissed the use and consumption of freshwater fish by Puebloan groups as improbable. Such views resulted from the fact that by the turn of the twentieth century, the environment had been altered by nearly three hundred years of overgrazing by livestock introduced by Spaniards, deforestation, and irrigation agriculture along the Rio Grande and some of its tributaries. The idea that Puebloan groups had never utilized fish was strengthened by poorly understood emergence myths and generalizations collected among the 'modern' pueblos (see, for example, Bandelier 1892(2):62; Beideleman 1956:5-13; and White quoted above). Such views were further enhanced by poor preservation, and more importantly, rudimentary recovery techniques that focused almost entirely on the collection of 'goodies' and entire ceramic vessels. Thus, Judd's (1959:35, 127-128, 132) "surprise" and "astonishment" at finding gar scales and an awl made from an unidentified fish bone in his excavations at Pueblo Alto between 1923-1926, was understandable – the recovery of fish from sites in New Mexico was, at the time, virtually unthinkable. There could be no correlation between what were then seen as the two extremes of a semi-arid climate and the presence of freshwater fishes in the rivers and streams in the state, subsistence notwithstanding.

Yet, early Spanish accounts of the area (Adams 1947; Adams and Chavez 1975; Hammond and Rey 1953; Hodge, Hammond and Rey 1954; Milich 1966; see also D. H. Snow 1976:11-14) repeatedly mentioned the variety and abundance of freshwater fish available in the surface waters of New Mexico, and in at least one instance, provided a neatly detailed account of their procurement. Among those species most often mentioned in late-sixteenth and early-seventeenth century documents were *bagre* (Ictaluridae, catfish), and *matalote* ("river fish" – possibly one of the Catostomidae, i.e., suckers); the latter was in any case, "a white fish almost half a yard long" (Hammond and Rey 1953:314; Milich 1966:57).

When Gehlbach and Miller (1961:2-8) first proposed that prehistoric Puebloan groups in New Mexico, and indeed throughout the Southwest, might have consumed fish, their hypothesis, while not necessarily rejected out-of-hand, was largely ignored for the more traditional explanation that fish were "ceremonial" (Vivian and Mathews 1965:23). The fact that, at the time Vivian and Mathews wrote of the remains of longnose gar (*Lepisosteus osseus*) recovered from Kin Kletso, the remains of only nine fish had been recovered from four sites in the state. Since then at least twenty-
six species of freshwater fish have been recovered from more than forty sites in New Mexico.

ARCHAEOLOGICAL EVIDENCE

The freshwater fish recovered from archaeological sites in New Mexico have been summarized in Table 1. The sites from which the fish remains were recovered range in date from the late Archaic to the nineteenth century, and were located everywhere from riverine environments to closed basins. All major drainages in the state have been included in this study except for the Canadian, which should be studied, but was not. Also no attempts were made to study fish depicted on ceramics, in rock art, or kiva murals since those topics have been discussed elsewhere (Bradfield 1929; Brody 1977; Cosgrove and Cosgrove 1932; Dutton 1963; Jett and Moyle 1986:688-720; Schaafsma 1975). While the 40-some sites discussed herein represent a miniscule percentage of the more than 130,000 sites recorded in the state to date, that percentage becomes statistically more important when one considers the fact that relatively few of those recorded sites have been collected, tested, or excavated, and that the vast majority have been identified as the result of survey (Timothy Seaman, personal communication 1991; ARMS files).

Table 1

<table>
<thead>
<tr>
<th>Site/Ref.</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 217 – Rainbow House</td>
<td><em>Cycleptus elongatus</em> (blue sucker) 2 specimens, about 33&quot; and 25.&quot;</td>
<td>Only instance of <em>Salmo clarki</em> from all sites in NM. 10 vertebra from blue sucker worked. Fish remains date from Pueblo Revolt?</td>
</tr>
<tr>
<td>LA 4451 - Palace of the Governors, Correspondence W. J. Koster to D. H. 4/11/83 copies in possession of the author.</td>
<td><em>Cycleptus elongatus</em>; <em>Ictaluridae</em>, <em>I. Furcatus</em> (blue catfish), <em>I. punctatus</em> (channel catfish), <em>Pylodictis olivaris</em> (flathead catfish); <em>Salmo clarki</em> (trout); <em>Scaphirhynchus platorynchus</em> (shovel-nose sturgeon); <em>Catostomidae</em> (suckers); <em>Ictiobus bubalis</em> (smallmouth buffalo).</td>
<td></td>
</tr>
<tr>
<td>LA 6462, correspondence W. J. Koster to D. H. Snow 4/11/83, copy in possession of author LA 70</td>
<td><em>Ictaluridae</em>; <em>Pylodictis olivaris</em>; <em>Catostomidae</em></td>
<td>13th c. pithouse. Based on associated ceramics fish remains date from the 13th through the 15th centuries</td>
</tr>
<tr>
<td>LA 6455 – Cochiti Dam Site correspondence from W. J. Koster To D. H. Snow, copy in possession of the author.</td>
<td><em>Aplodinotus grunniens</em>; <em>Scaphirhynchus platorynchus</em>; <em>Cycleptus elongatus</em>; <em>Ictiobus sp.</em>; <em>Moxostoma congestum</em>; <em>Catopodes carpio</em>; <em>I. punctatus</em>; <em>P. olivaris</em></td>
<td></td>
</tr>
</tbody>
</table>
Table 1  
Continued  

<table>
<thead>
<tr>
<th>Site/Ref.</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 187 – Kuaua</td>
<td><em>N. bubalis</em> or <em>N. niger</em> (?)</td>
<td>Lambert in Dutton (1963) reported no fish recovered from Kuaua; Akin reports buffalo. Fish depicted in kiva murals.</td>
</tr>
<tr>
<td>LA 35493 Akin in Wiseman 1995</td>
<td>Ictiobus sp.</td>
<td></td>
</tr>
<tr>
<td>LA 22765 – Chamisal</td>
<td>Lepisosteus osseus; <em>P. olivaris</em>; Ictiobus bubalis; Carpiodes carpio</td>
<td>Unidentified</td>
</tr>
<tr>
<td>LA 33223 – Taylor Ranch Stiner (1986: 115-126)</td>
<td>Unidentified</td>
<td></td>
</tr>
<tr>
<td>Tijeras Pueblo Cordell (pers. comm.)</td>
<td>Lepisosteus sp.</td>
<td>Single scale recovered modified for use as a projectile point</td>
</tr>
<tr>
<td>Par'ko Pueblo Lambert (1954:160)</td>
<td>Unidentified</td>
<td></td>
</tr>
<tr>
<td>LA 14904- Comanche Spring</td>
<td>Ostechthyes (bony fish)</td>
<td></td>
</tr>
<tr>
<td>LA 53662 – Belen Bridge Site Akin in Wiseman 1995</td>
<td>Lepisosteus sp.; <em>Aplodinotus grunniens</em>; <em>P. olivaris</em>; Carpiodes carpio; Ictiobus sp.</td>
<td>Ostechthyes (bony fish)</td>
</tr>
</tbody>
</table>

**DRAINAGE: SAN JUAN RIVER**

<table>
<thead>
<tr>
<th>Site/Ref.</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>LA 3427, Correspondence Koster To D. H. Snow, 1/16/84</td>
<td>Catostomus latipinnis; <em>Gila robusta</em>; Catostomus discobolus</td>
<td></td>
</tr>
<tr>
<td>LA 4054, correspondence Koster To D. H. Snow, 1/16/84</td>
<td>G. robusta; C. latipinnis; <em>Psychocheilus lucius</em>; Catostomus discobolus</td>
<td></td>
</tr>
<tr>
<td>LA 4065, correspondence Koster To D. H. Snow, 1/16/84</td>
<td>I. punctatus; G. robustus; C. discobolus C. latipinnis</td>
<td></td>
</tr>
<tr>
<td>LA 4169, correspondence Koster To D. H. Snow, 1/16/84</td>
<td>C. latipinnis; C. discobolus; G. robusta</td>
<td>A.D. 850-1000, Piedra-Arboles Phase. Status of analysis unknown</td>
</tr>
<tr>
<td>LA 4247, correspondence Koster To D. H. Snow, 1/16/84</td>
<td>Catostomidae, possibly C. latipinnis</td>
<td></td>
</tr>
<tr>
<td>LA 4380, correspondence Koster To D. H. Snow, 1/16/84</td>
<td>C. latipinnis; C. discobolus; <em>Psychocheilus lucius</em> Redhorse (?)</td>
<td></td>
</tr>
<tr>
<td>La Plata Project, various LA Nos., Linda Mick-O'Hara Pers. comm.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DRAINAGE: GILA/MIMBRES**

<table>
<thead>
<tr>
<th>Site/Ref.</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kartchner Site – Sullivan and Berg (1983)</td>
<td>Ostechthyes G. nigrescens; Catostomidae; unidentified</td>
<td></td>
</tr>
<tr>
<td>LA 635 – Galaz Site Anyon and LeBlanc (1984)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 1
Continued

<table>
<thead>
<tr>
<th>Site/Ref.</th>
<th>Species</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DRAINAGE: PECOS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA 1549 – Henderson Site Speth (2002)</td>
<td>Lepisosteus osseus; Catostomidae; Moxostoma congestum; Ictaluridae; Phylodictis olivaris; Morone chrysops; Micropterus punctatus</td>
<td>Species include a previously unrecorded catfish, I. Chihuahua.</td>
</tr>
<tr>
<td>Pichacho Project Wiseman Pers. comm.</td>
<td>Ictaluridae</td>
<td>Archaic sites. 99% of fish remains are Catfish.</td>
</tr>
<tr>
<td>LA 68188 – Fox Place</td>
<td>Unidentified</td>
<td>Analysis in progress.</td>
</tr>
<tr>
<td>LA 25277 – Rocky Arroyo</td>
<td>Lepisosteus osseus, Dorosoma cepedianum; I. bubalus; Moxosoma congestum; Ictaluridae, I. sp., I. Lupus; I. punctatus, I. melas; I. lupus/punctatus; Phylodictis olivaris; Micropterus Punctatus (spotted bass); sunfishes; Percidae (perches).</td>
<td>Species list includes some species not found at LA 1549.</td>
</tr>
<tr>
<td>LA 3823 – Brantley Dam Robertson (1985:A21)</td>
<td>Pisces</td>
<td></td>
</tr>
<tr>
<td><strong>DRAINAGE: CHACO CANYON</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>La 661 – Pueblo Alto Judd (1959: 35, 127-128, 132)</td>
<td>Lepisosteus osseus; Gila elegans or Gila robusta</td>
<td>7 scales recovered from Room 44; awl made from unidentified fish.</td>
</tr>
<tr>
<td>Pueblo Bonito (Pepper (1920:136)</td>
<td>Unidentified</td>
<td></td>
</tr>
<tr>
<td><strong>DRAINAGE: ESTANCIA BASIN</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LA 120 – Las Humanas McKusick 1981: 39-65</td>
<td>Lepisosteus osseus</td>
<td>All remains are from the snout and lower jaw.</td>
</tr>
<tr>
<td><strong>REPORTED, UNABLE TO VERIFY</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In McKusick (1981:39-65)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“Near Cabezon” Sublette et al. (1990:37)</td>
<td>Lepisosteus osseus</td>
<td></td>
</tr>
</tbody>
</table>

Because of the widely disparate nature of the data available, which were predicated by the recovery techniques used during excavation, the sites for this study were selected solely because of the presence of fish. Where analyses are in progress, site reports not available, or fish remains made up such a small percentage of the faunal remains recovered, I have relied upon personal communication with archaeologists who have excavated sites where fish have been, or should have been, recovered. Given the data collected to date, I feel comfortable predicting that, with adequate preservation of fish bone and continued use of improved recovery techniques such as use of 1/8” mesh in
screens and flotation, fish remains will continue to be recovered throughout the state.

It should be immediately apparent that, with few exceptions such as trout, *Salmo clarki* from the Palace of the Governors, the majority of all of the fish remains recovered from the sites under discussion are representative of the largest species in the surface waters of the state. In other words, fish such as gar, catfish, suckers, and the Colorado squawfish, unlike most hatchery-raised trout, of a size for consumption by more than one individual. Wiseman (personal communication 1990) reported the recovery of the remains of catfish in excess of fifty pounds from a site in the Pecos drainage; while Speth (personal communication 1990) noted that the modal size of fish recovered from two sites on the Rio Hondo, a tributary of the Pecos, as between twenty and thirty centimeters. The remains of two blue suckers recovered by Caywood at Rainbow House in Bandelier National Monument were estimated by Gehlbach and Miller (1961:5) to have been “ca. 33 inches”, and “slightly more than 25 inches in length,” respectively, and may have weighed between three and ten pounds. Sublette et al. (1990:215) state that in New Mexico the blue sucker now rarely exceeds a length of 41 cm, and weight of 1.4 kg. Koster (letter to D. H. Snow dated April 11, 1983), identified “an unusually large” specimen of *Cycleptus elongatus* from a pit structure at LA 70, although no estimates of size were provided. The presence of both smaller and larger species within sites is probably determined by the method of procurement utilized.

Regardless of size constraints, the presence or absence of certain species provides information concerning not only the dating of sites, but also the presence or absence of fish in specific drainages. For example, in 1958, as part of the Navajo Reservoir Project, Eddy excavated LA 4065; a rock shelter that he suspected was highly disturbed (letter from W. J. Koster to D. H. Snow dated April 11, 1983). That disturbance was confirmed by the recovery of portions of the skull, vertebral column and pelvic girdle of channel catfish (*Ictalurus punctatus*), a species not introduced into the San Juan until after 1901 (Hatch, personal communication 1990; Koster 1957:74-75). In fact, according to Hatch (personal communication 1990), the zoogeographical evidence is such that there were never any native species of catfish in the San Juan.

In several other instances however, specimens of channel catfish were recovered from the fourteenth century site of Arroyo Hondo south of Santa Fe, at LA 70, LA 6455, the Cochiti Dam site, and previously undisturbed contexts in the Palace of the Governors (Lang and Harris 1984:37; letter from W. J. Koster to D. H. Snow dated April 11, 1983). In addition, numerous specimens were recovered from several sites in the Pecos drainage near Roswell (Speth 2002; Wiseman 1996, 2002). While Sublette et al. (1990: 244) reported that the species was native only to the Canadian drainage in New Mexico and the Rio Conchos in Mexico, Hatch has said since that it is possible that channel catfish was native to both the Pecos and Rio Grande drainages (personal communication 1990). He also noted that it easily could be confused with a smaller species of channel catfish, *Ictalurus lupus* that is native to the Pecos (see also Koster 1957:74-75). Given the difficulty in identification, when the fish remains from LA 1549 and LA 25277, both located on the Rio Hondo, were analyzed, they were identified as *I. lupus*, *I. punctatus*, or *I. Lupus/punctatus* in addition to yet another, previously unrecognized species which resembles *I. lupus*, *I. chihuahua* (John Speth, personal communication 1990; Sublette et al. 1990:241).

At the time Gehlbach and Miller (1961:6) did their research on the remains of blue suckers (*Cycleptus elongatus*) recovered from Rainbow House, they noted that this species did not occur any further upstream in the Rio Grande than the area of Big Bend National Park; while it had been
reported in the lower Pecos in New Mexico, it was rare. Interestingly enough, archaeological remains of the blue sucker have only been reported to date from sites in the Rio Grande drainage. Those remains include a necklace made of vertebra from the blue sucker that was recovered from excavations at the Palace of the Governors in 1974. None have been reported from the Pecos drainage.

In addition to the seemingly ubiquitous catfish and suckers recovered from archaeological sites within the state, another species must be remarked upon for its widespread distribution. The longnose gar, *Lepisosteus osseus*, now extirpated from the Rio Grande, is still found in the lower Pecos (Sublette et al. 1990:36-37). Most notable are scales from this species that have been recovered from such non-riverine environments as Pueblo Alto (Judd 1959:35,127-128) and Kin Kletso (Vivian and Mathews 1965:22-23) in Chaco Canyon, and Las Humanas (McKusick 1981:39-65) in the Estancia Basin. Gar has also been reported from a site "near Cabezon" (Sublette et al. 1990:37). More recently the remains of gar have been recovered from test excavations at San Marcos Mission conducted by David Hurst Thomas of the American Museum of Natural History (Duncan, personal communication 2001). In addition to the gar scales recovered both at Pueblo Alto and Kin Kletso, Vivian and Mathews (1965:22-23) also recovered the dentalia (lower jaw) of a gar. At Las Humanas, the remains consisted of the maxilla and dentalia. Although Lambert (1954:160, Figure XXXVI) recovered a single gar scale modified for use as a projectile point at Pa'ako (see also Agogino and Shelley 1988:29-31), that piece can no longer be found in museum collections.

Interestingly, no recognized otoliths, that is, fish earstones, have ever been recovered from any archaeological excavations in New Mexico (Secor et al. 1995). Whether this is because of poor recovery techniques or lack of familiarity with the objects is unknown. It appears likely; however, that with proper and rigorous recovery techniques, otoliths should be recovered from sites where fish have been processed—i.e., beheaded and gutted—prior to drying.

**ETHNOHISTORIC RECORDS OF PROCUREMENT**

Although the data are limited to the Rio Grande drainage, fish were historically recovered by one of several methods. In 1776, Fray Atanacio Dominguez described the use of seines or nets as follows:

> When it is ready, about thirty men take it and enter the river, and dragging it against the current they make a barrier as far as the riverbank. Now that the fish have been caught in the net, they put in their hands, grab them, and, pulling them out quickly, they throw them to the meadow, where there are people ready to seize them and kill them promptly for division after the maneuver (which they repeat or abandon as they see fit). This operation usually takes place in March because the water is muddy with the earth which the melted snow brings down and the river is not too high [i.e., full spring runoff has not yet occurred]. It is also done in summer when it has rained a great deal, after the river has subsided leaving the water muddy...This river [the Rio Grande] is in flood from mid-April to the end of June. (Adams and Chavez 1956:7).

Bandelier (1892:149) reported similar communal fishing expeditions at Cochiti in the last decades of the nineteenth century, but noted that the catch was divided among the clans with portions set aside for the highest religious officers and communal stores. He also noted, in passing, that certain stretches of the river "were almost despoiled of fish" as a result of seining. The latter comment is particularly significant in view of the
archaeological evidence for species of fish, such as the blue sucker, which are no longer found in certain areas. Finally, Koster (1957:40-41) reported that at least some of the suckers, particularly, the smallmouth buffalo are only taken by seining, as they will not take even a small hook.

Lange (1968:140-141), in his discussion of Cochiti more than fifty years later, reiterated Bandelier’s statements to a degree, but noted that only the oldest informants remembered communal fishing. Those under fifty years of age at the time Lange did his study had no recollection of it. He noted further, “...it would seem that toward the end of the last century the war captains maintained control of the nets, but the general interest in this aspect of [communal] fishing has declined” (Lange 1968:141). It is not inconceivable that the lack of interest in communal fishing was the result of a decline in the population of fish available for exploitation.

W. W. Hill also discussed fishing at length in his Ethnography of Santa Clara Pueblo (Lange et al. 1982:59-61; see also Arnon and Hill 1979:296-307):

Seining was a communal endeavor, and nets were communally made and owned. When not in use, they were cared for and stored by the head of the hunt society...or, in more recent years, by the war captain or governor.

A projected seining was announced by the governor, or the ‘town crier’...formerly all available boys and men repaired to the river at the time designated...The work was directed and supervised by the head of the hunt society or, ...by the war captain. Operations might continue for two or three days; the seining began near Ranchito, in the vicinity of San Juan Pueblo, and ended several miles downstream near the Pueblo of San Ildefonso.

The net, which in storage was rolled around a log like a coil of wire, was carried by four men to the river and unrolled. Two to four men worked each end of the net, and others grasped the top and guided the central portions. The men at one end waded into the river and were followed by the rest. When they arrived at a sufficient distance from the bank, the seine was dragged shoreward, the ends somewhat ahead of the center. When the bank of the river was neared, those along the center reached down and lifted the bottom of the net, enclosing the fish in the trough. The catch was tossed to those waiting along the shore. Eels were given an especially strong toss so they could not get back into the water. Those on shore strung the fish on sticks, passing the stick through the gills...

Each time the net was removed any necessary repairs were made...Seining continued until enough fish had been caught or until night fell. If the catch was sufficient, the net was dried, rolled and stored; if not, it was left on the bank, and the next day operations began at that point (Lange 1982:60; my emphasis).

Hill’s observations are noteworthy in several respects. The fact that seining took place over a distance of several miles, from Ranchitos to an area above San Ildefonso, may have been reflective of long-term over-fishing, and/or indication of the importance of fish in the diet. That fish were dried for storage strongly suggests that fish were an important part of the diet. The latter is further supported by the statements that “...seining continued until enough fish had been caught,” and “...if not...operations resumed the next day...,” moreover, “each individual received from five to twenty fish...” Although Bandelier stated that such communal fishing expeditions occurred in March before the annual run-off and in summer after heavy rains, we do not know the actual frequency of such hunts.
In his discussion of fishing at Cochiti, Lange (1968:140) quoted Dumarest in saying that in addition to seines, "fish are blocked up in little bights and caught in a *serape* or blanket or by fork or even by hand." Hill (in Lange 1982:61) noted that in addition to nets, hooks and lines, bows and arrows and snares were used at Santa Clara to catch fish. The latter strategy appears almost more recreation than not; certainly it is time consuming and labor intensive.

The snare is made of a horsehair loop tied to the end of a short stick. Lying on the bank, the fisherman maneuvers this snare til it is directly in front of the fish, and then draws it up with a jerk. The fish, startled, shoots straight ahead and is caught. The Indians of Taos Pueblo are very skillful at fishing in this manner (Hill in Lange 1982:61).

While Lange (1968:141) specifically noted that he had found no evidence at Cochiti for the use of poisons or toxic plants to aid in catching fish during the historic period, Foster et al. (1981:162) reported finding burned seeds of *Tephrosia tenella*, hoary pea, in the midden at LA 1671 a site north of Anapra, New Mexico. The Tarahumara and other groups use this wild plant as stupefying agents to aid in catching fish.

During the first decades of the seventeenth century, Fray Alonzo de Benavides noted, “when they wanted to go fishing, they first offered meal to the river, hoping by this means to obtain a big catch” (Hodge et al. 1945:43). Presumably this offering was a precursor of such modern practices as the scattering of cornmeal and fish scales along the banks of irrigation ditches at San Juan Pueblo to ensure good fishing (Ortiz 1969:115). Alternatively, Hatch (personal communication 1990) questioned whether the scattering of meal to ensure a good catch actually might not be a form of chumming. Is it possible that hoary pea or other such agents were mixed with the cornmeal to doubly ensure a good catch, particularly when seining? Of course, muddy river conditions such as those mentioned by Domínguez in 1776, would also serve to prevent fish from scattering (D. H. Snow, personal communication 1990).

Although apparently the use of seines and/or nets was the most common method of catching fish, in 1885, Bandelier described a weir located at the confluence of the Chama River and Rio Grande:

> It is an ingenious thing, and when it closes a stream, not a fish can escape. It empties the whole breed at once. The side dams are a long cylindrical basket of branches filled with rocks. At the issue, a strong beam is placed across horizontally, and under the dykes. Over this beam the water falls through the sieve and here the fish are caught and cannot get up the inclined plane. (Lange et al. 1975:97)

Although he did not describe the weirs, Harrington (1916:187) identified the canyon of the Rio Grande above Velarde as “fishweir water canyon...because the Tewa used to construct fish-weirs in this canyon.” Harrington also noted that the Cochiti constructed and used weirs in the Rio Grande north of their pueblo (Harrington 1916:187). The responsibility for the maintenance of the weirs is not mentioned in either account.

Since the Rio Grande narrows appreciably above both Cochiti and Velarde, increasing the rate of flow of the river, weirs would have been a more practical means of procuring fish than the use of seines or nets in the same situation. Additionally, given the location of the weir described by Bandelier at the confluence of the Rio Grande and Chama, I wonder if weirs were not used specifically when spawning occurred?
CONSUMPTION AND USE OF FISH

Most fish caught were consumed either immediately, or some time later after the catch had been dried. According to Lange (1982:60):

All present shared in the catch. The head of the hunt society received first choice of the fish. Next choice went to those who worked the ends of the net, next to those who worked the center. Finally fish were distributed to the remainder of the participants. Each individual commonly received from five to twenty fish.

Fish were utilized only as food. If a surplus accrued they were baked in an oven and then dried. In this condition they could be stored without danger of spoiling. (Lange 1982:60, my emphasis)

While Lange notes that fish were used only for food, Henderson and Harrington (1914: 56) reported in their Ethnozoology of the Tewa Indians that skins from the "phlegm fish" or eels were "highly prized and used for leggings and moc­casins." Lambert (1954), on the other hand, reported recovery of a gar scale from her excavations at Pa'ako that had been modified for use as a projectile point. There is nothing in the ethno­graphic record to explain the use of the gar remains recovered in Chaco Canyon or elsewhere.

With the coming of the Spaniards in 1598 and the advent of the missionization effort, consumption of fish was required at specific times of the year as the result of religious observation of Lent and other times of fasting. Dried saltwater fishes such as haddock and cod, and shellfish such as shrimp were included in the mission supply shipments that arrived after 1630 on the average of every three years (Hodge et al. 1945). In addition, documentation of the mission estancia records made during the great famine of 1666-1672 indicate that specific pueblos provided dried fish not only for famine relief, but also in order that Lent could be observed (Archivo Franciscano, Legajo 1, numero 34, folios 1-24v; Ivey 1994).

HABITAT

While it is difficult to document habitat degradation due to inadequate "before" data, a crude picture can be developed by looking at the extent of irrigation agriculture, loss of riparian habitat and the impact of domesticated livestock on the environment. On March 2, 1599, don Juan de Oñate wrote to the viceroy of New Spain describing the natural wonders of New Mexico (Hammond and Rey 1953:484). In his letter, Oñate mentioned, among other things the "fine grapevines, rivers and woods with many oak and some cork trees; there are also fruits, melons, grapes, watermelons, Castilian plums, capulins, piñon, acorns, native nuts, corelejo, which is a delicate fruit, and other wild plants”—in short, something along the lines of an "Eden", cork trees notwithstanding. However, Oñate and his colonists brought with them nearly 5000 head of horses, oxen, sheep, goats and mules (Hammond and Rey 1953:215-216), and within two months of their arrival at San Gabriel began work on an irrigation ditch (Hammond and Rey 1953:322-323). While this is neither the time nor the place to discuss prehis­toric and protohistoric irrigation practices along the upper and middle Rio Grande, suffice it to say if they existed, they were rudimentary compared to Spanish irrigation systems. Concomitant with the introduction of domesticates and irrigation on a larger scale than any that had been practiced before was the destruction of fragile, riverine ecosystems.

A case in point is the area surrounding Santa Fe. Unoccupied by Puebloan people at the time Spaniards arrived, the Santa Fe River appears to have been a perennial stream in all but the driest years, if not then too. A large cienega located north, east and southeast of the present plaza was fed by at least three springs that “gushed forth.” The waters of the cienega, when combined with
acequias, were sufficiently plentiful to serve the needs of livestock and domestic use of the settlement such that wells were not necessary until the eighteenth century. The riparian growth was so dense that in 1692 Vargas described “the stronghold” as shaded morning and afternoon, and requested permission to move the villa across the river (Espinosa 1940:282). By 1776, however, Dominquez said of the river:

Although it carries enough water to be called a river, it is not overabundant. Indeed it is usually insufficient, and at the best season for irrigating the farms, because there are many of them it does not reach the lowest ones, for the first being higher up keep bleeding it off with irrigation ditches, and only in a very rainy year is there enough for all. (Adams and Chavez 1975: 40)

So important was irrigation to the area, D. H. Snow (1988:5, Table 1), reported that by 1914, the acequia system in Santa Fe extended approximately thirty miles and irrigated 1,335.14 acres. One need only look at the extensive irrigation systems and several dams along the Rio Grande from Velarde south to the Texas-Mexico border to get an idea of the truly phenomenal role water control has played in the development of a semi-arid environment.

*The Ethnozoology of the Tewa Indians* was also published in 1914. According to Junius Henderson and J. P. Harrington, “most of the lateral canyons of the region [including the Rito de los Frijoles] are dry or nearly dry through most of the year, and hence contain no fishes.” Henderson and Harrington continued:

The Rito de los Frijoles is at present a small stream, the waters of which in places sink entirely beneath the surface of the sand, leaving not even pools, and the water all along becomes very shallow at times…the absence of deep pools in which fish could survive an extended drought seems sufficient to account for their absence…the present absence of trout has been locally attributed to a heavy flood which is said to have washed them away. There is evidence along the bottomlands that such a flood did occur, but that it washed the trout out is highly improbable. It seems much more probable that it may have filled the pools that once made it possible for trout to survive protracted dry seasons, though it is not impossible that the filling is due to the fact that the desiccation of the country has at least reached a point where the stream is not able to take care of the debris arising from lateral erosion of the valley. (Henderson and Harrington 1914: 54-55)

However, Charles F. Lummis reported catching trout in the Rito in the 1890s less than thirty years before Henderson and Harrington wrote their monograph.

While the number and impact of domesticated livestock cannot be estimated for the seventeenth century due to the lack of surviving documentation, it is generally agreed that the missions had more livestock under their control than did the Spanish settlers (Scholes 1942: 26-33; see also Hackett 1937:66-72). After the Reconquest, herds were slowly rebuilt until, by the mid-eighteenth century, flocks of more than 1,000 sheep were not uncommon (Baxter 1987: 28-29). So great was the impact of these grazing animals that more than a decade earlier, ranchers had begun moving their stock from the Rio Grande drainage to the eastern plains along the upper and middle Pecos in order to find new grass for their flocks (Baxter 1987:92-94). Whether the ultimate destination for these flocks was California or Mexico, the impact of these sheep on the environment cannot be understated. Although sheep herding continued into the twentieth century, its importance lessened as the importance of cattle ranching increased.
In summary, irrigation agriculture bleeds off water from the main stream as Domínguez noted in 1776. Thus, small streams that were once perennial became ephemeral while larger streams suffered from lack of flow and resultant increase in water temperature. Sheep and cattle not only consumed grasses and forbes found in riparian environments, they also compacted soils, which increased runoff and turbidity. Trapping of beaver and subsequent destruction of beaver dams removed habitat that could not be easily regained by aquatic resources. Deforestation resulted in arroyo cutting, which also increased turbidity and flooding; the latter scoured river bottoms of necessary nutrients for aquatic resources (see also York and Dick-Peddie 1969).

In short, the use and consumption of freshwater fish among Puebloan groups in New Mexico appeared to be a classic case of "we have met the enemy, they are us." Centuries of fishing exacerbated by rapid habitat degradation with the introduction of domesticated livestock resulted in a marked decline in the preferred species of fish available. With the completion of the railroad system, and the increased availability of canned goods, substitutions were made and fishing, for all but recreation, fell into disfavor. Where fish had once been an important source of food in the Rio Grande drainage, by the late nineteenth and early twentieth centuries, fishing was of such little importance few remembered that it had ever taken place. As a result, Puebloan informants related that fact to the early anthropologists and archaeologists working in New Mexico, and in so doing, started a now popular myth.

REFERENCES


Akins, Nancy J. 1995 Faunal Analysis. In The Belen Bridge Site and the Late Elmendorf Phase of Central New Mexico, by Regge N. Wiseman. Archaeology Notes 137, Office of Archaeological Studies, Museum of New Mexico, Santa Fe.


Archivo Franciscano 1672 Documentos Nuevo Mexico, Legajo 1, numero 34, folio 1-24v, Biblioteca Nacional de Mexico.


Baxter, John O. 1987 Las Cameradas: Sheep Trade in New Mexico, 1700-1860. Published in cooperation with the Historical Society of New Mexico, University of New Mexico Press, Albuquerque.


Bradfield, Wesley 1929 Cameron Creek Village: A Site in the Mimbres Area in Grant County, New Mexico. School of American Research Monograph No. 1, Santa Fe.
Brody, J. J.
1977 Mimbres Painted Pottery. School of American Research and University of New Mexico Press, Santa Fe.

Cosgrove, H. S., and C. B. Cosgrove

Dutton, Bertha P.

Espinosa, J. Manuel

Foster, Michael S., Ronna J. Bradley and Charlotte Williams

Gehlback, Frederick R. and Robert Rush Miller

Gillispie, William B.

Hackett, C. W., editor

Hammond, George P. and Agapito Rey
1953 Don Juan de Oñate, Colonizer of New Mexico. Coronado Cuarto Centennial Publications 1540-1940, University of New Mexico Press, Albuquerque.

Harrington, J. P.

Henderson, Junius and John Peabody Harrington

Hill, W. W. and Charles H. Lange

Hodge, Frederick Webb, George P. Hammond and Agapito Rey (translators and editors)

Ivey, James E.

Jett, Stephen C. and Peter B. Moyle

Judd, Neil M.

Koster, William J.

Lambert, Marjorie F.

Lange, Charles H.

Lange, Charles H., Carroll L. Riley and Elizabeth Lange
Marshall, Michael P.  

McKusick, Carmion R.  

Milich, Alicia Ronstadt (translator)  

Ortiz, Alfonzo  

Robertson, Paul B.  

Schaafsma, Polly  

Scholes, France V.  
1942 Troubles Times in New Mexico. Historical Society of New Mexico, Albuquerque.

Secor, David H, John M. Dean and Steven E. Campana (Editors)  
1995 Recent Developments in Fish Otolith Research. Published for the Belle W. Baruch Institute for Marine Biology and Coastal Research by The University of South Carolina Press, Columbia.

Snow, David H.  
1976 Notes from a New Mexico Piscatory. New Mexico Wildlife, March-April, pp.11-14.


Speth, John D.  
2002 Life in the Periphery: Economic Change in Late Prehistoric Southeastern New Mexico. University of Michigan Museum of Anthropology Memoir 37, Ann Arbor.

Stiner, Mary C.  

Sublette, James E., Michael Hatch and Mary Sublette  

Sullivan, Norman C. and Deborah Berg  

Vivian, Gordon and Tom W. Mathews  

White, Leslie  

Wiseman, Regge  

1995  The Belen Bridge Site and the Late Elmendorf Phase of Central New Mexico. Archaeology Notes 137, Office of Archaeological Studies, Museum of New Mexico, Santa Fe.

1996  The Land In Between: Archaic and Formative Occupations Along the Upper Rio Hondo of Southeastern New Mexico. Archaeology Notes 125, Office of Archaeological Studies, Museum of New Mexico, Santa Fe.

2002  The Fox Place, A Late Prehistoric Hunter-Gatherer Pithouse Village Near Roswell, New Mexico. Archaeology Notes 234, Office of Archaeological Studies, Museum of New Mexico, Santa Fe.

York, John C. and William A. Dick-Peddie

A STATISTICAL COMPARISON OF THE WATERFLOW AND CROW CANYON ROCK ART SITES

The Waterflow site, also known as Pictured Cliffs, in San Juan County, New Mexico, and the Crow Canyon rock art site, Rio Arriba County, New Mexico, are well known rock art sites about 60 miles apart in northwestern New Mexico. A statistical comparison of the two sites is presented.

I photographed the sites in 1974, having been guided there by the late Harry Hadlock, longtime ASNM member. Three hundred and thirty-five petroglyphs were recorded at the Waterflow site and 330 in Crow Canyon. Even if some were missed, this would constitute an acceptable sample of the rock art. At each rock art site the engravings were on vertical sandstone cliffs.

Anthropomorphs totaled 116 at Waterflow and 163 at Crow Canyon, for a percentage of 35 percent at Waterflow and 49 percent at Crow Canyon, the latter site having some 14 percent more anthropomorphs.

Zoomorphs were more prevalent at Waterflow with 105 versus 62 at Crow Canyon. This amounts to 31 percent at Waterflow versus 19 percent at Crow Canyon.

Abstract petroglyphs were 114 at Waterflow versus 105 at Crow Canyon, 34 versus 32 percent, or about the same.

Anthropomorphs consist mainly of men with stick limbs, and stick men (Table 1). One shield man was recorded at Crow Canyon. Six men with bows were recorded in Crow Canyon and one at Waterflow. One Flute player was recorded at Waterflow. Thirty-eight Navajo Yei figures were recorded in Crow Canyon.

<table>
<thead>
<tr>
<th>Element</th>
<th>Waterflow</th>
<th></th>
<th>%</th>
<th>Crow Canyon</th>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>man, stick limbs</td>
<td>54</td>
<td>47%</td>
<td>62</td>
<td>38%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>stick man</td>
<td>44</td>
<td>38%</td>
<td>33</td>
<td>20%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>broad shouldered man</td>
<td>9</td>
<td>9%</td>
<td>9</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>shield man</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>man using bow</td>
<td>1</td>
<td>1%</td>
<td>6</td>
<td>4%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>horned human</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>humpback flute player</td>
<td>1</td>
<td>1%</td>
<td>1</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yei figure</td>
<td>38</td>
<td>23%</td>
<td>38</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>man riding horse</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>foot</td>
<td>5</td>
<td>4%</td>
<td>4</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hand</td>
<td>1</td>
<td>1%</td>
<td>2</td>
<td>1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total anthropomorphs</td>
<td>116</td>
<td>100%</td>
<td>163</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>mountain sheep</td>
<td>28</td>
<td>27%</td>
<td>2</td>
<td>3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>antlered animal</td>
<td>2</td>
<td>2%</td>
<td>5</td>
<td>8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bison</td>
<td></td>
<td></td>
<td>0%</td>
<td>10  16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>horse</td>
<td></td>
<td></td>
<td>0%</td>
<td>2   3%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>quadruped</td>
<td>46</td>
<td>44%</td>
<td>13</td>
<td>21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>snake</td>
<td>5</td>
<td>5%</td>
<td>1</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lizard</td>
<td>19</td>
<td>18%</td>
<td>8</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>paw</td>
<td>4</td>
<td>4%</td>
<td>6</td>
<td>10%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>insect</td>
<td>1</td>
<td>1%</td>
<td>0</td>
<td>0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bird</td>
<td>0</td>
<td>0%</td>
<td>15</td>
<td>24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>total zoomorphs</td>
<td>105</td>
<td>100%</td>
<td>62</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Abstract elements are those which are neither anthropomorphic or zoomorphic. The term abstract does not mean to imply that they did not having meaning or significance to the artists who executed them.

Basically the same elements appear at both sites (Table 2). Wavy and straight lines appear at Waterflow, but not at Crow Canyon, however, meanders appear at both sites. Circle designs are numerous at both sites, as are dot designs. One element classified as a decorated enclosed area is numerous at Waterflow, with some 22 elements, and only four at Crow Canyon. This amounts to some 19 percent at one site versus four percent at the other.

The most numerous elements at Crow Canyon are the so-called bird tracks. There are 16 of them at Crow Canyon and none at Waterflow.

The most significant thing is that there are about the same percentage of abstract elements at both sites totaling about a third at each site.

The rock art at each site is similar enough to indicate some sort of cultural affiliation. Further statistical studies of rock art sites may be valuable in defining cultural affiliation.
In June of 2000 the Texas Archaeological Society (TAS) in cooperation with the Center for Big Bend Studies at Sul Ross State University conducted its annual Field School in Presidio County, Texas, under the direction of Robert J. Mallouf, Principal Investigator. Attended by approximately 370 avocational and professional archaeologists and based at a ranch south of Marfa, the Field School investigated prehistoric and historic sites, recorded rock art, and conducted pedestrian surveys in an area which had seen little archaeological attention. The baseline data compiled during the Field School will allow more complete integration of the extensive Marfa Plain with the larger picture of Big Bend and the Eastern Trans-Pecos (Robert Mallouf, personal communication 2000) and greatly contribute to regional culture history of the Borderlands.

Since the Field School headquarters was located on the Texas branch of the Chihuahua Trail, much of the historic archaeology was directed to the history and material culture of the trail. Although the Missouri-Santa Fe-Chihuahua trails have received more attention, the Texas “connection” played a pivotal role in the economic and cultural development of North Central Mexico and Texas in the latter half of the 1800s (Applegate and Hanselka 1974:29-30; Raht 1963:230,233; Seymour and Skaggs 1977:103). Indeed, the shortened link between Chihuahua and eastern United States by way of ports on the Gulf facilitated movement of monies and goods prior to the expansion of the railroad.

Winding its way north from Ciudad Chihuahua to a crossing of the Rio Grande River at Presidio del Norte (present-day Ojinaga, Chihuahua), the Texas-Chihuahua Trail (Figure 1) continued to San Antonio and crossed to Indianola (and later Galveston) on the Gulf coast. After crossing the Rio Grande at Presidio, the route followed Alamito Creek and its many springs to Tinaja San Esteban, where it split with one branch heading for Fort Davis and the other climbing Paisano Pass to Alpine (Burgess Springs) and Fort Stockton. Archival sources document the antiquity of the passage through the drainage (e.g. Castaneda 1938:218), and recent archaeological surveys are beginning to recognize the richness of the resulting material culture. In historic times the creek and its wide valley witnessed Spanish entradas, freighters with long wagon trains, camel and military exercises, large parties of Mexican Revolution refugees, herds of stock moving toward railway heads at Marfa and Alpine, and finally completion of the Kansas City, Mexico and Orient rail line.

Spurred by the treaty of Guadalupe-Hildalgo several pioneers already involved in the Chihuahua trade came to Texas and settled in the Presidio area. One of these men was John G. Davis, who established a ranch complex in the early 1870s midway between Presidio and Marfa on the Chihuahua Trail. This site, now known as the Davis-Herrera Ranch, was a well-known way station for freighters and the military in a harsh and often inhospitable land (Gregg 1933:67; Thompson 1985:56; Raht 1963:202; Santleben
1910:102) and was one venue for historic archaeology during the 2000 Field School.

Archival research began well in advance of the field work and included a search of several special collections for references, maps, and oral histories. Almost immediately questions surfaced because of chronological gaps in Davis’ personal history, lack of information from relatives, and troubling inconsistencies in informants’ information and archival documentation, especially the historic photographs. As Noel Hume (1967:25) has stated, “All historical evidence should be used with extreme caution, for it does not always follow that the buildings described are the same as those found in the ground.” In the case of the Davis-Herrera Ranch, we were not at all confident that informants’ descriptions or historical photographs could be ground-truthed.

Initially, locating the family chapel and recording the house at the Davis-Herrera Ranch were tasks assigned to a crew under the direction of Dr. Lou Fullen and the author. Comparison of the 1930s photograph of the Davis chapel (Figure 2) with architectural drawings and a current photo of the Burgess chapel at Fort Leaton (Figure 3), prompted the crew to anticipate comparable dimensions. Local ranchers indicated a probable location which was cleared and investigated. Several non-invasive techniques, including a metal detector survey and an electromagnetic (EM) conductivity survey were employed in the search. Because the gridded area was placed only a few meters between the black-topped county road and the old rail line, numerous hits were recorded with the metal detector and one major anomaly was revealed by the EM survey. The latter was confirmed as a black powder can likely used during railroad construction (Richard Gregg, personal communication 2000). Clearly different episodes of heavy construction and the ravages of time had impacted the above-ground resources and the archaeological record.

Figure 1
Map of the Chihuahua Trail through Texas. Adapted from Mellard (1973).
Since non-invasive techniques failed to locate the chapel, a 12 m x 50 cm hand-excavated trench was placed along the north-south baseline in hopes of revealing a remnant of some wall or foundation. The excavation did confirm a portion of an adobe wall ca 47 cm wide at ca 33 cm below the surface, lying perpendicular to the trench. Adobe slump continued on both sides of this remnant. Was this the chapel? Recalling that a historic photo showed adobe corral walls in use extensively at the ranch, it is impossible to conclude with this limited excavation that the chapel had in fact been located.

As the week progressed, it became clear that the five-person crew needed assistance not only in finding the chapel, but also in recording the house and other features of the ranch complex. Teddy Stickney and her rock-art recording crew and Jim Warren and his survey crew came to the rescue. After studying the house (Figure 4), Teddy directed her crew to draw the western elevation and the distinctive arched fireplace (Figure 5). Having mastered the process of recording rock art to scale, the crew found the task of indicating differences in sizes of adobes easy, if not as artistically challenging as drawing pictographs or petroglyphs.

Before research began, the fireplace was recognized as a striking architectural feature. Later it became apparent that it was an unusual example of arch technology in sun-dried adobe. Few examples of structural arches in adobe brick, however, seemed to occur outside ecclesiastical architecture, e.g. the now-demolished convento at Isleta Pueblo and Nuestra Senora de los Angeles at Pecos Pueblo. Architectural historian Eugene George (personal communication 2000) commented that he knew of only one other fireplace of this style in a Borderlands domicile. That house which is now demolished was located in Guerrero, Coahuila.

Reassured by James Ivey (personal communication 2001) that adobe arch technology had been alive and well in the Borderlands, the author began searching for this illustrious feature in Presidio County. In the intervening year a series of adobe arches has been noted extending along the Alamito Creek drainage from the Presidio area to Fort Davis, Texas (Whorton and Fallwell 2001:6).
Interestingly, the arched fireplace at the Davis house is the smallest example identified to date. The largest arch was constructed at the Arch House in Fort Davis to accommodate the passage of stage coaches to the inner courtyard of this stage stop. Unfortunately, this structure no longer exists (Mary Williams, personal communication 2001). Construction dates reveal a tight temporal framework for all the arches, suggesting the possibility that one or more maestros was traveling along the trail from Mexico into Texas importing cultural traditions and technology.

Other architectural details of the house exhibit construction typical of the age and expedient for a location along the Chihuahua Trail. Notable is the zaguan, which was originally roofed and afforded an entry large enough to accommodate passage of animals and wagons into a protected courtyard or corral. This architectural feature clearly provided some needed security for passing travelers and stock. Carlos Herrera, who purchased the ranch in 1896 after Davis returned to his birth state of North Carolina, filled in the zaguan with adobes of a slightly different size and composition, no doubt to provide additional living space for a large family (Figure 6).

Back in the field the survey crew provided its expertise by recording a hand-dug well, the school, extensive sheet midden, part of the acequia and its metal flume, and several cultural deposits located in the cut bank of the creek. Judging from archival photographs, maps, tax records, and comments from freighters, the Davis ranch at the height of trail use was extensive. For about 15 years, the ranch was a popular way station for rest, water, and hospitality. A Presidio County historian has remarked that the “running water, the shade trees, and the peach brandy and food at the Davis’s [sic] place made it a famous stopping place for the freighters and other travelers on the Chihuahua trail” (Gregg 1933:67).

What is the future of the Davis-Herrera Ranch? Melting adobe ruins need protection, and a site
with an important historical record merits interpretation. Presidio County, the Texas Historical Commission, and the Center for Big Bend Studies have applied for funding (TEA-21) from the Texas Department of Transportation for stabilization of the house and school and for the design of interpretative pathways and signage. A decision will be forthcoming soon on the grant proposal.

Recently, Teddy Stickney and the author returned to the site, hoping to trace the acequia along the creek. We were pleased to note that the chimney and entire south wall of the house had been filled in and capped with new adobes providing a measure of protection for the present. We also found additional traces of the irrigation system (but no peach trees, still, or brandy) and a possible foundation remnant for the eastern part of the house. As often is the case, additional questions about construction episodes and function have arisen, but ongoing research will build on the many person hours of hard work that the Field School participants contributed. They deserve hearty congratulations and thanks for dedicated service to Borderland history through their archaeology and contacts with the local community.

**Figure 6**
The remodeled zaguan showing differing adobe types. Photo by Brenda Whorton.

**REFERENCES**

Applegate, Howard G. and C. Wayne Hanselka  
1974 _La Junta de los Rios del Norte y Conchos_. Texas Western Press, El Paso.

Castaneda, Carlos E.  

Connor, Seymour V. and Jimmy M. Skaggs  
1977 _Broadcloth and Britches: The Santa Fe Trade_. Texas A&M University, College Station.

Gregg, John E.  
1933 _The History of Presidio County_. M.A. thesis, University of Texas, Austin.

Mellard, Rudolph  

Noel Hume, Ivan  
1976 _Historical Archaeology_. Alfred A. Knoph, New York.

Raht, Carlyle G.  
1963 _The Romance of the Davis Mountains and the Big Bend Country_. Rahtbooks Company, Odessa, Texas.

Santleben, August  

Thompson, Cecilia  
1985 _History of Marfa and Presidio County_. Nortex Publishing, Austin.

Whorton, Brenda B. and Kenneth L. Fallwell  
2001 _Arches along the Trail_. _The Reporter: Newsletter of Preservation Texas_, winter.
Frank Hamilton Cushing was neither the first nor the last participant observer of a native American group in the Southwest, although he was perhaps the best known example. More than a century before Cushing arrived at Zuni Pueblo in 1879, Father Fray Francisco Garcés accompanied Lieutenant-Colonel Juan Bautista de Anza’s California-bound colonists westward across southern Arizona. The good father had a peculiar empathy with the natives of southern Arizona. This drew the attention and the criticism of Fray Pedro Font, the expedition’s chaplain:

Father Garcés is so well fitted to get along with the Indians and to go among them that he appears to be but an Indian himself. Like the Indians he is phlegmatic in everything. He sits with them in the circle, or at night around the fire, with his legs crossed, and there he will sit musing two or three hours or more, oblivious to everything else, talking with them with much serenity and deliberation. And although the foods of the Indians are as nasty and dirty as those outlandish people themselves, the father eats them with great gusto and says that they are good for the stomach and very fine. In short God has created him, as I see it, solely for the purpose of seeking out these unhappy, ignorant, and rustic people (Bolton 1930 IV: 121).

Cushing’s own peers with the U.S. National Museum and later the Bureau of American Ethnology, not to say schoolteachers, missionaries, Indian agents, traders and others whose paths crossed with his, might have used similar language to describe the young ethnologist. His acceptance by the Zunis took scarcely two years; by January 1882 he had been adopted into the tribe, made a Junior Priest of the Bow and 1st War Chief of Zuni (a title he initially termed “Commander of the Zuni People”), and gained other offices that may have existed largely in his own mind (Green 1990:12-14, 178, 180-181, 188, 209). The wonder is that these events happened after the Zunis caught Cushing looting their shrines for Zuni religious relics (Green 1990:140, 343-344). Although tried for sorcery, his only penalty was to have about a dozen objects taken away to serve as sacred relics.

There were other problems of his own making, such as his shooting Navajo ponies that had trespassed onto Zuni lands, which he rationalized as his duty as a war chief. He protested against the attempts by Americans, including U.S. Senator John A. Logan, to grab essential springs at Nutria. While this drew Logan’s contempt, it may be an overstatement to claim that the Bureau withdrew Cushing from Zuni under the Senator’s threat to withhold their annual appropriation (Green 1979:10-12; Green 1990:261-263, 275, 282-283, 287-288, 321; Pandey 1972:325-326). Logan had much greater interests at stake in the notorious American Valley (Cattle) Company in present Catron County, New Mexico, and the land frauds
that whirled around it, the so-called American Valley affair (Westphal 1965:56-61; 1973: 150-182). Cushing wrote extensively for popular and literary magazines, but was remiss in completing his reports for the Bureau of American Ethnology, the employer who paid his salary and bills.

During his lifetime Cushing had admirers as well. In the century since his passing, anthropologists and historians have generally praised his major ethnographic works but are more uncertain about the man himself (Hinsley 1983; Kan 2001:6; Mark 1980:96-130; Woodward 1939). One anthropologist noted that he shared closely in Zuni activities and mastered their language, but completely lacked training (Basso 1979: 14). E. Richard Hart, ethnohistorian and expert witness for the Zuni Tribe, called him a controversial character (Hart 1995:25-26). New Mexico historian Marc Simmons (1979:219) pointed out that the dual pattern of Cushing's activities qualified him as a precursor of the escapist, whom Simmons calls "yearners" or aficionados and whose numbers grew rapidly after World War I. These were Anglos who participated in Pueblo life to varying degrees, and affected Indian dress.

Less well known is that during his stay at Zuni, Frank Cushing was subjected to a rather searing appraisal by U.S. Indian Inspector C.H. Howard. To the best of my knowledge, the United States Indian Inspectors have been overlooked by both anthropologists and historians. The office came into existence in 1873 and up to five Inspectors served at any one time, under the supervision of the Secretary of the Interior. They were the untouchables of their era; charged with investigating all matters pertaining to the condition of the Indians, use of reservation lands, character and abilities of the Agent and other employees, the Indian schools, and claims made against Agents or employees. In short, the administration of the agencies and the reservations. Ideally, each agency was to be inspected twice a year, a goal that was rarely met. Their reports date mostly from the late 19th century. Only a few files are later than 1932, with some records as recent as 1948 (Hill 2000:121-122). Many files may be seen in National Archives Microfilm Publication M-1070.

In any event, Howard's instructions of May 29, 1882, charged him with examining the pueblos in charge of the Pueblo Agency at Santa Fe. He began by visiting Zuni sometime in July, the date not stated. While there he suffered "a sudden and unforeseen attack of illness" and received a telegram on July 25th directing him to Chicago. His report, on the Pueblo of Zuni alone, was delayed until late December.

Howard had been directed to look particularly into the matter of schools. This he did, and he judged the situation at Zuni not good from any standpoint. Continuing, he found sanitation poor and land titles unclear. There was definite need for an irrigation project and for curbing the impositions of "bad White men." Reservation boundaries needed to be marked, although the controversy involving Nutria had evidently not yet arisen. He recommended that a sub-agent live at Zuni since the Indian Agent for the New Mexico Pueblos resided in Santa Fe, two hundred miles distant. Surprisingly, there were no charges of waste, incompetence, corruption, or other abuses, at least not until Inspector Howard came to the longest single section of his report - "Employee of Ethnological Bureau."

He did not name this individual specifically but the identity is unmistakable. The Inspector never met Frank Cushing, who by July of 1882 had been at Zuni almost three years, because Cushing and a party of Zunis left for Washington in late February that year. He would remain in the East until late September, then return to the pueblo with his non-Zuni wife, Emily. Green (1990:263) included a single document by Inspector Howard, a very abbreviated account of Cushing's conduct, which he addressed to J.W. Powell, director of the Bureau of American Ethnology. In his full report, most of what Howard wrote was based upon hearsay by
JOHN P. WILSON

parties either unnamed or known to be unfriendly towards Cushing. The charges while undoubtedly biased were not necessarily false or inaccurate. They go beyond what has been published before and although not sworn testimony, the Indian inspectors were usually able to sort out substantial claims from spurious ones, adding their own conclusions. Howard's remarks follow, with the addition of paragraphing and occasional explanatory notes in brackets [ ].

Employee of Ethnological Bureau

It is with extreme reluctance that I invite attention to a representative of this Bureau, resident at the Zuñi pueblo, as I did to one living at a Moqui [Hopi] village. I should be very sorry to accuse the Bureau or any of its representatives unjustly. But the complaints were so often repeated I do not feel at liberty, as a sworn officer of the Government, to ignore them.

This man was charged with licentiousness, with lawlessness of conduct, with much falsification to the Zuñis and to the public, and with pernicious influence upon these Indians. While among the Moquis who are somewhat intermarried with the Zuñis, and between the pueblos of whom visits are frequent, I was told by the Missionary that the Indians had said that the resident representative of the Ethnological Bureau with the Zuñis was licentious. I heard the same report from different persons at the Navajo Agency. The teacher of the Zuñis [Samuel A. Bentley] said it was common talk with the latter, and that they pointed out two children by Zuñi women of whom he was the father, and declared he had introduced a licentiousness that had been before unknown among them.

The teacher also said that he had been accustomed to tell falsehoods to them as e.g. about the three scalps which he claimed he had taken from their enemies, the Apaches; that a man who was with him when he visited Colorado Canyon [the Grand Canyon, referring to Cushing's visit to the Havasupais in July 1881] testified that two of the scalps were bought in Prescott [Arizona] and one of them was that of a Chinaman sent him from New York City. My informant said this was only a specimen of many falsehoods with which this Government representative had deceived this simple people and fostered their old barbarous and savage traditions and customs.

By such means he insinuated himself into their secret order. On the other hand it was a falsehood that he had given out to the public that he was 'second chief' - that in fact he is not a chief at all but only a member of a sort of police or village council of ten members [i.e., the Bow Priesthood]. If a chief he ought assuredly to have exerted some influence towards cleanliness, decency, and health in the village. In short, every witness showed that this man who stood for a scientific bureau of an enlightened Government made no attempt whatever to elevate these Indians, not even in their outward circumstances and the commonest habits of civilized life, but on the other hand that his whole example and influence were degrading.

As an instance of lawless teaching and example, I saw a complaint in writing from the Navajo Agent that this man had shot two or three Navajo horses. The owners had entered formal complaint. The circumstances as confirmed to me by Zuñi testimony were as follows: He was riding along with a party of Zuñis and saw some Navajo horses feeding on the Zuñi land (the Navajos say they do not know where the Zuñi boundary is, as it is not marked). He thereupon drew his revolver and shot one dead and wounded two others, one of
whom afterwards died. The motive seemed to be bravado, to show his recklessness of laws and regulations and to gain favor with the Zuñis by thus injuring their so-called enemies.

He thus fostered the old tribal hatreds, stirred up new strife, and set an example too likely to be followed by both tribes, of retaliation and lawless violence. Conduct like this and the testimony of the Indians as to his character and habits should be least lead to serious and thorough investigation, and if his example and influence are corrupting, as reported, no time should be lost in expelling him from the Pueblo and discharging him from the Government service.

His various statements as to no white men in Colorado Canyon, and as to the sacred water from the Gulf, as well as with reference to his own position in the tribe were pronounced 'pure fiction.' I mention them and his falsifications in general in showing at least the character he sustains in that region (National Archives, M-1070, Roll 41).

The body of Inspector Howard's report runs to twenty-three pages. Three pages of recommendations follow and then a 4 1/2 page synopsis. In this last, he reiterates that: "Here as at one of the Moqui villages, complaint was brought to me from various sources of the bad influence of a certain resident representative of the Smithsonian Institution. I have indicated the nature of these complaints and my reasons for believing there is some foundation for them (pp. 17, 18, 19, 10)" (National Archives, M-1070, Roll 1). He dated the report December 23, 1882.

While some of the Inspector's language sounds overwrought and he obviously believed in the Government's policy of civilizing the Indians by whatever means, he was scrupulously fair in his evaluations and recommendations elsewhere in the report - on settling troubles with the Navajos and checking infringements by whites, teaching health measures, improving the attendance of pupils at the school, securing justice for the Zunis in Territorial courts, encouraging better care of flocks and improving the breed of sheep, and the need for a resident sub-agent. Howard and the other Indian Inspectors often found conditions much the same from agency to agency, and they were ever watchful for waste, incompetence and corruption.

Sooner or later they saw just about everything that could go wrong in the administration of an Indian agency and they were not easily deceived. They had no 'turf' to protect and usually stayed only a few days at a time, so they did not threaten anyone's position simply by their presence. They also had judicial powers to suspend superintendents, agents or other employees and designate temporary replacements, as well as the authority to examine all records and administer oaths for the taking of sworn testimony. This meant that a visit from an Indian Inspector was pretty much like having the FBI stop by. They were thoroughly professional and had no reason to report other than what they saw and, in their judgment, believed to be the case. Whether the government's policies at this period were always wise ones, and worth supporting, is of course another question (Simmons 1979).

Most of the incidents that Howard cited are also alluded to by Green (1990), although there do seem to be some new specifics such as the allegation that Cushing fathered two children at Zuni. This would have been possible since by July 1882 he had been there for almost three years. And it is no strain to accept that a person could have purchased two scalps (scalps of whom??) at Prescott.

It appears too that there are places where more knowledge about Cushing's stay at Zuni might be found. Green (1990:402, 433) cites at least five documents to an unstated location in Record Group 75, Pueblo Indian Agency, at the Denver
Federal Center branch of the National Archives. RG 75, Records of the Bureau of Indian Affairs, has many categories of records that might be searched at the National Archives both in Washington D.C. and in the Denver branch. For someone like Howard Cushing, who seems to have been more an irritant than a threat, these repositories should be worth examining. The document in the present article is a case in point. Another strong possibility is the Presbyterian Historical Society in Philadelphia and particularly the papers of the Board of Home Missions' medical missionary, the Rev. Taylor Ealy, and his successor at Zuni, Samuel A. Bentley (Bender 1984). Anything sent to the Board of Home Missions offices or to the Rev. Sheldon Jackson, superintendent for Presbyterian mission work in the Rocky Mountain West, will probably be found in the society's extensive collections.

Cushing wanted not so much to become a Zuni as he wanted the adulation that he thought he deserved from both within and without the tribe by virtue of the esoteric knowledge that he had gained, and which to some extent he made available in his popular and anthropological writings. Whether the Zunis benefitted from his having lived among them is debatable, but clearly he has not been forgotten there.

At the beginning, I mentioned that Cushing was neither the first nor the last. Father Garcés is, unfortunately, well known only to western historians and a few ethnohistorians. In the twentieth century we have the example of Grenville Goodwin, who lived with the Western / White Mountain / Apaches, learned their language, and in a regrettable short life recorded and to a certain extent published what he learned about them and particularly their social organization, without an anthropological background at the time of his fieldwork (Goodwin 1969). The work of all of these scholars requires careful study because of their personal involvements, but for the understanding that this can bring, we are much better informed than if they had never passed among us.

REFERENCES

Basso, Keith H.

Bender, Norman J., editor

Bolton, Herbert Eugene

Goodwin, Grenville
1969 The Social Organization of the Western Apache. The University of Arizona Press, Tucson.

Green, Jesse, editor
1979 Zuni: Selected Writings of Frank Hamilton Cushing. University of Nebraska Press, Lincoln.


Hart, E. Richard, editor

Hill, Edward E., compiler

Hinsley, Curtis
Hinsley, Curtis S., and David R. Wilcox, editors

Kan, Sergei, editor
2001 *Strangers to Relatives: The Adoption and Naming of Anthropologists in Native North America*. University of Nebraska Press, Lincoln.

Mark, Joan

National Archives and Records Administration

Pandey, Triloki Nath

Simmons, Marc

Westphall, Victor


Woodward, Arthur
ERRATA


p. 57  top right column, line 6: “mineral clay” should read “clay mineral”.

p. 62  Figure 8: “see Fig. 4 and 5” should read “see Figs. 2 and 3”

p. 62  Figure 9: “see Figs. 5 and 6” should read “see Figs. 4 and 5”

p. 63  Figure 11: “Fingure print area 0 to 40 theta” should read “Finger print area 0 to 40 degrees, 2 theta” and “Figures 10, 13, and 14” should read “Figures 10, 14, and 15”.

p. 66  Figure 17: “13” should read “16”.

p. 67  Eggan and Pandy reference: “pp. 31-42” should read “p. 481”.
### PUBLICATIONS OF THE ARCHAEOLICAL SOCIETY OF NEW MEXICO

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Year</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Collected Papers in Honor of Lyndon Lane Hargrave</td>
<td>1968</td>
<td>$7.00</td>
</tr>
<tr>
<td>2</td>
<td>Collected Papers in Honor of Florence Hawley Ellis</td>
<td>1975</td>
<td>Out of Print</td>
</tr>
<tr>
<td>3</td>
<td>Collected Papers in Honor of Margorie Ferguson Lambert</td>
<td>1976</td>
<td>$14.00</td>
</tr>
<tr>
<td>4</td>
<td>Collected Papers in Honor of Bertha Pauline Dutton</td>
<td>1979</td>
<td>Out of Print</td>
</tr>
<tr>
<td>5</td>
<td>Collected Papers in Honor of Helen Greene Blumenschen</td>
<td>1980</td>
<td>$14.00</td>
</tr>
<tr>
<td>6</td>
<td>Collected Papers in Honor of Erik Kelleman Reed</td>
<td>1981</td>
<td>$14.00</td>
</tr>
<tr>
<td>7</td>
<td>Collected Papers in Honor of John Runyon</td>
<td>1982</td>
<td>$14.00</td>
</tr>
<tr>
<td>8</td>
<td>Collected Papers in Honor of Charlie Steen Jr.</td>
<td>1983</td>
<td>$14.00</td>
</tr>
<tr>
<td>9</td>
<td>Collected Papers in Honor of Harry L. Hadlock</td>
<td>1984</td>
<td>$14.00</td>
</tr>
<tr>
<td>10</td>
<td>Southwestern Culture History: Collected Papers in Honor of Albert H. Schroeder</td>
<td>1985</td>
<td>Out of Print</td>
</tr>
<tr>
<td>11</td>
<td>Prehistory and History in the Southwest: Collected Papers in Honor of Alden C. Hayes</td>
<td>1985</td>
<td>Out of Print</td>
</tr>
<tr>
<td>12</td>
<td>By Hands Unknown: Papers on Rock Art and Archaeology in Honor of James G. Bain</td>
<td>1986</td>
<td>$15.95</td>
</tr>
<tr>
<td>13</td>
<td>Secrets of a City: Papers on Albuquerque Area Archaeology in Honor of Richard A. Bice</td>
<td>1987</td>
<td>$15.95</td>
</tr>
<tr>
<td>14</td>
<td>Reflections: Papers on Southwestern Culture History in Honor of Charles H. Lange</td>
<td>1988</td>
<td>Out of Print</td>
</tr>
<tr>
<td>15</td>
<td>From Chaco to Chaco: Papers in Honor of Robert H. Lister and Florence C. Lister</td>
<td>1989</td>
<td>$15.95</td>
</tr>
<tr>
<td>16</td>
<td>Clues to the Past: Papers in Honor of William M. Sundt</td>
<td>1990</td>
<td>Out of Print</td>
</tr>
<tr>
<td>17</td>
<td>Puebloan Past and Present: Papers in Honor of Stewart Peckham</td>
<td>1991</td>
<td>Out of Print</td>
</tr>
<tr>
<td>18</td>
<td>Archaeology, Art, and Anthropology: Papers in Honor of J. J. Brody</td>
<td>1992</td>
<td>Out of Print</td>
</tr>
<tr>
<td>19</td>
<td>Why Museums Collect: Papers in Honor of Joe Ben Wheat</td>
<td>1993</td>
<td>Out of Print</td>
</tr>
<tr>
<td>22</td>
<td>La Jornada: Papers in Honor of William F. Turney</td>
<td>1996</td>
<td>Out of Print</td>
</tr>
<tr>
<td>25</td>
<td>La Frontera: Papers in Honor of Patrick H. Beckett</td>
<td>1999</td>
<td>$19.95</td>
</tr>
<tr>
<td>26</td>
<td>The First 100 Years: Papers in Honor of the State and Local Archaeological Societies of New Mexico</td>
<td>2000</td>
<td>$25.00</td>
</tr>
<tr>
<td>27</td>
<td>Following Through: Papers in Honor of Phyllis S. Davis</td>
<td>2001</td>
<td>$19.95</td>
</tr>
<tr>
<td>28</td>
<td>Forward to the Past: Papers in Honor of Teddy Lou and Francis Stickney</td>
<td>2001</td>
<td>$19.95</td>
</tr>
</tbody>
</table>
CONTRIBUTORS

David M. Brugge
Carol J. Condie
John Greer
Mavis Greer
Frances Joan Mathien
Thomas C. O’Laughlin
Hugh C. Rogers
Samantha M. Ruscavage-Barz
Michael A. Schillaci

Dan Scurlock
Calvin B. Smith
H. Denise Smith
Cordelia T. Snow
Paul P. Steed, Jr.
Christopher M. Stojanowski
Brenda B. Whorton
John P. Wilson