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I first came to know the names of Meli Duran and Dave Kirkpatrick on the covers of the Archaeological Society of New Mexico’s annual volumes I received as a benefit of my student membership in ASNM in the 1990s. To my regret, I never got to know Meli personally before her illness and passing, but as I’ve worked with Dave on the board of ASNM, I’ve learned to appreciate his considered stances on archaeological matters and his good humor. How often can one carry on an email conversation with someone that simultaneously deals with publication of an upcoming book, canning home-grown garden produce, and the latest fieldwork adventures, complete with bad fishing puns? As I’ve learned more about Dave and Meli’s lives and careers, I’ve come to appreciate the range and scale of the archaeological research they have accomplished and their devotion to family. Where they particularly stand out is in their deep and complementary partnership, their mutual commitment to sharing the results of their archaeological research, and their dedication to educating the public about archaeology. ASNM is proud to honor Meliha Duran and David Kirkpatrick.

Emily Brown
INTRODUCTION

For Meli and me, archaeology has always been a lifestyle. We have seen many interesting sites in remote areas of New Mexico, volunteered for digs with Easter egg hunts for the kids on Sunday morning, and many other adventures with our friends. Over the years through various activities, both archaeological and non-archaeological, we have met many very interesting people, learned new things, and gained new friends. We are very appreciative to have been chosen for the 2011 Honoree volume.

MELIHA S. DURAN

March 14, 1951-May 11, 2009

Meliha Sue Duran, the first child and only daughter of Martha (Tucker) Duran and Servet Ahmet Duran, was born March 14, 1950 in Finch Memorial Medical Hospital, Pullman, Washington (Figure 1). Many people asked her if Meliha was a Hawaiian name. Honoring her father’s Turkish heritage, her parents named her Meliha, or “Beautiful, sweet, and charming.”

Meli’s parents, both Stanford University students, met one holiday on campus. They were married on May 4, 1946. Two years later they moved north to Washington State University (WSU), where Servet accepted a research position in the School of Mines, and later, in the College of Engineering, he taught and conducted metallurgical research until he retired in 1986 from the Material Sciences Department, WSU. One of his retirement activities was advising freshman engineering students.

On June 13, 1952 Meli’s first brother Fredrick Rifat Duran was born in Pullman. Seven years later, her second brother Michael Halis Duran was born on Christmas Eve, 1959. Meli and Rick were upset because they couldn’t open presents that Christmas Eve. A grandmother’s compromise was reached so each got to open one present and the rest on Christmas Day.

In 1956, Meli’s dad returned to Stanford University to teach and finish his Ph.D. in material science. The family lived in Stanford Village, a collection of World War II barracks that had been converted to apartments in Menlo Park. Meli attended first and second grade at Laurel School (1956 and 1957). In second grade, Meli walked a couple of blocks to another apartment where Julie Luck, her Pullman nursery school friend lived with her parents (Dad also a Stanford graduate student). Meli...
would go in the back door, pick up Julie, and go out the front door, and they walked to school together. In the afternoon, the process was reversed.

**The Early Years in Pullman**

At the end of summer 1957, the family returned to Pullman where Servet resumed his teaching responsibilities. The family lived in a one-year rental house and then another the following year. According to her mother, each house had a piano so Meli could have piano lessons and practice at home. This began her lifelong interest in the piano. She continued with lessons through high school. The third year after returning from Stanford, the family bought a home. Because of Meli’s serious interest in the piano, Servet bought her a new piano, before the family even had a sofa!

Meli attended Edison and Franklin Elementary Schools and Lincoln Junior High School. In the Christmas season of 1963, Meli, a 13-year-old Lincoln Junior high student, was awarded a book for “Most Appropriate Decoration” for the Community Christmas Tree in the city library. She selected “Thirty Seconds over Tokyo” to add to her 50 plus book personal library, according to a newspaper article in the Pullman Herald. Beginning in 1961, while in grade school through high school, Meli was very active in Camp Fire Girls. She worked on a variety of projects, including a scrapbook with decorated wood covers and leather hinges, filled with her projects and achievements.

In 1964 Meli entered Pullman High School, graduating with the Class of 1968 in May. During her high school years, Meli was very active in a variety of clubs. She was a member of the National Honor Society as well as the Thespians and the Drama Club. She was the narrator plus an animal in A.A. Milne’s *Winnie the Pooh*, the Old Crone in R. L. Sweeney’s *The Hangman’s Noose*, and the costume chair for Arthur Miller’s *All My Sons*. In 1966, she participated in the fortieth High School United Nation convention, representing Russia. During the summers, Meli worked in Dr. Luck’s Agronomy lab, and did lots of babysitting.

While in high school, Meli was very interested in the written word. She was the copy editor for the school newspaper *Hi Times* and editor for the Scribe and Scroll, the International Honor Society for High School Journalists. Next to her senior picture is the characterization: “D is for decisive editor.”

**The Undergraduate Years**

In the fall of 1968, Meli entered the University of Washington (UW), Seattle, graduating with a B.A. in anthropology in the Fall of 1971. Her early archaeological experiences were at Washington State University. The first was the summer of 1970 when she participated in the WSU field school excavations at the Minard Site, on a sand spit between the Pacific Ocean and Gray’s Harbor. The field school students visited the Ozette Site, a prehistoric and historic Makah village preserved under a mudslide (Figures 2-4). Meli fell in love with the site and its coastal setting. In a November 1970 letter to a close friend, Meli wrote, “Next summer I would love the opportunity to work at the Ozette Indian site, if they have enough money.” However, Meli spent the summer of 1971 attending summer school at Stanford University.

![Figure 2. Hiking to Ozette, Summer 1970.](image-url)
Her dream did come true, however, and as a graduate student, Meli would return in the summer of 1972 to work in the field laboratory, especially with cedar baskets, mats, and other perishable artifacts.

Meli was modest about her UW college life, usually telling Leyla and me that she lived in French House (Maison Françoise), a co-ed (both sexes) floor dorm where only French was spoken. This was probably during her sophomore and definitely her junior year. However, while preparing for her memorial service, I found a newspaper clipping in her scrapbook that shows the radical side of her personality. Undated, the campus newspaper clipping is titled “Open Bathtub Policy Begun in McMahon” (also known as French House). Meli and seven of the coeds moved a bathtub into the women’s dorm showers, using a rubber hose to get water from the shower head into the tub and draining it with a copper pipe back into the shower. The coeds told the investigating University officials that it was safer and more sanitary than the slippery shower floors (Figure 5). They defended their actions with “We are very fond of our tub and would hate to see it go. After all, we’re all it has.”

Pat Peron who lived with Meli in Maison Françoise, in a remembrance note, wrote that Meli was the Empress (not president!) and always had an up-to-tricks smile on her face. “Before Meli became Empress of Maison Françoise, it was OK…but a bit forbidding. The language informants were French, sophisticated grad students…and it could be intimidating. But with her at the helm, we had a ball—parties (keggers à la française, class, please) and dancing seriously, on-going jokes. Fun!”

Aside from family and Camp Fire Girls trips to British Columbia, Canada, Meli became an international traveler in the summer of 1969. According to Meli, her father was awarded a summer grant from an international agency. His project was to assist in the development of the new Material Science section in the Department of Engineering Physics, Ankara University in Ankara, the capital of the Turkish Republic. Servet traded in his first-class plane ticket for coach class so the family could go with him. Rick stayed at home so it was Meli, Mike, and her parents who set off for a grand adventure. With Meli’s copy of Touring Europe on $5 A Day for College Students, they flew out of Vancouver, British Columbia to London. After a couple of days seeing the sights, which included Meli and her mother attending a performance of the controversial Hair: The American Tribal Love-Rock Musical, they took a bus/hovercraft/bus to Paris, train to Rome, bus to Athens, and boat to the coast of Turkey. They visited several museums and archaeological sites on the way. After visiting Servet’s brother’s family and other relatives in Istanbul, the family moved on to Ankara and stayed in the apartment of a colleague who was out of town for the summer. The family shopped in the local bazaar for food, clothing, and other needs. Meli went on a few dates with American service men. Her mom had only one request, that she bring back cake mixes from the PX so they did not have to shop in black market stores.

During the fall of senior year, Meli, Pat, and two other women lived in a house off-campus in the University District. Other than telling us she walked to campus since she did not have a car, little was shared with us. Meli completed her studies with the fall semester classes.
Meli returned to Pullman and surprised her parents by requesting their support to go to graduate school at WSU. They agreed if she wanted to attend WSU and live in the basement apartment.

**Graduate School Years**

Meli was accepted into the Anthropology Graduate program in the Spring of 1972. Meli moved into the family’s rental basement apartment, rent-free. At the time she was living by herself. She began attending classes in January 1972. The one class we shared, although we didn’t know each other then, was an Anthropology Method and Theory class in a large lecture hall with an elevated seating format. Several of us guys sat in the higher seats in the back. Meli would come in just before class started, wearing her trademark overalls accompanied by Ginger, a German short hair pointer she was dog sitting for a friend.

In 1972 Dr. Richard “Doc” Daugherty hired Meli as summer Laboratory Director for the WSU field school at Ozette site (Figure 6). Meli supervised the lab and trained the field school students and the Native American workers (many were Makah from Neah Bay) in preservation and laboratory techniques. She also did lots of hands-on work with preserving the perishable artifacts in tanks filled with polyethylene glycol along with the cataloging and labeling tasks.

After dinner one evening in late August, Meli was hiking to the top of Cannonball Island. She got into an area of slick wet grass and slid over the edge of a 30 ft cliff, landing feet first in an area of cannonball rocks. She scooted over to a tidal pool to put her feet in the cold water. She called out to nearby hikers who notified the staff at the camp, who then arranged the rescue. Bad weather prevented the Coast Guard helicopter from performing a medical evacuation of Meli. When the Coast Guard cutter arrived off shore, Doc transported Meli via his small boat to the cutter which delivered her to Neah Bay where an ambulance took her to the hospital in Port Angles. Our friends likened her transport to the cutter as symbolic to a marriage ceremony with a Makah bride being taken out to the canoe of her new husband.
After emergency surgery in Port Angles, Meli insisted that she go home to have the final surgery in Pullman. She was transported to SeaTac airport and then to Pullman, 300 mi to the east, in a commercial plane, lying on a stretcher that rested on seats across the aisle. After surgery to repair the crushed head of her left tibia and half the bones in each foot, Meli returned to her basement apartment.

Meli was adamant about returning to classes, enrolling in courses for the fall 1972 semester. While Meli was using a wheelchair with her legs extended straight out in soft casts, Martha, her mother would drive her to campus finding the closest drop-off, usually a loading dock, and then returning at a designated time. Other students helped her around classes.

As the 1972-73 school year started, Meli and her roommate, Diane, offered to cook dinner for Tom White and Paul McGuff, who had worked with her at Ozette the previous summer. Tom, Paul, and I were sharing an apartment in one the WSU residence apartments. I was also invited since I was their roommate. The terms were to split the cost of the food and the guys would do the dishes. Tom White, a fellow first year (1971-1972) graduate student with me, told me of the arrangement. Tom insisted I knew her as we took a class together but I couldn’t remember her. When Tom and Paul took me over for first dinner, my introductory comment to Meli was “So you’re the one!” remembering the young lady who came to class in overalls and accompanied by Ginger.

After I graduated in 1971 from University of California, Santa Barbara, a bicycling campus, I bought a 1965 white Rambler station wagon. Meli was able to slide onto the back seat with her legs in casts and the wheelchair went into the back. Our first date was to a movie show in Moscow, Idaho to see the animated film, *Félix the Cat*, a satire on college life, politics, and free love.

During the 1972 Thanksgiving break, Meli and I traveled to Corning, California for the fiftieth wedding anniversary of Charles and Ruth Kirkpatrick, my grandparents. Meli was now walking with the aid of crutches. An accomplished seamstress and quilter, Meli made a quilted dress to wear for the occasion (Figure 7). My grandparents and family enjoyed meeting Meli. Afterwards while the immediate family was talking about this and that, Grandpa sided up to me, and within Meli’s hearing, asked “You had to break her legs to catch her?” to which Meli laughed and smiled.
During the summer of 1973, Meli worked for Central Washington State College on a survey and testing project at Dry Falls State Park. As a result of the cataclysmic Lake Missoula flood, the area is very rugged with isolated buttes with vertical sides. The Friday, July 27, 1973 Spokane Daily Chronicle featured an article on the project including a picture of a rugged butte at least 150 ft high. Imagine her parent’s surprise when they saw the picture of Meli standing about 5 ft from the cliff edge, laying out a grid!

DAVID T. KIRKPATRICK

I was born on January 11, 1949 the first child and only son of Charles “Kirk” Teal Kirkpatrick and Phyllis Eileen (Shaw) Kirkpatrick at Mercy Hospital, Sacramento. After graduating from Fort Bragg High School, my dad worked at Sacramento Air Depot (later McClellan Air Force Base). Years later he learned he had worked on Lieutenant Colonel Jimmy Doolittle’s B-25s, doing the final modifications prior to their flight to Tokyo. Drafted in 1942, he was sent to Wright Patterson Army Air Force Base, Dayton, Ohio.

Kirk and Phyllis met on a blind date before he shipped out to England. Phyllis was a native of Dayton. They corresponded while Kirk was stationed at air bases in England and Ireland. His duties included maintenance and repair on primarily B-17 and B-25 planes. When he returned, they were married on April 12, 1946. They moved to North Sacramento, California where Kirk returned to work for several years as a civilian mechanic on the flight line at McClellan Air Force base before he moved into production control in the 1950s. Mom and Dad bought a small three-room house to which dad added a dining room, living room, and more bedrooms, plus a garage. A favorite family story is when I, as an older toddler, frightened my parents when I climbed up the ladder and walked along narrow planks set on ceiling joists several feet above the concrete floor. On March 17, 1955, my sister, Susan Shaw Kirkpatrick was born on Saint Patrick’s Day. Mom had a full-time job taking care of us kids.

Early Years in North Sacramento

My early years included attending Hagginwood Elementary School for first through sixth grades. My home was only six blocks away so I walked back and forth. Extracurricular activities included playing on a basketball team coached by Kirk. I also joined the Cub Scouts and Webelos, and in December 1959, the Boy Scouts of America, Troop 231. I completed the requirements for Tenderfoot Scout, Second Class Scout and First Class Scout. The troop was very active with my father and other fathers organizing projects and camping trips.

From his production-control responsibilities Dad advanced to contracting operations with the Air Force. He was sent for three months’ training at Wright Patterson Air Force Base. My parents decided we would go with him and stay with William and Edna Shaw, my mom’s parents. Pulling a 15-ft Aljoa travel trailer behind a 1960 Rambler station wagon, we visited several national parks and monuments. Memorable ones are Mesa Verde, Walnut Canyon (where I was to work the summer of 1971), Craters of the Moon, and Jewel Cave, plus Custer State Park, South Dakota where our vehicle was surrounded by a migrating herd of bison. I slept in the back of the station wagon while my parents and sister slept in the trailer.

I was enrolled briefly in sixth grade while in Dayton. Students had to buy their own books but since my stay was to be short, I was loaned the books with the promise not to “mess them up.” The trip back to North Sacramento was direct so Susan and I could return to school.

Santa Maria, California

Santa Maria, an agricultural community, is known for its strawberries, truck-farm vegetables, wine, and shipping. George H. W. Bush said he didn’t like broccoli. A local packer sent two semi-trailers of broccoli to him. In 1961 my dad was offered a transfer to Butte, Montana or Santa Maria, California. Since my mother had enough snow growing up in Dayton and Dad never grew up with snow, the choice was easy. In 1961, we moved Santa Maria, the
family home. I learned many years later that Dad was a contracting officer for the construction of the Titan missile facilities at Vandenberg Air Force Base.

I attended Fesler Junior High School for seventh and eighth grades. During the Cuban Missile crisis of October 1962, we practiced "Duck and Cover" drills should there be a nuclear missile attack on Vandenberg, only 12 mi from Santa Maria. Looking back, we students knew it would be bad but we never really had a realistic knowledge of the devastation of such an attack. In 1960 I had read my parent's copy of John Hersey's *Hiroshima* (1946) but did not have the necessary perspective to truly understand what he had written.

Since the Boy Scout troop in Santa Maria was not very active, I did not transfer my membership. I wanted to play the clarinet, so to pay off the loan from my parents for the clarinet purchase, I started a lawn mowing and watering business for several neighbors during the year. This expanded during the summer months when other families went on vacations. Later, our daughter Leyla played that clarinet in junior and senior high school band. One of the neighbors started me growing cymbidium and cattleya orchids. After learning how to make corsages, and if blooming time was right, my high school and junior college dates received a personalized orchid corsage for special occasions.

I attended Santa Maria High School, graduating in the Class of 1967. During the four years I participated in a variety activities, including marching and symphonic bands plus the Saintly Swingers (pep jazz band), freshman and junior varsity basketball (I helped starters look good), and Latin Club. I was a member of the Squires (sophomore) and Knights (junior and senior) service organizations, and California Scholarship Federation Auxiliary honor society. In early 1967 after turning 18, I was hired as a page at the Santa Maria Public Library. My main responsibility was to shelve books and to retrieve magazines from the back room. This job gave me a little spending money and savings toward college. Perhaps the most challenging task was when we moved the library to and from the vacant Safeway store when the library was closed for expansion construction.

**Allan Hancock Community College**

Allan Hancock Community College (AHC), only a few blocks away from my home, provided a good and economical opportunity to get the core undergraduate classes out of the way with classes of 20-30 students and not 100s like at major universities. I was a member of the Alpha Gamma Sigma Scholastic Honor Society, serving as vice-president for the local chapter and state vice-president in 1968-69. I graduated in June 1969 with an Associate of Arts with a Social Science major. I continued to work at the mowing business, the city library, and, during the summers, as a YMCA day camp counselor.

**California State Park Ranger**

In the spring of 1969 I was hired as a State Park Ranger: Permanent-Intermittent to work at La Purisima Mission State Historic Park in Lompoc, California. The position was for the summer months and other times as needed and when money was available. La Purisima Mission, the eleventh of the 21 missions between San Diego and San Francisco, was secularized in 1834 and by the early 1900s, it was an series of melted adobe ruins. In 1934, the Civilian Conservation Corps and the National Park Service rebuilt the mission to its 1820s appearance using period tools, with the exception of a mechanical mixer for adobe bricks and a transit. Sitting on 640 acres of native vegetation, the mission is probably in the least urbanized setting of all the missions. My responsibilities were to unlock and lock the heavy wooden doors using 6-in long iron keys on two rings, 12 keys each, interpret the mission and answer questions while patrolling the museum grounds, conduct fire patrol in the chaparral back country, and work with volunteers like the Boy Scouts (Figure 8). This was my first real job in the real world and I loved it. Unfortunately Governor Reagan did not allot sufficient money for the two permanent intermittent positions for fiscal year 1970-71. I could not start work until July 1971 and I had graduated in March 1971. To
get ahead of the story, I applied for several positions with the National Park Service as a seasonal ranger, eventually working at Walnut Canyon National Monument, Flagstaff the summer of 1971 before going on to graduate school at Washington State University (WSU).

University of California, Santa Barbara

In the fall of 1969 I began my junior year at University of California Santa Barbara (UCSB), majoring in anthropology. My first archaeology class, Introduction to Archaeology, was a self-paced class taught by Dr. Brian Fagan. Some 400 of us met once a week for a lecture, attended one class led by a teaching assistant, and went to the self-paced lab as needed. My other anthropology class was North American Indians taught by Michael A. Glassow, an ABD student of James Hill, University of California Los Angeles. Mike eventually became my major professor as he also taught Prehistory of California, Archaeology of the New World, Method and Theory of Archaeology, and the Saturday field school in the spring quarter of 1970.

I lived in Annapurna Inn, a dormitory-style apartment complex on the west side of Isla Vista, the student community for UCSB. There I met Joe Tainter, a sophomore anthropology student whose room was a couple of doors away. I soon heard through the Anthropology Department that Foley Benson and Gary Coombs were looking for volunteers to help excavate at Burton Mound, a historic contact Chumash site. I quickly volunteered for my first archaeological excavation for the following Saturday. My excavation unit was in a 5 ft deep trench and my tool was a square tipped shovel. I was to skim shovel the black, highly organic and carbonaceous fill and swing it over my head into the wheelbarrow above me. It was a challenging and exciting first day. I barely got out of bed on Sunday. I soon got into shape and enjoyed several weekends working on the site.

In the fall quarter, Joe and I were in Mike Glassow’s North American Indians class where we met Shelley Davis (King) and Robert Hitchcock (later, he was a co-founder of Human Systems Research as a University of New Mexico graduate student). We all shared a love of archaeology and enjoyed working together on class projects, volunteering at Burton Mound and other sites, and partying on the weekends after digging all day. In a department of 600 undergraduates (an easy degree for a teacher’s certificate), a group of about eight or so of us were the most serious archaeology students. Later, Joe,
Shelly, Bob and I also were in Mike’s Prehistory of California class (winter quarter) and then the Method and Theory of Field Archaeology, our spring quarter field school. The field school included a Saturday dig at Devereaux Point site (Sba-51).

We referred to our group at the People’s Provisional Revolutionary Archaeological Survey (PPRAS) with no membership dues, organized meetings, or other formal structure. In May 1970 we “mimeograph published” the first summary of archaeological research in the Santa Barbara region “The Santa Barbara Region: A Review of Cultural/Temporal Sequences and the Relevance and Problems of Stylistic Chronologies.”

More weekend field experience came when the California Department of Transportation was realigning Highway 101 through Pitas Point where a large Chumash site was located. Joe Tainter, I, and a couple of other students were hired to work on the Saturday and Sunday crew in January and February 1970. The project, directed by Chester King, provided new excavation experiences and challenges for me. When we were working in the sandy deposits, the sand fell through the screen leaving only shell fragments, flakes, and non-cultural pebbles. Other locations were so hard that we had to use axes to straighten the sidewalls and wood stakes to break up the clay clods in the screens.

My time at UCSB was a learning experience not only for my chosen profession but also for life to come. Across the nation it was a time of changing social values with the Vietnam War, the civil rights movement, and the agricultural worker rights movement, to mention a few. On the UCSB campus, students and faculty were very active with speakers and protest demonstrations. I watched from the sidelines as I had my education and park service job to protect. Between February 25 and June 11, 1970, there were three major riots associated with social protest of national events, including the trial of the Chicago Eight, the invasion of Cambodia, and general police brutality in breaking up several peaceful protest gatherings of several thousand students, faculty, and residents. The Isla Vista branch of the Bank of America was burned down during the first riot. During this three-month time period the 7:30 p.m. curfews were enforced by National Guard troops and police officers riding in the beds of dump trucks. Many of the values my parents taught me were put to the test as a result of seeing these events, especially the police brutality. I certainly learned more about myself and what I believed was important in life’s values.

During the time between the second and third riot, we began our Saturday field school excavations at the Devereaux Point site (Sba-51). The site had an east-west road going through it with an intersection for a south road. At the end of this road was the headquarters for the National Guard, Sheriff’s Department, and other law enforcement personnel, and the parking lot for the dump trucks (Figure 9). We saw a variety of marked and unmarked vehicles with uniformed and undercover officers drive through the site. Aside from nearly being squirted by a baby skunk in a grid, my other notable field school memory was one morning while I was kneeling down

Figure 9. Devereaux Point site (Sba-51) field school, Spring 1970, (Patty Clarke, Nancy Webb, Bob Hitchcock, Shelly Davis, Kathy Brown and myself).
and troweling a level about 2 ft below surface in my 3-by-
3-ft grid, the grid was suddenly in a shadow. I looked up
and there were four uniformed Long Beach police officers
with rifles loaded with tear gas grenades. They asked what
we were finding and the importance of the site. As I ex-
plained what I knew about the site, I casually looked
around and saw that work had stopped in all the grids.
The officers were sincerely interested in what we were
finding and soon walked back to their headquarters.

With graduation, peace returned to Isla Vista but there
were significant changes for the better between Sheriff's
Department and the residents of Isla Vista during my
residence in the fall and winter of 1970. I participated in
more volunteer digs on Chumash sites in southern San
Luis Obispo County. I shared a second-story beach-front
apartment (100 ft cliff to the beach) with friends from
Annapurna Inn. But that’s another set of stories!

Because I had taken summer courses at AHC, I had built
up a “surplus” of non-major credits. By the end of the
winter quarter 1971, I had completed the departmental
requirements and chose to graduate at the end of the
winter quarter. In the spring, I helped Larry Spanne, a
UCSB graduate student, teach an archaeological field
dig on Chumash sites in Southern San Luis Obispo County.
I shared a second-story beach-front apartment (100 ft cliff to the beach) with friends from Annapurna Inn. But that’s another set of stories!

Graduate School Years

I was accepted into the M.A. program at Washington
State University later that summer. When work was done,
I drove to Santa Maria, packed up the Rambler station
wagon for a year away from home and drove to Pullman.
For my first year I lived in the basement apartment of the
retired head groundskeeper. When he learned I had a
lawn service in high school, he sent me to the head
groundskeeper who hired me to work 19 hrs a week. I
worked 20 but then got some time off later. The most
unique work assignment was to vacuum up the leaves on
the president’s lawn prior his wife’s lawn tea party using
the football field vacuum cleaner. In January, I was hired
to work in the journals section of the Social Sciences
library. The interviewer, noting that I had over 2,000
hours of experience at the Santa Maria Public Library,
apologized that they could only credit me with 1,500
hours for determining my hourly wage. In five minutes I
had earned a 15-cent raise, which was a lot in 1972. The
next few years both Meli and I had teaching assistantships
for a variety of classes.

In May 1976 I earned my master’s degree with Dr. Frank
Leonhardy as my chair, and was accepted into the Ph.D.
program, having completed many of the degree courses.
These included a year of palynology (Dr. Peter
Mehringer), physical stratigraphy of archaeological sites
(Fred Nials), and faunal identification (Dr. Carl
Gusfatson). I felt that I needed some different field
experience so I applied to work on a summer survey of
Grand Gulch with Dr. Bill Lipe, who was going to join
the faculty in the fall of 1976. It was an exciting summer,
where I met Paul Williams, camping out and seeing some
of the sites originally seen by the local cowboys in the late
1880s. Their names were scratched with lead bullets on
rock walls near rock shelter sites. It was a very memorable
season working with Rick Ahlstrom, Bill, and R.G.
Matson. I was thinking about a dissertation project that
might relate to historic archaeology of the area, but also
survey work around Elizabethtown, New Mexico, in the
Sangre de Cristo Mountains.
**Philmont Memories**

During that first year I had kept in touch with Mike Glassow. When I mentioned I was looking for summer work, he said Philmont Scout Ranch was looking for an archaeologist. He had worked as the Philmont archaeologist from the mid 1960s and used survey data for his dissertation. I applied, and with Mike' recommendation, I was hired for the summer of 1972. Karl Laumbach, one of the first people I met, was a program counselor with me at Indian Writings (IW) camp. This was the beginning of our lifelong friendship and working many projects together. We provided a program that emphasized scientific excavation and record keeping, excavation of underground storage and roasting pits, and tours of the rock art panels for which the camp was named. We found one storage pit filled with very carbonaceous fill toward the end the summer. I stayed on for a week after the season ended to complete the excavation. Bob Burns and Dave Spirtes dammed up the North Ponil Creek, creating a small shallow pond where they stood many hours floating out charcoal for me. I used this material for my master’s research paper, which was later published in *The Kiva* with Dr. Richard Ford as coauthor.

The summer of 1973 I returned to IW. The camp director was Stephen Zimmer, an anthropology student at the University of New Mexico. Steve had taken a laboratory class with Jim Judge and was familiar with what I was doing at IW. Another lifelong friendship was begun. The most excitement that summer was when a bison from a ranch up canyon jumped the fence and wandered down to see us at IW, knowing what a friendly staff we were. While being interviewed by an editor of *Desert Magazine*, I looked out the cabin window and said, “There’s a buffalo,” and ran out the building to get my camera. Of course when they looked out, it had gone out of sight. I got my pictures and the Philmont cowboys chased it back up canyon. He did return once again for a brief visit as he walked on down canyon, jumping four-strand barbed wire fences. That summer Bob Harmony tagged me with my Philmont nickname of Iron Dave after Iron Dave Spourl, a character in the novel *Kiborne*.

I worked as the Camp Director and archaeologist at IW during the summers of 1974 and 1975. Because I needed to gain a different set of field experiences, 1975 was my last year at Philmont. However, from 1978 to 2000, I provided archaeology training to the summer staff at Indian Writings. These trips were very special, not necessarily for the archaeology, but because it was Leyla’s annual father-daughter trip. We had lots of exciting experiences on these trips, including flooded and blown-over tents and stories from my friends of the good ole’ days. In 1997, the Boy Scouts of America added the Archaeology Merit Badge. Because of my work at Philmont, in 1996 I assisted in the textual content of the new Archaeology Merit Badge booklet, with editorial assistance from Meli.

**We Move to Southern New Mexico**

In the spring of 1977, through contacts with Karl and Phil Shelley, Stan Bussey, Director of the Cultural Resources Management Division (CRMD) at New Mexico State University (NMSU) asked me to help prepare a proposal for the excavation of 42 sites on Block II, Navajo Indian Irrigation Project (NIIP). In July, Karl, his wife Toni, Meli, and I prepared a proposal and budget of $300,000. I applied my interdisciplinary training to the project research design by including several natural science specialists and an ethnohistorian and comparing their results with the results of the archaeological excavations. This approach was successful, for the subsequent NIIP projects followed this research approach. My original plan was to be a crew chief and return to WSU to take my Ph.D. comprehensive exams. When Karl and I asked Stan whom he wanted for Project Director, he looked at me and said, “You.” And that is how Meli and I came to live in Las Cruces.

Fieldwork began on July 20, 1977 with the setup of a tent camp with an electric generator for the refrigerator and lights at the south end of the San Juan Cooperative Extension field station. The tent camp was leveled only once by a severe wind and rainstorm. After being in the field for a couple of weeks, we learned the project had many high-level opponents who did not want to do
archaeological studies prior to developing the agricultural fields and support facilities. Ted Birkedal, the National Park Service monitor for the project, explained that further archaeological studies of the NIIP depended on a successful Block II program. With a crew of 31 people of varying personalities and field experience, we excavated the sites, conducted the interdisciplinary studies and returned to NMSU on October 20, 1977 to begin the analyses and writing the report. We were successful.

Later that fall, Meli returned to WSU to finalize and defend her M.A. thesis, *Teaching Anthropology*. We purchased a house on Sacramento Street in the north part of Las Cruces, and sold our house in Palouse, north of Pullman. For Christmas 1977, our first Christmas tree at the Sacramento house was a 3 ft tall ficus on which we hung a few ornaments.

Back on the NMSU campus, Karl served as Lab Director, setting up the lithics lab in the basement of Baldwin Hall and Toni did the ceramic analysis in the NSMU Museum, housed in the original seed house. Karl also coordinated the submission of radiocarbon, faunal, and other special studies. Meli and Tim McKeown analyzed the historic artifacts in an old photography lab in a room of an old army barracks. Pat Beckett had an office up the hall. My office was a former dark room inside this room. I painted the walls and ceiling with several coats of white paint over the black acoustic tile. The crew chiefs worked in other offices or at home. Linda Gao (Hart), a friend and fellow archaeologist from WSU, drafted the site maps and other illustrations. When it came to preparing the report, we had a typing pool that produced a five-volume (1,903 page) report. Everyone in the office was relieved when the report was completed and delivered to the National Park Service.

While working at CRMD, Meli and I learned a lot through a variety of different projects, including seismic lines, block surveys, geothermal well pads, and access roads. Meli's major project was a series of seismic transects that totaled 200+ miles throughout Doña Ana County. Karl and I surveyed several Plains Electric transmission lines in the Rayado and Springer area and enjoyed visiting with his parents in the evenings. My last project at CRMD was a 134-mi survey of the proposed Plains Electric transmission line from Springer to Rosebud. Showell Osborne and I did mile-long leapfrog segments across the plains, finding lithic scatters, quartzite quarries, and tipi rings. We stayed with my friend Steve Zimmer, cooking dinners for him in exchange for a bed and great conversations.

The Black Range Project was the most memorable and enjoyable project I worked on while at CRMD. Karl Laumbach has had a long interest in the archaeology of Sierra County. The Historic Preservation Division had matching grants for surveys in under-surveyed areas of
New Mexico. Karl and I wrote a proposal to survey 2% of the State of New Mexico Trust lands in western Sierra County, or the foothills of the Black Range where numerous Mimbres sites were located. We camped out when the weather permitted, with pleasant evenings around the campfire, or cooked dinner on an electric skillet in a quaint 1940s motel in Truth or Consequences. If the transects were close to Las Cruces, we commuted on a daily basis. We surveyed 92 1-mi-long transects across varied landscapes, met a lot of interesting ranchers and their families, and recorded 69 sites, including 28 Mimbres structural sites. Most of all, we appreciated the support of our wives while we were gone for a week at a time for over the year.

**Marriage and Family**

Meli and I were married on May 31, 1974 in an outdoor ceremony at Boyer County Park (Figure 10) on the north bank of the Snake River—May 31st because it’s the last day in May, an anniversary date easy to remember. The ceremony was officiated by Dr. Louis Hieb, a professor who taught courses on the Southwest and cultural classes that Meli and I took together. We learned he was also a minister in the United Church of Christ and had performed a wedding for his sister and her husband. Since neither of us had strong religious affiliations, we asked him to perform our ceremony and were very happy when he agreed. The bachelor party was held at Grover Krantz’s house after several of us completed our tough final for Dr. Henry Smith’s Soil Taxonomy and Classification class. It was a co-ed costume party and Meli was not invited. But she convinced my parents to bring her, crashing the party in street clothes. Her girlfriends immediately took her upstairs and “exchanged” her clothes for a sheet, instant toga. A good time was had by all, including the belly dancer.

Meli’s wedding dress was designed and sewn by her mother. The weather was perfect, food and wine excellent, sharing with our friends and family, and a nice end of a long semester. Our honeymoon trip was a three-day drive to Cimarron, New Mexico where we camped out in a tent in the backyard of Ellie Pratt, Museum Director. Meli flew back to Pullman to begin her job in the Social Sciences Library, having completed her coursework. She later worked as the librarian for the Architecture Department and Agronomy Department libraries.

Many of you know Meli had a great sense of humor; sometimes you could see the devilment sparkling in her eyes. Since I had worked for three seasons at Philmont, the “old-timer” staff knew I was married, though they had not met Meli. In 1975, radios were the main form of communication between headquarters and the backcountry camps with staff check-ins at 8 a.m., noon, and 6 p.m.; everybody heard everyone else’s messages. As camp director, it was my responsibility to do the radio check-in. In late June, I did my noon check-in and was told I had a message from Meli. Since personal messages were strongly discouraged, I knew it must be important so I acknowledged and said to read it over the air. He read “Mother and babies doing fine!” I spent the rest of the summer explaining the message was referring to our dog Deah and her litter.

On Labor Day, September 2, 1978 our daughter Leyla was born at Memorial Medical Center in Las Cruces. Following Meli’s family tradition of Turkish or Persian names, we selected Leyla, not knowing it translated to “Dark Place” and later learned Leyla was the Juliet of the Persian version of a “Romeo and Juliet” story. Leah was an early choice but we soon realized when we called for Leah, our dog Deah might come and vice versa. Leyla was a good and happy baby, especially when she was in her Navajo cradleboard, which our friends Dennis Gilpin and Tim McKeown presented to us. During Leyla’s early years growing up, Meli often worked at home or a close neighbor baby-sat Leyla when Meli worked at the office or did a day survey. We supported Leyla in her many activities. In what spare time Meli had, she volunteered with Leyla’s Girl Scout troop, taking them camping, and organizing cookie sales. We also worked with the Las Cruces High School Band Parents group, helping to raise money for the band’s yearly events, including the organization of the Christmas luminaria sales (1994-1996). Meli helped Leyla with sewing projects and shared
her interest in quilting. Meli participated in a quilting bee group for several years.

**The 1980s and Human Systems Research**

Mark Wimberly and Peter Eidenbach had formed Human Systems Research (HSR) in 1972. I joined in October 1983, initially working small surveys while writing my dissertation *Anasazi Settlement Patterns in the Middle San Juan Region, Northwestern New Mexico*. I defended it in December 1985 and was awarded the Ph.D. in May 1986 with hooding by Servet, my father-in-law. In late 1984, HSR won a competitive bid for a 5-year contract for archaeological projects on White Sands Missile Range (WSMR). Meli was the editor who turned the archeologist’s text into a winning proposal. My first project was a 7,200-acre inventory survey of the Headquarters area, Nike Avenue, and the Stallion Range Center. We recorded 57 Archaic, Jornada Mogollon, and prehistoric sites of unknown date or cultural affiliation, but no historic ranching or military sites were found. I was able to see many different parts of the range, which gave me a better understanding of prehistoric people and the historic ranchers who lived in different environmental zones present in south-central New Mexico.

Meli worked on a variety of projects in the 1980s, ranging from fieldwork to editing reports. She also was attending graduate school in the English Department, focusing on technical writing and communication. She was awarded her M.A. in May 1988.

In the spring of 1985 Meli participated in a historic building survey of Hillsboro with Dr. Jeffery Brown, History Department, NMSU. In September 1986, she did similar work in Deming. She contributed to the National Register nominations with a discussion of the architectural styles and history of these communities. She also prepared, in February 1989, an emergency State Register Nomination for Court Junior High School to preserve the building from potential demolition. It is a Spanish-Pueblo Revival style building in the Alameda-Depot Historic District. Today the building is the home of the charter high school, Alma d’Arte.

In addition to editing HSR reports, Meli began her small word processing and editing business. Her major client was the Historic Preservation Division (HPD) who advertised for services to edit National Register nominations for which Meli won three contracts in 1986, 1988, and 1991. One of the more interesting nominations she enjoyed working on was for several well-known Animas Phase pueblos in the southern area of Hidalgo County. These were placed on the National Register of Historic Places in January 1993.

In 1985 Karl and I co-directed the Sgt. York survey on the southern end of Chupadero Mesa inside WSMR. WSMR needed to have a large area surveyed for tests of the Sgt. York tank system. HSR hired a large crew and rented motel rooms and office space for 30 days. All went well until the afternoon of the last day when control of WSMR airspace was transferred from Holloman Air Force Base to Fort Bliss in preparation of a large exercise. A crew surveying in part of the Red Rio bombing range narrowly escaped being strafed by two A-10 fighter jets. The four-volume report was completed on time and established HSR’s reputation for completing complex surveys in a timely manner and producing a quality report.

Eventually the work on WSMR required hiring several project directors and I moved from doing fieldwork to more supervisory responsibilities of budgets, monthly reports, and report production. Of course, whenever it could be arranged, I did field inspections to get out of the office and see sites.

**The Lincoln Projects**

In 1986, HSR was awarded a grant to conduct a reconnaissance survey of the Rio Bonito Valley within the Lincoln County Historic District with funds provided by the Lincoln County Heritage Trust (LCHT) and HPD. The goal of the project was to identify important prehistoric and historic archaeological sites and nominate these to the National Register of Historic Places. I directed the project with the assistance of Linda Hart, a fellow WSU alum and former HSR archaeologist and editor, whose husband Bob was the deputy director at
LCHT. Several of the local ranchers showed us many of the sites on their property and supported the register nominations. We had international students from the World College, Las Vegas, New Mexico, assist us over spring break. These young adults were very interested in archaeology and we all learned a lot from each other. Meli edited my nomination text to produce the final nomination, which resulted in several sites being placed on the register.

While this project was being conducted, Michael Romero Taylor, who worked at the State Monuments, Museum of New Mexico, asked if HSR would be interested in doing an archaeology public education project in Lincoln. The project was to teach the public about archaeology, the Lincoln War, and historic preservation while trying to locate the remains of the Alexander McSween House. The house was burned down at the end of a five-day siege during the Lincoln County War. On the evening of July 19, 1878, Billy the Kid escaped the burning structure in a hail of gunfire that killed Alexander McSween when he tried to flee. HSR staff conducted the excavation while volunteers helped with the screening and cataloging work. We worked Wednesday through Sunday so people could visit the site and watch us work, ask questions, and tour the informal museum exhibits in the Fresquez House. Some people we only saw once, but others came every weekend to see the new discoveries. The excavations, conducted around the Fresquez house, in the middle of Lincoln, did find first-course adobe bricks for the eastern wall under the bedroom. The LCHT did an excellent public relations program that brought visitors from nearby communities, Las Cruces, Albuquerque, Santa Fe, and out-of-state. Meli and Leyla would drive up on Friday evening or early Saturday to help and return home on Sunday evening.

The program was resumed in 1987, with excavations focusing on the driveway area just south of the monument headquarters. Here we found in the basement of the house’s north wing, burned and smoked ceramic and glass dishware fragments, window pane glass fragments, melted seed beads (possibly from decorations on a purse), burned coffee beans, and melted lead from exploded cartridges that had been lying on the floor of the burning building. Historic descriptions of the siege mention that two men were killed early in the siege and buried in the basement. Late one morning, Linda Hart came to me and very quietly asked me to come look at her unit. She showed me three bones in alignment that resembled human finger bones. Just what we needed to find on a day with lots of visitors, except in her area. Linda carefully excavated the largest bone and, to identify the bone, I consulted my reference books on human bones and my reference materials from Carl Gustafson’s faunal class. A public relations crisis was avoided when the bone keyed out to be a sheep or goat toe bone. We all breathed a great sigh of relief and went on with work knowing that Alexander and Susan had probably enjoyed a Sunday leg of lamb dinner in cattle country. In 1988 Curtis Monger and I briefly returned to the site to finalize some questions on the geomorphological context of the site.

One of my life goals, more clearly defined over time, has been to bring to the public an understanding about the various and diverse aspects of archaeology and how it contributes to our society. The McSween Project allowed me to talk one-on-one to site visitors about archaeology, the Lincoln County War, and the myths and facts surrounding Billy the Kid. Often the visitor’s questions would go to other topics about prehistoric Indians in the Southwest. We had some very interesting conversations with the visitors, especially the international travelers.

The Yeo Project

In 1989, Meli and Betty Ayer were awarded a contract from HPD to inventory and catalog the Herbert Yeo collection at the Laboratory of Anthropology. Herbert Yeo was involved with the Rio Grande Project and the construction of irrigation facilities associated with Elephant Butte Dam in the 1920s. He later served as the State Engineer, which took him to many areas of New Mexico. An avocational archaeologist, he recorded and mapped many of the sites he saw in the course of his professional work, especially in southern New Mexico.
He also photographed many of these sites. Meli and Betty organized the collection and published a guide that has proved to be invaluable to anyone working with Yeo’s collection of site forms, papers, and photographs.

**Historic Ranches, Mines and the Trinity Site**

HSR was awarded several WSMR contracts since the after 1984 contract, and I supervised both small and large surveys and testing and data recovery excavations. Because of my knowledge of historic archaeology, I supervised a multi-year project (1994-2001) recording 117 ranches and mines. Several of these ranches were later the focus of integrity-preservation studies where roofs, walls, and floors were repaired. I also supervised similar studies at the Trinity National Historic Landmark on buildings and structures at the Trinity Base Camp (McDonald Brothers Ranch) and at the West 800 Instrumentation Shelter. I also worked with Tom Merlan to produce two popular reports on the Trinity Experiments and Life at Trinity Base Camp for WSMR. Through these various projects I learned more about the history of the Trinity Experiments, and remembered the “Duck and Cover” drills, which were probably of more psychological benefit than realistic survival for Santa Maria’s residents.

**Archaeological Society of New Mexico**

In 1987, Toni Laumbach nominated me as a Trustee to the Archaeological Society of New Mexico (ASNM). Although I did not get elected, I was an alternate and within a few months, I was appointed to a vacant trustee position. I served as trustee for two terms between 1987 and 1996. Richard Bice asked me to serve on the Certification Council, which I have done since 1987. In 1992-1993, Meli and I assisted Albert Schroeder with publishing the first ASNM Special Publication (1993), *Ancient Communities in the American Desert* by Edgar L. Hewett (1908), originally published in French. The goal, if possible, was to publish in English the volume with the same pagination as the original dissertation. Meli, with her knowledge of French, read the original text and then made an annotation on the translated English manuscript where there should be page breaks. Through her effort, this volume is a page-by-page reproduction of Hewett’s original dissertation. I worked with the word processor to produce a camera-ready copy and then coordinate with Beth Chapmon at C & M Press to produce the final copy. As an aside, there is a noticeable similarity in the organization of Hewett’s dissertation and A.V. Kidder’s *Introduction to the Study of Southwestern Archaeology* (1924). Since 2000, I have continued to serve as the chair the Special Publication committee. It has been enjoyable working with different people in getting some of the unpublished literature available to current researchers. In 1993, Meli and I were honored to receive the ASNM Archaeological Achievement Award, Meli for her work with the annual volume and me for public education activities (Figure 11).

Meli and I began our tenure as co-editors for the *Papers in Honor of* volumes in 1989 with the volume honoring Robert and Florence Lister. Through the 11 years it was a pleasure to work with the honorees and the authors. It was always interesting to read the biographies of the honorees. The articles covered a wide range of topics from archaeology, Navajo rugs, the arts, leading personalities, historical events, and cultural aspects of different Native American groups. We divided up the tasks with Meli doing the technical editing and working with the word processor. I contacted the authors whenever there were

![Figure 11. Receiving the Archaeological Achievement Award from Dudley King, May 1992.](image-url)
questions and worked with the printer, Beth Chapmon at C & M Press in Denver, to produce the volume in time for distribution at the annual spring meeting. In July 1994, I directed an ASNM Field School (three one-week sessions) at Rayado Ranch on Philmont Scout Ranch (Kirkpatrick 2000).

Service and Public Education

Over the years, Meli and I have been active in several professional organizations. In the mid-1980s Meli was a member, an officer, and the newsletter editor for the Rio Grande Chapter of the national organization, Society for Technical Communication. For the El Paso Archaeological Society (EPAS), she served as Vice-President (1990-1992) and the newsletter editor (1992-1993). In 1999 she was the editor of The Artifact, the annual EPAS publication. EPAS awarded Meli the Award of Distinction in 1993 and I received it in 2003. In 2000 I accepted the editorial position, which I still hold. Meli chaired the Public Education committee of the New Mexico Archeological Council (NMAC) in the mid-1900s until 1999. In 1996, NMAC presented Meli with the Award of Honor.

For the Dona Ana Archaeological Society (DAAS), I have served several terms, alternating as the vice-president in charge of programs or as president. I also lead occasional field trips to nearby sites (Figure 12).

I served as president of NMAC in 1989 with the goal of providing educational programs to the membership. Cheri Scheick, president-elect, organized a highly successful series of ceramic identification workshops that carried over into her term in 1990. Since then, my contributions to NMAC have been organizing workshops, one on Southwestern New Mexico geomorphology, two on historic artifacts, and one on New Mexico homesteads.

Meli and I both taught Elderhostel courses at Holy Cross Retreat between 1985 and 1996. Meli read extensively on western Women’s history, eventually building a 250-volume library on women in the Southwest, Nevada, California and a few in the Northwest. Because of this interest, she usually taught a class titled Historic Women of New Mexico, which included women from various Native American groups, wives of ranchers, miners, and military men, and distinguished artists such as Georgia O’Keefe. I taught a variety of courses—Billy the Kid and the Archaeology of the Lincoln County War, Prehistory of New Mexico, New Mexico Outlaws and Sheriffs, and The Desert We Live In. In 2004, I participated in the Texas Archeological Society’s “Texas Archeology 101 Academy” with lectures on the local archaeology and field exercises at Firecracker Pueblo (Figure 13).
Meli's Challenge

On December 15, 1994, while having lunch with Bob Hart, Meli suffered a grand mal seizure. The MRI did not show the cause of the seizure. In September 1996, while returning from taking Leyla to Whitman University, Meli had two minor seizures and the MRI showed a large tumor in the left frontal lobe which was removed in mid-October. After recovery, Meli resumed her editorial work.

By the March 1999, the benign tumor had regrown in the same area. After a series of mapping tests, the tumor was removed from the left supplementary motor area. This resulted in Meli's being physically weak on the right side and in the loss of speech initiation, which left her unable to initiate speech, clinically non-verbal. With serious phonetic clueing, Meli could do a one-word response such as choosing fish or chicken for dinner. Her mother moved down from Pullman and moved into a house across the street from our house. Martha was the work-week caregiver and I was responsible for the evenings and weekends. Meli's weekly routine soon became two to three morning sessions at the NMSU Speech Clinic and water aerobics afternoon sessions on Monday, Wednesday, and Friday. The water aerobics helped with the flexibility of her right arm and leg. In 2001 Meli had a vagus nerve stimulator (brain pacemaker) implanted in her chest that controlled brain electrical activity, preventing many seizures. Once off several anti-seizure drugs, her improvement in speech and physical progress was amazing. She soon became the official repetition-counter for the various exercises, which helped her speech sequence and voice projection and right arm flexibility. In the first couple of years, Meli had a speech therapy session on Tuesday mornings which prevented her from participating as a volunteer in the Cañada Alamosa lab with Karl Laumbach. Also, Martha found a piano teacher who could work with Meli's weak right hand. Meli resumed her piano lessons, often practicing 45 to 60 minutes or more a day instead of the 30 as requested. She was able to get the right hand to do its part in a piano piece, beyond running chords and other warm-up exercises. Once again her remarkable powers of concentration, determination, and positive outlook came through.

During these early retirement years when she was no longer working in the field, she really didn't want to go to archaeology meetings or field trips. When speech
therapy moved to a non-Tuesday schedule, her outlook on life radically changed. Now able to participate in the Cañada Alamosa lab, everything else came second to lab time and she looked forward to the meetings at EPAS, DAAS, ASNM, and even the Pecos Conferences.

Eventually Meli became independent and assumed several responsibilities around the house. These included feeding the two dogs, cat, and birds, bringing in the morning paper, organizing and taking her meds, fixing breakfast (cereal, eggs, etc.), and loading, starting, and unloading the dishwasher, and reminding me of my "honey-dos". My main responsibility was washing her hair on Sunday because she couldn’t raise her right arm high enough. As we drove around town, Meli would tell me to look at things she found interesting, usually dogs in the back of pickup trucks. Meli was always an excellent cook and especially enjoyed baking. She resumed this activity with baking cookies, cakes, and brownies. We all know it is easy to double a recipe with teaspoon and tablespoon measurements. Meli surprised us when she tripled a recipe of snickerdoodle cookies. When Leyla asked her why she tripled the recipe, she told Leyla she wanted to use up the last of the cream of tartar! As brother Mike once said, “There is logic and then there is Meli logic.” And the cookies tasted great!

After Christmas 2007, the seizures returned with another tumor regrowth. Surgery in June removed 90% of the tumor but unfortunately this surgery left Meli with no sense of balance and dependent on a wheelchair for mobility. Eventually her general health began to decline, including movement of her left arm and hand and speech capabilities. Meli enjoyed attending the May ASNM meetings in Taos. The highpoint was visiting with Ted Frisbie and selecting a Zuni fetish. Over the years Meli purchased at least one fetish from Ted, and kept her menagerie on the piano where she could enjoy them while practicing her music. In the first tray we showed her was a black hummingbird. When Meli saw it, she determinedly reached out and picked it up with her left hand, more movement than I had seen in a few months. In the early morning of May 11, 2009, Meli peacefully passed away as a result of respiratory complications from the tumor. Leyla and I were at her side. Karl Laumbach and Pat Beckett kindly provided her professional obituary to the NMAC Newsletter (Beckett and Laumbach 2009: 6, 9-10).

Our Animals

Animals have always been an important part of our family. Meli’s first pet was Ping-Pong, a black and white short hair cat that was a gift from her mother’s mother, as when the family traveled back to Pullman in 1956. Meli told me many stories about Ping-Pong’s long-life, which included putting several dogs in their place. In 1974 while I was at Philmont, Meli selected our first dog, Deah, whose parents were a standard poodle and a cocker spaniel. We kept her first daughter, Farfle, also a cockapoo, since two dogs get into less trouble than one bored dog. Over the years we had several dogs related back to Deah. In 1985 we added a kitten, and soon a stray kitten adopted us. A year later, Meli was taking a conversational Spanish class and when asked if she had pets, she replied, “Si, veintidós perros y gatas.” The teacher thought she misunderstood but, she explained, in Spanish, we had two dogs, two cats, and 18 puppies and kittens. And her Spanish was always spoken with a French accent!

In the late 1980s, as the original cockapoo line died out, we adopted Hank the Cow Dog, a shelter blue healer for me, and Chaco, a mixed rescue dog for Meli. In the mid-1980s Meli decided she would like parakeets so we selected two of different colors and named them by color. For over 20 years we have had the pleasure and company of dogs, cats, and birds.

Family Celebrations

Family celebrations have been an important part of our lives. We enjoyed the usual birthday and anniversaries with special dinners and cake at home or going to a special restaurant and sharing dessert, “One death by chocolate and three forks, please.” Meli and I were especially proud when Leyla received her Girl Scout Gold
Award in April 1996. Earlier that month we went to Santa Maria, California to celebrate my parents’ fiftieth wedding anniversary and in May we went to Pullman, Washington to celebrate Meli’s parents’ fiftieth anniversary. It was very nice to visit with our parents’ friends and family.

To celebrate our thirtieth anniversary we went to Hawaii (Figure 14) and participated in an Elderhostel class titled Cultural and Natural History of Hawaii. It was perfect for us—we learned about Hawaiian history, plants, foods, and took many afternoon trips to various historic sites, including the summer palace of Queen Emma, wife of King Kamehameha IV. The tour guide asked if anyone played the piano and I said my wife did; a rare privilege, Meli was asked to play for us. A bit shy, Meli, using both hands, played a short series of warm-up exercises on the baby grand piano and received a nice round of applause.

In September 2007, we celebrated Leyla and Martha’s birthday with a Duran family gathering in Taos. The celebrants were Meli’s brother Rick and wife Sheila, from the Chicago area, and their four children from California, New York, and Georgia, plus brother Mike and wife.
Lynn from New York, and Jan Maguire, a close family friend of Martha's. We walked the plaza, saw the gorge, visited the pueblo, and ate several different New Mexican dishes that I prepared at Martha's request. We also had many family pictures taken (Figure 15). It was a nice experience to share New Mexico with family who grew up in the Midwest and New York.

In December 2009, Meli's brother Mike celebrated his fiftieth birthday with “Mikey-Mas,” a combination of his December 24th birthday and Christmas. The extended Duran family plus two-year old great-grandson Mason gathered at a “party” house in East Hampton a couple of days after a record-breaking 24-in snowfall. It was the perfect White Christmas. We enjoyed visiting, window-shopping in East Hampton, keeping Mason entertained, walking the snowy beach (Figure 16), and eating lobster for Christmas dinner. It was a joyous time for Meli was with all of us in spirit.

Leyla and I look forward to life's new challenges and adventures. We share loving memories of Meli. During an interview about being an archaeologist and editor, the interviewer asked Meli what her greatest accomplishment was, expecting a professional response. Meli's immediate reply was, "Raising our daughter, Leyla."

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In The First 100 Years: Papers in Honor of the State and Local Archaeological Societies of New Mexico, edited by Frances Joan Mathien, David T. Kirkpatrick, and Meliha S. Duran, pp. 99-105. Papers of the Archaeological Society of New Mexico 26, Albuquerque.
MY PARENTS ARE ARCHAEOLOGISTS

Archaeology. I knew the meaning of the word before it came up on an elementary school vocabulary test. But, in the proverbial sense, I choked when it came to the test. To my parents' horror I misspelled the word, leaving out that seemingly awkward second a. (The teacher had insisted that "archaeology" was the correct spelling.) To this day, in my mind, I pronounce every single vowel in the word as I spell it. But at the time I'm not sure who I was more scared to tell, my father, seemingly stern, who all my friends asked if he was like Indiana Jones. Or if I was more scared to tell my mom, who was getting a master's degree in technical writing, and knew everything about the English language. But I learned not to make the mistake of misspelling their profession, their passion, again.

Mom seemed like the quintessential mother, of course with her own peculiarities. She took her time with family and friends, baking being a passion, allowing me beside her in the kitchen. Showing each step of the process, allowing me to flip pancakes on the skillet, or drop cookies onto cookie sheets. And, of course, the joy of the first warm cookies out of the oven.

Many years later she rescued a young dog, who had clearly been abused as a puppy. With her gentle caring, her newest animal friend, Chaco, became her constant companion. He sat by her side, guarding her against anything he thought might be coming to harm her or take his place as her pet of affection.

She was an avid reader. When I was in high school, there was a clear pecking order, when a new book by the family's favorite authors came into the house. Dad got to read them first, as he read them the fastest, then mom, and then me. Although, if the stack of books mom was reading was too great, I could sometimes jump the line and read the book first. I had been placed into Advanced Placement English courses, and I was reading many of the same books mom had read during her youth. During this time, she was serving on the Board of Directors for the El Paso Archaeological Society, and had monthly drives to El Paso for meetings. I became her companion during the drives, and we discussed all these novels. I jogged her memory about what happened during the book, and she helped point me in the right direction when it came to analyzing Shakespeare, Tolkien, and other literary greats that I was having trouble wrapping my head around.

For my twelfth birthday, I was asked what I wanted to do to celebrate. I had had the parties, and I'm sure that's what my parents were expecting me to request. Instead, I wanted to go camping. I had a bug collection project due in science class, and perhaps they thought that's why I wanted to go. But I had been reading a book: *Cochise: Apache Warrior and Statesman*. I was enthralled with his tribe hiding out in a stronghold in the mountains, invisible to the White Man. I wanted to visit the Dragoon Mountains where he hid, walk in his moccasins, perhaps. It didn't turn out quite that way. On the trip down, the roadway was covered in large green locusts, perfect for my bug collection (yikes!). We did camp in the Chiricahua Mountains. Mom had encouraged me to bring a pair of binoculars I had received as a present. I found the perfect use for them—looking at the surface of the moon. The constellations were clear enough, but the full moon allowed an unprecedented view that I had not seen before. We also visited Ft. Bowie, where the Army set out from to chase Cochise and his band. And of
course, my parents knew one of the Park Service Rangers we met there. It was quite the family trip, one of those that continued to push me into the natural sciences.

Another family trip that is set in my mind was not so much a single trip but a number of trips over three summers. These were the years my father excavated the McSween home in Lincoln, New Mexico. Dad went up Wednesday; mom and I would follow after work on Friday. For dinner we would stop at Taco Bell in Alamogordo and share an order of Nachos Bell Grande. We then continued to Lincoln, arriving at 8 or 9 p.m., depending on how fast we left Las Cruces. This was when I really got to see my parents, the archaeologists. My mother, lying down in the dirt, shoes kicked off, reaching into a square hole in the ground. Patiently peeling back the dirt, when I watched her, it seemed like she was moving it grain by grain, allowing the changes in the soil to slowly appear. Would it be a burned horizon, or a stash of fine beads that came off a lamp shade? Dad was running the project, and I would see him take a few minutes to pick up a piece of ceramics, pulling his glasses to the end of his nose for a better view, before explaining what he saw to the volunteers that were helping him. My time was spent between the screens, where my parents showed me the patience to sift through the soil that was poured through them, and the laboratory, where I spent my time washing and cataloging the artifacts that were unearthed. This was a far cry from the Indiana Jones adventures I was constantly asked about when mentioning my parents were archaeologists.

I learned many things from my mom. I'm not sure what tops the list—there are all the day-to-day activities that everyone learns from their parents: cooking, laundry, and sewing as examples. Then, there are not so classic things that I learned from her. I saw her as one of the most patient women I knew. She would read through the same manuscript over and over, stopping to put in that stray comma. I learned the importance of education. Not by her telling me, "You have to learn," but by leading by example. She got her last official degree in her mid-thirties, but she continued to take classes as long as she could. I also saw her teach as many Elderhostel courses as her schedule could take, her favorite being Women of New Mexico. Evenings were often spent at lectures for professional meetings, and family vacations were scheduled around conferences.

Mom walked me to elementary school every morning, even if I was riding my bike. She stood at the crosswalk, watching me cross the street, lock my bike up and head to class. I remember one day when she brought our dogs along, two or three of them—I don’t remember how many we had at the time! She was dressed to go work after she got home. Her walking route was a large loop around the neighborhood. We took the long route, heading away from the school before looping back to drop me off. The last section followed the irrigation channel that brought water to the orchards in the neighborhood. Hoskinini, my cockapoo dog, decided that the rushing water of the irrigation channel looked appealing, and, as dogs do, went for a swim. Of course, she had a massive surprise when she found the channel was much deeper than her legs would reach. Mom, quick as ever, kept hold of the leash, and managed to manhandle (or maybe that’s woman-handle) Hoskinini back up to dry solid land. Fortunately, my dog was safe,
but mom needed to change, as Hoskinini shook dirty irrigation water all over her.

We took several international trips together. In 1997, Mom and I went to Turkey with her mother and a good family friend. Mom and I, the first to arrive in Istanbul, saw many military tanks lining the intersections as we traveled to our hotel. Due to the time difference, we wanted to take a nap before meeting her mother and having dinner. After we arrived at the hotel, mom told me, “If you hear shots being fired, we’re going to get on the floor and move the mattresses over the window.” I think I paled at the thought, surprised that she had any idea what to do! But this wasn’t our first trip to a foreign country with some sort of trouble.

A few years earlier, Mom, her sister-in-law, her mother, and I traveled to Mexico. We were stopped at immigration, our passports being inspected, when the agent told Mom that I couldn’t come into the country as she didn’t have a letter giving her permission from my father. For all he knew, Mom had stolen me from my father, and was planning on selling me into slavery. After some hemming and hawing, Mom, perhaps unknowingly, said the magic phrase and the agent indicated a bribe would be acceptable. Digging through her wallet, she found a $10 bill, and passed it into his hands, and he allowed us through. Later we were stopped at a military roadblock, where soldiers had machine guns slung casually over their chests. Luckily, after a brief search of the car, we were let through. On that trip, mom and I kept travel journals, with nearly matching journals and matching pens. She insisted we get them before the trip, after showing me her travel journals from her high school and college trips. I think I developed a travel log journal addiction on that trip, and for years afterward, I spent a few minutes each night adding to my journal, especially during my 1998 summer doing geophysical work in Middle East.

That summer I worked with a small consortium of professors developing software to use with ground penetrating radar. Our test sites were archaeological sites in Jordan and Israel, where the field school students could follow up on our possible findings. After a couple of weeks in Amman, we traveled south into the heart of the desert, passing the Dead Sea, and to the mountains where there was a small military outpost—two buildings and a water tank. During the winter, the archaeological department at a large university would come to do their field school at the nearby site. The professor who ran the field school was there to show us around the site.

As we sat at the end of a test pit, looking at a wall during a mid-morning break, I started looking at the structure of the wall—how it was built, and the form it took. I commented that the wall reminded me of the rock structures in the Southwest where I grew up, and had visited many sites with my parents. The professor agreed with me, saying it was very similar to the rock structures at Chaco. He then paused, asked what my last name was, again (we had been introduced when we first arrived at the site). I told him, “Kirkpatrick”, and he asked, “Is David Kirkpatrick your father?” Yes, indeed, I had traveled halfway around the world, and ran into Alan Simmons, from University of Nevada, Las Vegas, who knew my parents and was familiar with their work. I used to be embarrassed when my mom would go into a parent-teacher conference at school, and she knew my teachers from when she was in the English Department at New Mexico State University. But now, I realize, when I travel half way around the world and I run into someone who knows my parents, just how respected they are in their field.
I first met Dave in 1976 at the Philmont Scout Ranch, which was hosting the annual Archaeological Society of New Mexico meeting. I never realized at that time that he would become one of my closest friends during the next 34 years. At the conference he gave a paper, “A History of Archaeological Investigations in the Cimarron District, Northeastern New Mexico.” I asked if he would like to have the paper published in “AWANYU,” the quarterly journal at that time for the Archaeological Society of New Mexico, which I was the editor and publisher of. He consented, and our long-term relation and friendship started.

In 1977, Dr. Stanley Bussey, Director of the Cultural Resources Management Division (CRMD), New Mexico State University (NMSU) offered Dave an Archaeologist II (senior archaeologist) position at CRMD where I had worked for three years. He was responsible for the data recovery excavations at Block II, Navajo Indian Irrigation Project (NIIP). We shared office space in an old Army barrack building for a number of years, while he was the running the Block II, Navajo Indian Irrigation Project, which resulted in a massive, five-volume publication. I became Director of CRMD in 1978, which resulted in becoming his boss for the rest of the time I was at CRMD.

Dave’s huge five-volume Block II publication overworked the three members of our secretarial staff, as this was before personal computers. Often manuscripts had to be typed over and over again, and we were doing hundreds of other projects during the Block II time. It was decided that we would buy a top-of-the-line IBM System 6 computer, which resulted in tremendous time saving, as nothing had to be completely retyped. This acquisition was the envy of the other archaeological organizations in the state, and I can say Dave was indirectly responsible.

As the entire CRMD staff was working on both large and small projects, which ranged from one day to many months, Dave and our other Archaeologist II, Karl Laumbach, kept many of our other archaeologists and crews busy. It was at this time that the three of us started to enlarge the scope of CRMD. Dave and Meli played a contributing and central role in helping to lessen my workload as we started a series of professional workshops for archaeologists who came from all over the Southwest to attend these two-day sessions. They were taught by professionals from most of the New Mexico museums and universities. These workshops later became the model for the New Mexico Archeological Council workshops.

In 1979 we moved from the basement of NMSU’s Baldwin Hall into Kent Hall, which was to serve as the University Anthropology Museum downstairs. The contract office (CRMD) was to occupy the entire upstairs. As there was no money for the move or remodeling, once again the entire staff contributed to moving and painting the facility. We now had room for private offices, labs, and a room for the CRMD library. Meli organized and cataloged the entire library and solicited new additions from staff members and exchanges from other contract organizations, building a fine archaeological reference collection.

In 1978, Reg Wiseman, Museum of New Mexico, and I met in a Santa Fe bar and put together the outline for the first Jornada Mogollon Conference to be held in Las
Cruces in 1979. New Mexico State University, Museum of New Mexico, and COAS Publishing & Research hosted this conference. Dave and Meli helped me organize the conference. Dave also served as the audiovisual person for the conference and for many years later for conferences I hosted or other institutions hosted.

In 1979 Karl Laumbach came into my office and asked when we were going to have a Mogollon Conference. I picked up the phone and within a few minutes, Joe Ben Wheat, Charles DiPeso, Emil Haury, Beatrice Braniff, and Stan Bussey had been lined up as chairs for the conference. Then Karl, Dave and Meli, and I sat down and put together the fliers and other information for the conference.

Since that time, Dave and Meli have been constant supporters and, in some cases, editors of the many Jornada Mogollon and Mogollon conferences. Dave presented one of his first papers on Mogollon archaeology at the first Mogollon conference. Jornada Mogollon and Mogollon archaeology have benefited greatly from his work in the region.

After I left NMSU, I worked for Human Systems Research (HSR) to help Peter Eidenbach out of a time crunch bind on a White Sands Missile Range contract. Because of the recent passing of HSR President Mark Wimberly, I was asked to become a board member of HSR. I had accepted on a temporary basis. It was during this time, after a hard day’s work, that Pete was lamenting about finding project archaeologists for HSR. Now sometimes I’m not the brightest light around, for Dave and Karl had been talking to me about leaving NMSU. It took me two weeks to put together that one friend on one side was looking for project archaeologists and on the other side, two friends were looking for similar jobs—not one of my brightest moments. Since that time Dave, Karl and Meli, up to the time of her retirement, have been at the core of HSR research and past HSR board members.

To their credit, Dave and Meli were always involved in local and regional archaeological organizations. The Archaeological Society of New Mexico, New Mexico Archeological Council, El Paso Archeological Society, and the Dona Ana Archaeological Society have been especially blessed by their many activities and hours that they volunteered for their various projects, offices and their tireless efforts to accomplish them. The dedication of this volume of the Papers of the Archaeological Society of New Mexico to Dave and Meli is long overdue.
SELECTED PUBLICATIONS

Meliha S. Duran and David T. Kirkpatrick—Edited ASNM Volumes


Meliha S. Duran—Major Publications


David T. Kirkpatrick—Major Publications

Basketmaker Food Plants from the Cimarron District, Northeastern New Mexico (with Richard I. Ford). *Kiva* 42(3-4):251-269.


1986 Anasazi Settlement Patterns in the Middle San Juan Region, Northwestern New Mexico. Unpublished Ph.D. dissertation, Department of Anthropology, Washington State University, Pullman.


Tunque Redux: A Work in Progress

The Rio Grande pueblo of Tunque (LA 240), retrieved and revisited, is the goal for a current project that has required detective work in order to provide a comprehensive synthesis of the history of archaeological investigations there. The effort to locate all such materials and data from previous work at the site has been undertaken by the senior author (Armstrong). Morales provides a brief summary of the occupational history of the site, based on his Ph.D. dissertation (Morales 1997), and Snow has pulled together some additional data from Spanish colonial and ethnographic references to the site.

The first professional notice of the ruined pueblo of Tunque occurred in 1882, when Adolph Bandelier visited it in the course of his investigations (Bandelier 1892; see also Rodak 1988). Nels C. Nelson (1914) excavated some 240 rooms at the site; his notes and collections are curated at the American Museum of Natural History (a copy of the field notes is on file at the Archeological Records Management Section of the New Mexico Historic Preservation Division in Santa Fe). In 1909, Mr. A. J. Frank of Albuquerque initiated the manufacture of bricks from clays at the Tunque site, in the process of which a significant portion of it was destroyed (Figures 1-3). Sara Goddard, a faculty member at Albuquerque High School, worked at the site with students.

Figure 1. Field sketch map of Tunque by Nels C. Nelson (1914b, original in the American Museum of Natural History, New York, copy in the Laboratory of Anthropology, Museum of New Mexico, Santa Fe), courtesy of the Laboratory of Anthropology (from Bice 1990:Figure 2; note that Nelson indicates north to the left).
with the school's Archaeology Society during the 1930s. Their work included partial excavation of the only identified kiva on the site. A history of the Albuquerque High School Archaeology Society by Mary Darden Hurt suggests that the excavated materials were discarded or dispersed (Hurt 2000:165). What appears to be a brief summary of the work, perhaps written by Goddard, and which includes a map of room blocks, has been located by Morales, and will be deposited in the Tunque Document files in the Hibben Center of the Maxwell Museum of Anthropology at the University of New Mexico.

At some point early in the 1960s, the owner of the Diamond Tail Ranch, whose lands at that time encompassed the Tunque ruins, became annoyed by unauthorized digging on the site, and threatened to have it plowed under and smoothed over. This resulted, nevertheless, in several more excavation projects by a number of different individuals who were to become founding members of the Albuquerque Archaeological Society. Among them were Richard and Katherine (Kitty) Renwick, Douglass Fischer, Frank and Frances Vernon, Franklin and Joan Barnett, and Richard and Margaret Bice, who participated in several excavation projects at the site, apparently with the permission of the landowner. Finally, as a result of complicated series of land exchanges between the Diamond Tail Ranch, the Bureau of Land Management, and the pueblos of Santo Domingo and San Felipe, the site of Tunque was transferred to the ownership of the Pueblo of San Felipe during the 1970s (John Roney, personal communication 2009).
Richard A. Bice, a former president of the Albuquerque Archaeological Society, initiated efforts to collect all known records and artifacts from the site (Bice 1982, 2007), and prepared a report listing what was then known. Armstrong, following the death of Bice in 2008, has taken up the challenge to complete the inventory of records and collections data. The results of her efforts are curated at the Hibben Center and are summarized here. Bice’s (2007) report to the Society’s Field and Laboratory Committee notes that the excavated materials reported from the Barnetts’ excavations between 1962 and 1964 (Barnett 1969) have been dispersed, but field records remain. Bice adds that field notes and a “substantial” part of the Renwicks’ materials are held by the Albuquerque Archaeological Society (e.g., Renwick 1969); however, the Renwicks retained in their possession nine restored glazeware vessels; the remainder of the Renwick collection, if any, is not identified. The Bices’ materials, including artifacts and field records, were donated by him to the Albuquerque Museum of Art and History. The records are contained in a report entitiled “Tonque Field Notes, Text, Photographs and Drawings” (Bice and Bice [1965]).

In addition, Armstrong has located and discussed with Kitty Renwick her late husband’s field notebook, and the contents were copied for the Tunque Document Files. The nine glaze vessels were sold long ago by the Renwicks to unidentified individuals, but Armstrong has identified a collector who once purchased a variety of items from the Barnetts, some of which might be illustrated in Barnett’s 1969 publication. Armstrong has also contacted a
collector who claims to have purchased some (or all?) of the Barnetts' artifacts from his widow and is willing to allow them to be photographed. A small group of materials collected by the late William Sundt has been located at the Laboratory of Anthropology in Santa Fe (the Lab), which also curates H. P. Mera's small surface collection of type glazes from the site. Tom Morales has donated to the Maxwell Museum approximately eight boxes of unprovenienced materials from the Vernons' collections, and is compiling documentation of the contents. Finally, the authors would appreciate any additions to the Tunque Document File that might come from our readers.

Besides the previous works summarized above, studies of Tunque ceramics and local clays are under way by Kari Schleher, Suzanne Eckert, and David Snow. The authors of the current paper hope to compile a composite map depicting all identified previously excavated features at Tunque, and a search will be made for available aerial photos of the site and vicinity. Field houses in the vicinity, presumably used prehistorically by Tunque's inhabitants, have been noted by Morales (see also Bandelier's observations in Lange and Riley 1966:379-380).

**OCCUPATION AND ABANDONMENT OF TUNQUE**

The Tunque Pueblo grew rapidly during the early to midfifteenth century, and by the end of the 1400s had reached its maximum population. Shortly after A.D. 1500, however, the site began to decline. The long lateral Buildings (XVII-XVIII, Figure 1) appear to have been largely vacated in the early years of the sixteenth century. In other buildings there was a significant reduction in the number of occupied rooms by the 1520s. The large kiva might also have been abandoned in the early 1500s with the overall reduction in population (Barnett 1969:12-13; Nelson 1914b).

The large-scale or perhaps total abandonment of Tunque by the original inhabitants occurred between A.D. 1525 and 1550. This is inferred from the Spanish entrada accounts of the Hagan Basin as well as ceramic compositional data which indicate the cessation of on-site glazeware pottery production in the mid-sixteenth century (Barnett 1969; Bice 1990; Schroeder 1979). As yet there is no evidence for violent depopulation of the pueblo, and the general notion that the late prehistoric period in the Rio Grande was characterized by strife and violence remains to be more fully substantiated (LeBlanc 1999; Schroeder 1979).

Drought conditions (e.g., Rose et al. 1981), as well as simple overcrowding and the consequent onset of endemic (or possibly, the advance of introduced) diseases prior to actual Spanish contact (Reff 1987; but see Ramenofsky 1987) also have been suspected. Any or all of these causes for Tunque's depopulation, however, must remain speculative in the absence of controlled excavation data and analyses of materials collected.

After an occupational hiatus of approximately 50 to 100 years, portions of Tunque were reoccupied in the early seventeenth century. The reoccupation of the site is evidenced by the presence of late Glaze E pottery; by limited quantities of Glaze F with heavy, runny glaze paint, and by Sankawi Black-on-cream and Sankawi-type utility pottery. In addition are the fragmentary remains of domesticated goat and horse, and a bronze apothecary's pestle. These indicate that parts of previously existing structures were rehabilitated and new buildings possibly constructed over earlier ones between about A.D. 1600 and 1625.

Mid-to-late Spanish entradas fail to mention Tunque by this name, and it is unlikely that any substantial population remained when Vasquez de Coronado's army trekked eastward around the northern end of the Sandia Mountains toward Pecos and Quivira (Hammond and Rey 1940). Still unclear is whether the community was occupied some 40 years later when Francisco Chamuscado's small band followed what must have been the same approximate route eastward from the Rio Grande Valley or, still later, in 1592, when Castaño de Sosa observed the results of raiding by "other pueblos" on some villages near the northern end of the same mountain (Hammond and Rey 1966:291-292).
The historic reuse and/or reoccupation included portions of Buildings VIII-XII, XIV, and XVI. The most extensive reoccupation was in the central part of Building IX (Figure 1), where approximately 15 to 20 mostly contiguous rooms were simultaneously inhabited (Barnett 1969; Bice 1982, 1990; Bice and Bice 1965; Nelson 1914a, 1914b). As noted by Barnett, there were differences in the living habits of the later occupants as compared with those of the earlier occupation. Most notably, the generally contiguous rooms in Building IX where storage features were practically non-existent indicate this. None contained storage bins or subterranean pits, and only two contained storage jars placed into the floor. Several of the reused rooms had elaborate hearths with fireplace slabs mortared with adobe (Barnett 1969; Bice and Bice 1965).

The presence of Sankawi vessels does not necessarily indicate, as Barnett suggests, the presence of migrants from the Pajarito Plateau, for such vessels (as well as other seventeenth century pottery types) were widely traded during the early years of Spanish colonization in the Rio Grande. Whether any of the late glazeware vessels might have been produced at either San Felipe or Santo Domingo—or elsewhere—remains a possibility.

From these cultural items and architectural features it is possible to argue that the reoccupation of the abandoned pueblo was by Spaniards and their Pueblo agregados and servants (Barnett 1969; Bice 1990). That the early historic use of the site was limited both spatially and in numbers might reflect its location as the “estancia de Tunque,” established as early as 1626 by Pedro Duran y Chavez, one of the settlers with Juan de Onate who remained loyal to the early colony. Reuse of the site, on the other hand, might have been simply sporadic temporary visitations during the seventeenth century by Spaniards or Pueblo people during the hectic years of upheaval of the Pueblo world. Later materials are absent from excavations and on the surface, indicating that the pueblo was no longer in use at the time of the Pueblo Revolt. Not until 1909, when the brick factory was established by Mr. Frank, did Tunque again see activity, work that destroyed much of the possibly earlier western portions of the site (Figures 2-3).

Subsequent to its abandonment, the vicinity of Tunque Pueblo continued to be utilized by local Hispanic inhabitants from nearby settlements on the Las Huertas and Town of Tejon grants. Coyote, Hagan, Tejon, and Las Huertas residents undoubtedly continued to farm using waters from the intermittent drainages, to graze livestock, and to collect firewood and beneficial plants. Small numbers of sherds of historic Pueblo pottery of eighteenth and nineteenth century manufacture are evidence of such multiple uses of local resources at Tunque and its environs.

**HISTORIC TUNQUE.**

Tunque was once a prominent place on the prehistoric landscape of the upper Rio Grande Valley (Peckham and Olinger 1990; Schroeder 1990; Warren 1969). That its name apparently comes from the Tewa language is something of a mystery, however, as the pueblo seemingly lies beyond present Tewa pueblo territory. Harrington (1916:511), as did Bandelier before him (1892:109), derived the name from Tewa, t'ung, glossed as “down at the basket place.” Santa Clara and San Juan Tewa people, respectively, have t'ung - t'in - “basket,” with the final syllable, -ge, a Tewa locative (the initial t is aspirated). The name continues to be anglicized, however, as “Tonque”—perhaps because it appeared that way on products of the Tonque Pressed Brick, Tile, and Improvement Company (see Barnett 1969, Figure 14)—in spite of the consistent spelling Tunque in Colonial New Mexican documents.²

The pueblo’s fame derives from the production there of glaze-painted pottery of striking finish, quality, and overall appearance (Herhahn 2006; Nelson and Habicht-Mauche 2006). How, then, did an apparent Tewa language term referring to baskets come to designate this former pottery-production center? A small tributary named Uña de Gato (cat’s claw)—presumably because the plant grows there—enters Arroyo Tunque immediately west of the ruins. As the split pods of cat’s claw or devil’s
claw (*Martynia* sp.) are used by Southwestern Native Americans for basketry (Castetter and Bell 1942), the designation is perhaps an appropriate reminder of the purported Tewa place name. Nevertheless, this may be merely a coincidence, as Harrington (1916:511) was unable to elicit any knowledge of the place from his Tewa informants. Possibly, another name for the place has gone unrecognized.

A Santo Domingo Pueblo story collected by Adolph Bandelier (1892:116-117) told of havoc wreaked on a number of pueblos by the “Kirawac” in the distant past: “A long time ago, and before the Spaniards came, some wild tribe from the plains made a sudden irruption into the valley of the Rio Grande. They were called the Kirauash and they threatened Santo Domingo.” Those “Kirawac,” according to White’s (1935:179-182) version, “lived at a place right in front of the sun [and] they started out west dressed just like Opi [warriors]. . . . Whenever they came to a pueblo they killed all the people. The first village they came to was one right near Galisteo. They killed all the people there. Then they moved on to a village right near Kashenti; they killed all the people there. Then they went down south and destroyed Mictya, then Kodyomo’nic.”

On White’s map (Figure 4, drawn, presumably with the aid of an informant), numbers 3 and 4 are placed south of what is clearly Galisteo Creek, suggesting the location of the wellknown pueblo ruins of Pueblo Espinosa (LA 278), Tunque (LA 240), or perhaps Pa’ako Pueblo (LA 162).

Irvine Davis’ (1964:Entry No. 260, p. 167) Santa Ana Pueblo linguistic analysis contains a term that glosses as “clay.” [Editor’s Note: Unfortunately, the term is written in an orthography we are unable to reproduce.] Father Hillaire, who is fluent in Keresan, provided the Laguna word *m’i’ts’i*, meaning “rock from which clay comes” (Father Hillaire, personal communication 2010). Both words appear to be cognate with *mictya*. These terms might also refer to potting clay, certainly suggestive of Tunque’s former ceramic production.

In the past, Arroyo Tunque likely carried water to the vicinity of LA 240, and might, therefore, have provided a natural route to the villages of the Galisteo Basin, and to
those pueblos behind the Sandia-Manzano Mountain chain. It is worth considering, consequently, that this might have been the route traveled by Vasquez de Coronado to Pecos and, later, by the 1581-82 Chamuscado-Rodriguez expedition (Hammond and Rey 1940:256-258, 1966:67, 106, 119, 130). Should those expeditions have utilized the Arroyo Tunque drainage as their route toward Pecos, it seems likely that one or another of the places described by Coronado as abandoned or by Chamuscado-Rodriguez as smaller, occupied pueblos was Tunque.

In his famous relaciônes, written shortly after his return to Mexico in 1626, Fray Jerónimo de la Llana noted the “mines . . . in Tunque” (Milich 1966:56), possibly a reference to the well-known Montezuma mine some five or six miles northeasterly of the site. Some 15 miles or so east, and up the valley are the well-known gold and copper deposits of the San Pedro and Golden districts. Zárate Salmerón’s reference to Tunque is contemporary with testimony given at Santa Fe, in 1626, by Doña Isabel de Bohórques, wife of Pedro Duran y Chaves, who stated that she and her husband owned an estancia at “El Tunque,” near San Felipe Pueblo (cited in Chavez 1989:13 as AGN, Mex., Inq., t. 356, f. 301). Perhaps unfamiliar with the region’s geography, Chavez informs us, nevertheless, that the estancia in question “stood by the river in the fertile lands at ranchos de Santa Ana” (1989:15-16), some eight miles south of Arroyo Tunque.

According to Chavez, “El Tunque grant” was purchased ca. 1707 from the grandson of old Don Pedro, but there are no extant documents to substantiate such a grant, nor further references to the Duran y Chaves estancia. Neither in the itinerary of Otermín’s retreat south in August of 1680, in the subsequent account of Dominguez de Mendoza’s reconnaissance in 1681, nor in the journals of Vargas in 1692 and 1693, is there mention of Tunque or the Chavez hacienda.

Historic mention of Tunque may be found elsewhere, however. In 1759, seeking to recover the remains of Fray Jerónimo de la Llana from the ruins of Quarai mission, then Governor, Antonio Martín del Valle, instructed his chaplain to accompany him to the location of the friar’s resting place, saying that the two of them should rendezvous at “San Pedro” (presumably, the site known today as Pa’ako). On March 28, the Governor met up with his friar escort “at a place called Tunque” (Lange et al. 1975:516, n. 997). Tunque figured in a petition by officials of Santo Domingo and San Felipe pueblos in 1770 for a grant to lands bounded “por el oriente con un pueblo antiguo llamado el Pueblo de Tunque” (on the east with an ancient pueblo called the Pueblo of Tunque) (cited in Bandelier 1892 II:112). In 1780, Fray Agustín Morfí noted that, “at no great distance from [San Felipe] is seen the ruin of the old pueblo called Tunque. It has fine lands and three springs for its use” (Thomas 1932:97). The ruined pueblo remained a prominent place name in colonial New Mexico. The marriage in 1783 at Cochiti Pueblo of “Vicente Tunque, widower” is a reminder, perhaps, of a forgotten legacy of Tunque’s people (Betterly 1988:81).

NOTES

1 Although members of archaeological societies today would believe it unethical to keep artifacts from excavations or to sell them, these excavations were conducted in the early 1960s on private land, apparently with the permission of the landowner. The people involved broke no existing laws, and they went on to help found the Albuquerque Archaeological Society in 1966.

2 As Bice (1990:7) notes, Tunque has been spelled in various ways in the past. The Tonque variant appears in the products of the Tonque Pressed Brick, Tile, and Improvement Company and in several publications between 1960 and 1990 (e.g., Barnett 1969; Bice 1982; Warren 1969).
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Central Mexico possessed a complex and expansive ceramic tradition both before and after the coming of the Spanish. This tradition had a significant impact on New Mexico in colonial times and we find artifacts manufactured in central Mexico throughout Spanish settlements along the northern Rio Grande. However, many of these Mexican ceramic traditions appearing within the American Southwest are overshadowed by more visually stunning wares. There have been many studies on majolica (Deagan 1987; Fournier 1997; Fox and Ulrich 2008; Goggin 1968; Snow 1965) conducted within large-scale Spanish settlements in the New World, but very few have gone into any great detail about the other ceramic types that often co-occur with these highly decorative wares. None have focused exclusively on these wares within the northern Rio Grande.

This paper explores some broad perspectives on identifying and understanding Mexican ceramic traditions, excluding majolica, that commonly occur within the state and on what information these ceramics may provide about assemblage temporality and the ethnic composition of the colonial population in the northern Rio Grande. For the purpose of this study, these Mexican traditions are divided into two categories: native Mexican ceramics and Mexican lead-glazed earthenwares. Although this research is intended to inform upon these traditions in the northern Rio Grande as a whole, much of the archaeological research used in this study is based on the author’s own work in the Santa Fe area. As a result, findings from this research must be used cautiously when generalizing about trends and styles found elsewhere in the American Southwest.

**NATIVE MEXICAN CERAMICS**

In discussions of native Mexican ceramic intrusions into New Mexico in a historic setting, most literature refers specifically to pottery types associated with the Nahua Indian groups of central Mexico and the traditions that continue to develop from their cultural dominance in the region at the time of the Spanish conquest. The Nahua Indian group includes the Mexica, Tlaxcala, Tapaneca, and Alcohua peoples of central Mexico along with numerous other tribes located within Central America as far north as Chihuahua and as far south as Panama. The Spanish often referred to these people collectively as Aztecs or Mexicans or simply as indios amigos (Flint 2003). Three Nahua ceramic types, Mexican Redware, Aztec Black-on-red, and Guadalajara Polychrome, and one type often produced by Mixtec or Zapotec potters, Mexican Polished Blackware, have been found within the northern Rio Grande.

**Mexican Redware**

Mexican Redware, also known as Aztec Red (Di Peso 1974:949), Colonial Burnished (David Snow, personal communication November 5, 2009) and Mexican Red Painted Earthenware (Deagan 1987; Smith 1949), exhibits a highly polished or burnished red slip applied to both the exterior and interior of the vessel (Figure 1). The paste is often gray but may vary. Temper also varies and may be indicative of the region in which the pottery was produced. Mexican Redware was manufactured throughout New Spain both prior to and after the coming of the Spanish in the sixteenth century.

In Santa Fe, this ware is typically found in assemblages dating prior to the mid-eighteenth century. The ware has
been encountered in numerous contexts in Santa Fe including the Palace of the Governors (n=5, Barbour 2010b; n=2, Seifert 1979:73-74), south of the Santa Fe River (n=8, Barbour 2010c; n=1, Levine et al. 1985), the Baca-Garvis/Godoy Estate (n=5, Lentz and Barbour 2010), and recently behind the Santa Fe Cathedral (n=1, Cordelia Snow, personal communication November 4, 2009). In addition, fragments have been identified from the Sanchez Site south of Santa Fe near Las Golondrinas (n=22, David Snow, personal communication November 5, 2009).

**Aztec Black-on-red**

Like Mexican Redware, Aztec Black-on-red (Charlton 1968; Di Peso 1974:949; Parsons 1966), or Colonial Black-on-red (David Snow, personal communication November 5, 2009), is described as having a highly polished or burnished red slip applied to both the exterior and interior of the vessel (Figure 2). Paste is often gray and temper is not often visible with the naked eye, but both paste and temper may vary based on the location of production. Aztec Black-on-red is a Mexican Redware decorated with a black mineral paint. Typical designs include geometric and banded motifs. The type is thought to have been produced in Central Mexico up until at least the mid-eighteenth century.

Aztec Black-on-red is mentioned by Di Peso (1974:949) as having been found in the Casas Grandes region in post-European contexts. The only sherds identified in New Mexico have been located around the Santa Fe Plaza at the Palace the Governors (n=4; Seifert 1979:73-74).

Aztec Black-on-red and Guadalajara Polychrome are oftentimes both referred to as Aztec IV (Deagan 1987; Fairbanks 1972; Smith 1949). However, Guadalajara Polychrome represents a polychrome variety (three or more colors) produced exclusively in the Jalisco region of central Mexico, and Aztec Black-on-red is a bichrome pottery type produced in many different areas.

**Guadalajara Polychrome**

Guadalajara Polychrome (Deagan 1987:44-46; Goggin 1968:210), also known as Tonala Brunida Ware (Charlton and Katz 1979), Tonala Burnished (Fox and Ulrich 2008:42-43) or Aztec IV (Smith 1949), is a multicolor decorated type with a polished gray or buff background (Figure 3). Red and black are the dominant colors used in decoration forming bands around both the rim and base of the vessel. However, other colors, such as tans, grays, and blues are often used in smaller quantities. Decorations are floral or geometric and are bounded by the rim and base bands. Guadalajara Polychrome was manufactured in the Jalisco region in the seventeenth and eighteenth centuries (Deagan 1987:44-46).
A continuation of earlier Aztec traditions, Guadalajara Polychrome reached its height of popularity during the mid-eighteenth century and is found in the Old World and in Spain’s colonies in surprisingly high numbers. The vessels were made from the clay around Guadalajara that was claimed to have emitted a strong odor. Water stored in the vessel was believed to be beneficial to the complexion (Pearson 1981). However, Kathleen Deagan (1987:45) contends that the contexts in which these vessels are found, such as Spanish missions, contradict the explanation that these vessels were produced or shipped for cosmetic reasons.

In New Mexico, Guadalajara Polychrome has been found on the Santa Fe Plaza (n=2, Barbour 2004:59-61), the Baca-Garvisu/Godoy Estate (n=2, Lentz and Barbour 2010) and the Palace of the Governors (n=7, Barbour 2010b). All these locales represent the upper establishment within the city. No fragments have been identified in the Barrio de Analco. The presence of this ceramic type in high status households and not in the less affluent districts of the city, such as the Barrio de Analco, provides support for Pearson’s (1981) claim that the vessels were used to enhance the complexion. However, these wares could also represent Native servants or slaves from the Guadalajara region or the mestizo heritage of many of the Spanish colonists that came to settle Santa Fe.

In New Mexico, the ware has been positively identified in only one assemblage. Four fragments of a bowl or bowls were identified at the Baca-Garvisu/Godoy Estate in Santa Fe (Lentz and Barbour 2010). However, a discussion with Eric Blinman (personal communication April 25, 2007) suggested this ware may have also been found at San Lazaro Pueblo. At this time, these ceramics have not been made accessible for further study. Given the similarities between Mexican Polished Blackware and Kapo Black, a Tewa type with a polished black slip, it is possible that Mexican Polished Blackware has been found at other sites in New Mexico, but not accurately identified.
Table 1. Frequencies of Native Mexican Ceramics from Several Locations in the Santa Fe Area.

<table>
<thead>
<tr>
<th>Location</th>
<th>Mexican Redware</th>
<th>Aztec Black-on-red</th>
<th>Type Guadalajara Polychrome</th>
<th>Mexican Polished</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palace of the Governors</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Santa Fe Plaza</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Baca-Garvisu/Godoy Estate</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>South of Santa Fe River</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Santa Fe Cathedral</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanchez Site</td>
<td>22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
<td>4</td>
<td>11</td>
<td>4</td>
</tr>
</tbody>
</table>

Interpretations

Nathan Bower and David Snow (1984:2) attributed the creation and spread of Tewa Red and Tewa Black across the northern Rio Grande to Spanish contact. If they are correct, these Mexican wares may have influenced Tewa potters. Indeed, it would appear likely that if contact was the cause for the shift from black-on-white ceramics to red and black wares within the Tewa Basin, Mexican Indian ceramic traditions may have been a primary motivator for this change. However, no detailed study on the subject has been undertaken (Jeff Boyer, personal communication November 4, 2009). The Coronado Expedition alone brought roughly 1,300 Nahua Indians into the American Southwest, with some choosing to stay behind and settle the area rather than returning to central Mexico (Flint 2003:60).

In the case of Santa Fe, native Mexican ceramics are found in a variety of contexts including the Palace of the Governors, the Plaza, the Baca-Garvisu house and south of the Santa Fe River near the Barrio de Analco (Table 1). The Barrio de Analco is traditionally thought to have been settled by Tlaxcalan Indians, a Nahua tribe (Sze et al. 1988:21). However, Cordelia Snow and Jose Esquibel (Cordelia Snow, personal communication November 4, 2009) have found no evidence of a Tlaxcalan group ever settling the Santa Fe area and recent excavations by the author just south of the Barrio de Analco (Barbour 2008) have encountered no archaeological evidence of Mexican Indian material culture.

The native Mexican ceramic assemblages described above may reflect different indigenous Mexican Indian ethnic groups within the archaeological record of Santa Fe. Certainly historical records suggest central Mexican Indians served as colonizers throughout the Spanish Colonial Period. These Indians filled the roles of skilled laborers and household servants as the Spanish frontier moved northward (Cuello 1988:691). In some instances, Tlaxcalans were permitted to own and ride horses, own property and be represented by their own cabildos, or legal council (Gibson 1952). However at this time, there is no evidence at present to suggest these Indians settled as a cohesive group in Santa Fe.

A brief examination of the digital collections at the Florida Natural History Museum and the available physical collections at the Museum of New Mexico suggests native Mexican ceramics are found in significantly higher quantities in Santa Fe than in Florida. Coincidentally, many of the wares found in Santa Fe are produced along the west coast of Mexico in an area once known as Nuevo Galicia. It is from this area that some of the initial families destined to explore and colonize New Mexico came, including Coronado, Oñate, and Godoy (Chavez 1992; Knight 2002; Pilar 1963; Simmons 1991). Many of these families were mestizo in origin and the presence of high quantities of Native Mexican ceramics in the northern Rio Grande could be associated with this mixed heritage.
Mexican Lead-Glazed Earthenware

Lead-glazed earthenware manufacture was established in central Mexico at approximately the same time as the colonization of the American Southwest (ca 1600; Fournier 1997). Like majolica, it was an imported Spanish tradition and has many similarities with wares produced throughout Europe and North Africa (Deagan 1987:47). But unlike the lead glaze of majolica, which is infused with tin oxide, other metallic oxides, specifically copper and iron, were used to provide green, orange, brown, and red coloration to the transparent or semi-transparent glaze. Vessel forms suggest these wares were typically used for storage. The vitrified surface created by the lead glaze allowed the vessels to hold liquid and solids for long periods of time. Description and interpretation of Mexican lead-glazed earthenware within the United States has long been problematic. The most commonly used references for identifying Mexican produced ceramics within the Americas are Deagan (1987) and Barnes (1980).

El Morro Ware and Rey Ware

Using Deagan’s identification system, the overwhelming majority of Mexican lead-glazed earthenwares found in the American Southwest can be classified as either El Morro Ware (Figure 5), dating to the sixteenth, seventeenth and eighteenth centuries, or Rey Ware (Figure 6), dating to the eighteenth and nineteenth centuries.

Figure 5. Examples of seventeenth and early eighteenth century Mexican lead glazewares referred to as “El Morro Ware.”

Figure 6. Examples of mid- to late eighteenth and nineteenth century Mexican Lead Glazewares referred to as “Rey Ware.”
Kathleen Deagan (1987:51) describes El Morro Ware as “wheel thrown.... Paste colors range from tan to reddish buff. Glazing usually confined to the interior surfaces....Glaze is most commonly orange or olive green, although brown, light green, rust, and mixtures of these colors have been reported.” She describes Rey Ware (1987:51-52) as:

wheel thrown.... paste is tan, buff, or orange.... Glaze colors on Rey ware include brown, rust, green, orange-red, and light orange. Occasionally a swirled or mottled design in dark brown is present under the lead glaze. Some examples have white slip decoration on a rust-colored glaze....

And Deagan further suggests (1987:52) that Rey Ware

... bears a strong physical similarity to lead-glazed wares from contemporaneous English and French sites which, together with the late date of the ware, suggests that Rey ware may have been of non-Hispanic origin, introduced into circum-Caribbean Spanish contexts through legal or illicit trading activities.

For a number of reasons, Deagan may be mistaken about the origin of Rey Ware. Since medieval times, variability in lead-glazed ceramic manufacture techniques among the different European nations was all but non-existent (Noel Hume 2001:28-30). Significant quantities of Rey Ware have been identified within the relatively closed system of the American Southwest (Lentz and Barbour 2010). If these wares were English or French in origin, the archaeological record should also include quantities of delft and faience. It does not. In addition, production facilities in central Mexico during the twentieth century, and before that time, have fabricated similar wares (Fournier 1997:205-206).

The biggest problem, however, is not that Deagan is mistaken about the origins of Rey ware, but that most Mexican lead-glazed earthenwares found within the American Southwest fit comfortably under both Deagan’s descriptions of El Morro Ware and Rey Ware.

Each can have green, brown, and orange glaze colors and a paste that varies from tan to orange. Thus, the classification of an artifact is based on the context in which it is found and not on qualitative attributes. Shards found in sixteenth and seventeenth century contexts are identified as El Morro Ware, but those in eighteenth and nineteenth century deposits are categorized as Rey Ware. In addition, the typology ignores the fact that these materials are still produced today.

The Barnes Lead Glaze Classification System

Another perspective for looking at Mexican glazewares comes from Mark Barnes (1980). Barnes looked at Mexican lead-glazed earthenwares from Arizona and Northern Mexico and recognized that the majority of lead-glazed earthenwares were produced in central and northern Mexico. Under Barnes’s classification, Mexican lead-glazed earthenwares are separated into 13 ceramic types, 15 if one includes subdivisions. These divisions are partially based on the color of the lead glaze described in earlier studies by Louis Caywood (1950). However, of these 13 types, seven are green-glazed and the division between the seven—unless analyzing a whole vessel or one very large shard—will likely be determined subjectively and will be of limited use within an archaeological context.

Barnes’s lead glaze classification system has several major pitfalls. One such pitfall is that dates assigned to specific pottery types may be a function of the study area. Barnes dates most of his pottery types based upon assemblages from Arizona and areas not colonized until the eighteenth century. Hence, he suggests begin manufacture dates in the 1700s for many of his lead-glazed earthenwares. However, these types may predate this colonization effort. Barnes does offer some interesting conclusions. He observes that the Mexican lead-glazed tradition, though brought from Spain, was produced in Mexico by both Spanish and native potters. The vessels were largely wheel-thrown (sometimes molded) and were mass-produced for markets throughout the New World. He also observes that there were numerous production centers, including the Michoacan and Jalisco regions of west-central Mexico (see Fournier 1997). Finally, even
with 15 ceramic types, Barnes acknowledges an almost limitless variability in glaze color and decorative styles with very little of it being temporally or spatially diagnostic.

Recently, the University of Texas at San Antonio Center for Archaeological Research revisited Barnes' classification system in *A Guide to Ceramics from Spanish Colonial Sites in Texas* (Fox and Ulrich 2008). Using a glaze color-based identification system, archaeologists in Texas identified at least nine different Mexican lead-glazed earthenware types, most of which are temporally sensitive. This study is potentially the future for lead-glazed earthenware analysis, but the Texas-centric view of the study limits the types discussed to the late seventeenth and eighteenth centuries. It cannot aid in the identification of early seventeenth century materials and it is unknown at this time if the typology system and dates developed for specific types in Texas will be applicable to other distinct portions of the Spanish Borderlands, such as the northern Rio Grande.

**Black Lead-Glazed Coarse Earthenware**

One type agreed upon by both Deagan (1987:52) and Barnes (1980:99-100) is Black Lead-Glazed Coarse Earthenware (Figure 7). Black Lead-Glazed Coarse Earthenware is a glazeware produced in central and northern Mexico during the eighteenth and possibly the early nineteenth centuries (ca. 1700-1770, Deagan 1987; ca. 1750-1850, Barnes 1980). The ware possesses a black glaze on both the exterior and interior of the vessel. Its paste can be red, buff, or gray (Deagan 1987:52-53).

However, the ware is almost identical to the English Buckley ware and Jackfield types found throughout the English colonies (Noel Hume 1969:123-124, 132-133). This may have limited its identification in the northern Rio Grande given that many historic archaeologists working in the area were trained on the eastern coast of the United States. Furthermore, it may be impossible to differentiate between Mexican and English black lead-glazed wares without material studies such as petrography, x-ray fluorescence, or instrumental neutron activation analysis.

Figure 7. Black Lead-Glazed Coarse Earthenware.

Thus far, Black Lead-Glazed Coarse Earthenware has been documented in only two contexts. Two sherds were identified at the Palace of the Governors (Barbour 2010b) and one was found in association with the Baca-Garvisu/Godoy Estate (Lentz and Barbour 2010). The contexts in which these sherds were found dated to the eighteenth century.

**Interpretations**

From the perspective of the northern Rio Grande, Mexican lead-glazed earthenware comes in a variety of colors with green and orange-brown glazes occurring over the entire range of colonial occupation and into the Mexican Period (1598-1848). Clearly, all types discussed are diagnostic of manufacture in Mexico and so have some potential to provide information about the movement of Mexican items into New Mexico. Without material studies, however, it may be difficult to differentiate between items made in different parts of Mexico. Further, not all of them appear to be temporally diagnostic, which limits their potential to aid in dating specific contexts and to provide diachronic information.

Black Lead-Glazed Coarse Earthenware, acknowledged by both Deagan and Barnes, may be the only temporally diagnostic Mexican glazeware. In the case of the northern
Table 2. Frequencies of Mexican Lead-Glazed Earthenware from Several Locations in the Santa Fe Area.

<table>
<thead>
<tr>
<th>Location</th>
<th>El Morro Ware</th>
<th>Type Rey Ware</th>
<th>Black Lead-Glazed Coarse Earthenware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palace of the Governors</td>
<td>19</td>
<td>25</td>
<td>2</td>
</tr>
<tr>
<td>Baca Garvisu/Godoy Estate</td>
<td>22</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>South of the Santa Fe River</td>
<td>21</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>19</strong></td>
<td><strong>68</strong></td>
<td><strong>3</strong></td>
</tr>
</tbody>
</table>

Rio Grande, it appears exclusively in post-Pueblo Revolt assemblages (1692+). Table 2 summarizes frequencies of Mexican lead-glazed earthenwares found during several large-scale excavation projects within the Santa Fe area using Deagan’s typology. Although these types may not inform very accurately on the contexts in which they were found, several trends were identified during excavations.

Excavations at the Palace of the Governors revealed incised decorated Mexican lead-glaze earthenwares only in pre-Revolt contexts (Cordelia Snow, personal communication November 6, 2009; Barbour 2010c). These sherds resemble, but are not identical to, Barnes’s (1980:98-99) description of Incised Glazeware, which he tentatively dates between 1650 and 1750. However, the sherds are all small fragments that may represent a single vessel.

Also at the Palace of the Governors, some green-glazed sherds found in assemblages dating to the seventeenth century have a bright, vibrant color. These, like the incised glaze wares, are absent in assemblages dating after the Pueblo Revolt. A discussion with Natasha Williamson (personal communication March 21, 2003) suggested that this bright green-glazed ware was from Spain. However, no compositional analysis was undertaken to confirm the idea and the paste is similar to that of majolica manufactured in Puebla, Mexico.

Excavations of deposits at the Baca Garvisu/Godoy Estate dating to the eighteenth and nineteenth centuries revealed that Mexican lead-glazed earthenwares exhibit a wide range of variability in decorative styles, some of which do not conform to any description made by either Deagan or Barnes (Lentz and Barbour 2010). Mass produced by the eighteenth century, Mexican lead-glazed earthenwares typically represent no more than 20% of the Euroamerican ceramic assemblages which include much larger quantities of Puebla Majolica and Chinese Porcelain (Barbour 2010b; Barbour 2010c; Lentz and Barbour 2010).

Ultimately, we know very little about Mexican lead-glazed earthenwares in New Mexico. This presentation has briefly summarized two points of view on the subject. Deagan’s perspective lumps a great deal of variability into a few categories. Barnes creates many more type divisions that may be difficult to recognize in the archaeological record. Neither is completely satisfactory for the evaluation of Mexican lead-glazed earthenwares.

**SUMMARY AND CONCLUSIONS**

Past research on Mexican ceramics found in New Mexico has focused on majolica. However, majolica is not the only Mexican ceramic type that occurred in New Mexico’s developing frontier. During the course of this paper, an attempt was made to further the understanding and identification of native Mexican ceramic and Mexican lead-glazed earthenware sherds. However, these objectives were not completely met. Instead, I have pointed out the problems inherent in classifying these sherds and using them for particular diagnostic purposes. Examination of both previously published research and on-going investigations shows that many of the types are still poorly understood in terms of their manufacture and their spatial and temporal distributions. This should not be viewed as a criticism of past and present research, but
rather as recognition of our lack of familiarity with these wares and types.

Native Mexican ceramics found in the area appear to be largely from west-central Mexico. These ceramics could be indicative of slaves or servants within the village of Santa Fe or at the very least speak to the mestizo heritage of many of the city’s occupants. In addition, these wares bear a striking resemblance to Tewa-made red and black wares. It is possible that these native Mexican wares had an influence on locally produced ceramic types in the American Southwest. However, no comprehensive studies have been undertaken to confirm or dispute this hypothesis. Mexican glazewares are highly variable, but incised decoration, light green glazes and certainly black glazes appear to occur as temporally diagnostic indicators within the northern Rio Grande. However, current typological descriptions available to analysts may not be adequate for describing the variability within the archaeological record.

The assertions made during the course of this study are based on a small sample and should be viewed as a preliminary study. Rather than providing definitive conclusions regarding Mexican ceramic traditions in the northern Rio Grande, this paper suggests additional lines of inquiry. By providing a discussion and description, I hope to stimulate interest and aid in the identification of these types and wares by other archaeologists. Obviously, more research needs to be undertaken to augment these databases. The works of analysts elsewhere serve to provide an initial framework for discussing these sherds in New Mexico. However, if native Mexican ceramics and Mexican lead-glazed earthenwares are ever to be understood within the northern Rio Grande, archaeologists within the region need to address this topic in greater detail.

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Nicholas H. Beale and Don G. Wyckoff

THE X HOUSE BILLY SITE, AN ARCHAIC CAMP IN CHASE CANYON, COLFAIX COUNTY, NEW MEXICO

This study examines the X House Billy site, a late Archaic camp adjacent to Chase Canyon in Colfax County, New Mexico. X House Billy is one of only two Archaic sites known in the lower Poñil drainage of the southern Park Plateau. The other lies atop the high ridge directly west of Chase Canyon’s mouth, but its Archaic assemblage cannot be accurately sorted from late prehistoric habitation debris exposed there. In contrast, X House Billy artifacts implicate a short term, preceramic, hunter-gatherer occupation. Both sites were discovered in July of 2000 while the junior author was assisting Warren Lail in a reexamination of early sedentary Vermejo Phase (A.D. 400-700; Glassow 1971:113) encampments for his doctoral research (Lail 2008). Chase Canyon and the Poñil Creek valley below it are part of the historic Chase Ranch that is noted for prehistoric pueblos, historic Jicarilla camps, and a respected cattle spread in this part of New Mexico (Armstrong 1981; D. Gunnerson 1974; J. Gunnerson 2007). Our study honors the late Meliha Duran and her husband David Kirkpatrick. Meli was among the first to research Poñil drainage knapped stone, doing so while a student at Washington State University (WSU) (Duran 1973). David focused his WSU thesis on archaeological materials studied while working as an archaeologist for the Philmont Scout Ranch in the Poñil watershed west of Chase Canyon (Kirkpatrick 1975).

THE SITE, ITS SETTING, AND ITS STUDY

The X House Billy site is by one of the many canyons deeply incised in the Park Plateau (Figure 1). Well described elsewhere (Bauer 2010:255-263; Fenneman 1931:37-47; Robinson et al. 1964), the Park Plateau is a triangular upland area nestled between the High Plains and the Cimarron Range that fronts the Sangre de Cristo Mountains in northern New Mexico. Actually an uplifted syndinal basin containing Cretaceous and Tertiary sandstones, conglomerates, and shales, the Park Plateau tops out around 2590 meters above sea level where it rests against the Cimarron Range. Along the plateau’s eastern extent, however, its uppermost surfaces are from 2011 to 2300 meters above sea level. Here, the plateau forms an imposing southwest-northeast escarpment overlooking the High Plains section known as the Las Vegas Plateau (Robinson et al. 1964). The Park Plateau uplands (“benchlands” of Robinson et al. 1964) extend a maximum of 60+ km, and the west to east elevation differences result from two erosion cycles that created different peneplain surfaces. After peneplanation the Park Plateau was heavily eroded in Tertiary times, forming deep, southeast trending canyons; intervening high, wide ridges; and mesas isolated within and bordering canyons. This rugged landscape receives winter snow and July-August monsoon rain, but overall annual evaporation (>1000 mm) greatly exceeds annual precipitation (from 388 to 439 mm). Consequently, the Park Plateau supports dry montane woodlands of juniper, piñon pine, Ponderosa pine, and Gambel oak, all of which vary in density according to slope, aspect, and soil (Moir 1993:68).
Our site is some 36 m above the floor of Chase Canyon and 400 m northwest of the mouth of X House Billy Canyon (for which the site was named at the request of the landowner). Chase Canyon empties into Ponil Creek (Figure 1), a major watershed for the southern Park Plateau and adjacent Cimarron Range. Chase Canyon's headwaters are some 15 km east of these mountains in uplands 2440 meters above sea level. Local relief there approaches 50 m but it increases to some 245 m at Chase Canyon's mouth 17 km to the south. Along a tortuous meandering course, Chase Canyon drops over 400 m while seldom having a watershed more than a kilometer wide. Although heavily burned during a 2001 forest fire, Chase Canyon's slopes retain stands of piñon, Ponderosa pine, Gambel oak, snowberry, and skunkbush, whereas patches of pine, juniper, and occasional willow and cottonwood trees grow along the canyon's otherwise grassy bottomland. The stream in Chase Canyon is small (undersized for the canyon's width and depth), seasonal, and periodically flows over bedrock. During dry seasons, water is restricted to small pools and seeps. Mule deer, elk, black bear, and turkey are among the game animals observable along the canyon.

Topographically, the X House Billy site is positioned to look west over Chase Canyon. At this spot, Tertiary Poison Creek Formation sandstone (Robinson et al. 1964:Plate 3) forms an 8-m high vertical face, below which is a 28-m high, steep talus slope of large angular boulders that fractured from the cliff face (Figure 2). Gambel oak and deciduous brush prevail here, whereas piñon and Ponderosa pine are scattered along the slope's base (Figure 2). Northeast of the archaeological site begins a steep, rocky incline that rises within 300 m to a wooded crest that is 73 m higher than the site. The easiest access to the site is 600 m northwest where alluvium and colluvium along the south edge of Barilla Canyon's mouth create a traversable slope to the cliff top.

The artifacts from the X House Billy site are all surface finds. They come from a roughly oval area (nearly 40 x 50 m, or 2000 m$^2$) that was visited three different times:
the initial discovery in late July of 2000; four days of piece plotting during the 2003 University of Oklahoma Archaeological Field School; and a one-day inspection by the authors in April of 2008. No artifacts were recovered within 10 m of the bluff edge; here, only Poison Creek sandstone bedrock was exposed. Farther east, however, many flakes and a few chipped stone tools were scattered over a slight (<1.0 m), southwest trending, rocky rise (3% slope) that begins some 40 m back from the bluff edge. The site was discovered when hornfels flakes and several broken dart points were seen in the deep ruts of a vehicle trail across the northeast end of the rise (Figure 3). These ruts and a shallow soil profile subsequently dug adjacent them revealed a thin (5 cm) stony loam underlain by >20 cm of reddish yellow stony clay. This soil compares well with the Dargol stony loam series (Anderson et al. 1982:27-28). Where this soil occurred, artifacts were found resting only on top. At the lower margins of the rise, numerous scattered flakes and some tools were mapped eroding from a sandy surface horizon developed from slope wash and the weathering underlying Poison Creek sandstone. While piece plotting many artifacts, it became increasingly obvious that they were displaced. Given the surface context for all artifacts, the evidence for slope wash accumulating upslope from downed trees, and the high frequency of small, light weight flakes farthest from the low rise, we believe that the site has weathered extensively since it was occupied and that the artifact distributions reflect the effects of erosion far more than they do locations of prehistoric human activity. Despite this

Figure 2. View east-southeast of the bluff on which the X House Billy site is located.

Figure 3. View southeast across the trail-rutted rise where surface artifacts were first observed at the X House Billy site.
conclusion we focus on the chipped stone artifacts from the X House Billy site because Archaic assemblages and technology are little known for the Poñil drainage and the southern Park Plateau.

**X HOUSE BILLY SITE LITHICS AND TECHNOLOGY**

The collection from the X House Billy site totals 1,286 stone artifacts (Table 1): 423 surface finds from 2000; 509 (most piece plotted) items from 2003; and 314 surface finds made in 2008. Every specimen was weighed (in grams), and its length, width, and maximum thickness was measured to the nearest one-hundredth of a millimeter (Table 2). Recorded attributes include raw material, lithic category, flake stage, flake platform character, and flake termination.

Because diverse kinds of stone react differently when knapped, raw material identification is an important aspect of studying chipped stone technologies. Material type collections from the locality curated at the Sam Noble Oklahoma Museum of Natural History were our primary basis of stone identification. For each specimen, the raw material was noted and Munsell color charts were employed to standardize color recording. Many hornfels artifacts were heavily patinated, so we could not determine the stone’s actual color; such pieces were labeled indeterminate.

Because it makes up over 90% of the collection, Baldy Mountain hornfels is the focus of our study of the X House Billy site’s lithic technology. Hornfels is a metamorphic rock formed by magma intrusions altering already existing beds of shale (Bucher 2004). Baldy Mountain hornfels occurs on the southeast slope of Baldy Mountain (3810 meters above sea level in elevation) where it formed in siliceous shale (Ferguson and Skotnicki 2006). Through time, roughly parallelogram cobbles and boulders of hornfels have washed down Ute Creek and the Cimarron River (Figure 1). Hornfels occurs in gravel along the latter past the mouth of Poñil Canyon and well east on the Las Vegas Plateau (Wyckoff 2005:93). Although gravel beds were inspected along Poñil Creek’s several forks, no cobbles of this thinly laminated black-to-gray-to-blue (with gray-to-green cortex) material were found. Given its specific bedrock source, limited distribution, and distinctive character, Baldy Mountain hornfels offers a ready means to model hunter-gatherer movements and adaptations here in the southern Park Plateau.

**Raw Material Use at the X House Billy Site**

Baldy Mountain hornfels compose 94% (n=1177) of the chipped stone artifacts from this site (Table 1). Andesite, the next most common stone, represents less than 3% (n=26) of the assemblage. The third most common is obsidian at 1.2% (n=15), and it is manifest by flakes and a dart base (Figure 4) as well as by one side-notched arrow point. We regard this latter artifact as a late prehistoric intrusion on the site because it is smaller than several of the biface thinning flakes found there. Chert, quartz, and quartzite are very sparsely represented in the collection (Table 1), the latter by part of a second arrow point (uncertain style) that we believe was also incidentally lost at the location.

![Figure 4. Jemez Mountains obsidian artifacts believed associated with the Archaic occupation of the X House Billy site.](image-url)
Table 1. Percentages of Raw Materials among Artifact Classes at X House Billy Site.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Andesite</th>
<th>Indeterminate</th>
<th>Quartzite</th>
<th>Obsidian</th>
<th>Hornfels</th>
<th>Chert</th>
<th>Other (^1)</th>
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</thead>
<tbody>
<tr>
<td>Debitage</td>
<td>1219</td>
<td>2.0</td>
<td>1.4</td>
<td>0.7</td>
<td>1.0</td>
<td>94.3</td>
<td>0.6</td>
<td>0.2</td>
</tr>
<tr>
<td>Flake</td>
<td>11</td>
<td>-</td>
<td>9.0</td>
<td>-</td>
<td>-</td>
<td>91.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cores</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>25.0</td>
<td>75.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Bifaces</td>
<td>25</td>
<td>8.0</td>
<td>4.0</td>
<td>4.0</td>
<td>8.0</td>
<td>60.0</td>
<td>8.0</td>
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<td>Stage I</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>100.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stage II</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stage III</td>
<td>14</td>
<td>14.3</td>
<td>7.1</td>
<td>7.1</td>
<td>14.3</td>
<td>35.7</td>
<td>7.1</td>
<td>14.3</td>
</tr>
<tr>
<td>(projectile points)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>50.0</td>
<td>-</td>
<td>50.0</td>
</tr>
</tbody>
</table>

\(^1\) Includes quartz.

Baldy Mountain Hornfels

Artifacts of this material occur in many different colors that may or may not be banded. Cortex flakes and even finished implements exhibit noticeable gray to tan patina (Figures 5-7), a transformation that frequently occurs on this kind of stone in arid and semi-arid areas (Pineda et al. 1990). The X House Billy site's hornfels artifacts range from light gray to very dark gray. The majority are very dark gray with no banding. Only 12.7% (n=149) display banding, and these tend to be the lightest in color for the material. The presence of banding is believed associated with the highly variable knapping quality of the stone. Our experiments reveal it flakes readily in two directions but less so in the third. We have found it difficult, but not impossible, to make early or late stage bifaces by knapping perpendicular to the banding planes.

The Other Raw Materials

Steven Shackley identified six obsidian pieces (including the dart base) as coming from the Jemez Mountains, some 135 km west-southwest of the Park Plateau. So the obsidian materials are definitely exotic to this locality. The southern part of the Park Plateau, however, potentially has knappable stone besides hornfels. The 500 m thick Poison Canyon Formation contains beds of conglomerates with some pebble to cobble size clasts of quartz, micaceous quartzite, and chert (Ferguson and Skotnich 2006). Such conglomerates occur west of the X House Billy site; in Chase Canyon the formation is sandstone. Finally, light and dark colored chert pebbles reportedly (Ferguson and Skotnich 2006) occur in an Upper Cretaceous-Cenozoic stratum minimally exposed on Baldy Mountain. Such pebbles have yet to be seen in gravel bars along Poñil Creek (especially its South Fork which drains off Baldy Mountain), so we don’t think they were an important toolstone source for people frequenting this watershed.

As evident in Table 1, Baldy Mountain hornfels was overwhelmingly used at the X House Billy site. Despite its knapping idiosyncrasies, it was selected over potentially available clasts of chert, quartz, and quartzite. Three possibilities for this choice come readily to mind. For one, as Ferguson and Skotnicki (2006) note, the conglomerates and pebbly sandstones of the Poison Canyon and Mt. Baldy exposures contain small chert clasts. We suspect that such clasts were too small for the biface-oriented technology manifest at the X House Billy site. Secondly, although not always predictable in its knapping character, the Baldy Mountain hornfels occurs abundantly in the nearby Cimarron drainage where water was also consistently available. Finally, hornfels was durable and thus reliable, an attribute important for...

Debitage

The X House Billy site’s largest artifact class (94% of all recovered objects) is debitage, the broken and complete flakes and angular debris resulting from stone tool manufacture, resharpening, and reuse. To assess how this artifact class relates to human activities at this site, we explore the patterns manifest by flake stages, flake types, platform attributes, and flake terminations.

Flake Stages

By assessing the amount of cortex on dorsal faces of flakes, one can gain a rough perspective of the stages of cobble reduction being undertaken at a site (Rebnegger 2006; Wyckoff 1992; Yohe 1996). We have used the traditionally recognized stages of primary, secondary, and tertiary flakes. The latter dominate (88%) the debitage recovered from the X House Billy site. While tertiary flakes usually are the most frequent kind produced in stone tool making, they truly have a high frequency at this site. Large flakes with any amounts of cortex are very rare in the collection. On this basis, we believe the Late Archaic occupants of X House Billy mainly brought prepared cores, preforms for tools, and finished tools to this location. Early stage lithic reduction clearly was practiced elsewhere, and we would think that it was along the flowing Cimarron drainage west of the mouth of Ponil Canyon.

Flake Types

Using different combinations of attributes we identified eight different kinds of flakes. The first category is composed of cobble trimming flakes. These have cortex over, or partially over, their dorsal faces. Only 7% of the flakes from this site are classifiable as cobble trimming flakes. This low percentage is interpreted to indicate that Baldy Mountain hornfels was being extensively tested and shaped at the gravel or bedrock exposures where it was obtained. In essence, bulky, sometimes fractured, outer surfaces of hornfels cobbles were removed and the cobbles preliminarily shaped before being carried into these uplands where they would be further knapped into expedient or more finished implements.

The second category is core rejuvenation flakes (Crabtree 1972; Rebnegger 2006; Whittaker 1994). These exhibit many characteristics of a core: multiple flake scars or terminations of scars and conical shapes. Their removal provides new striking platforms on cores so that flakes of predictable shapes and sizes can be removed. Generally, prehistoric camps contain moderate numbers of core rejuvenation flakes, but the X House Billy site yielded only 2%. This low frequency, coupled with the few cobble trimming flakes, supports the conclusion that the X House Billy site residents brought few well-prepared hornfels cores to the location.

Our third flake type is interior flakes. Thick with little to no curvature, these have dorsal faces that retain portions of large scars from previously removed flakes. The dorsal faces display no cortex. Of the debitage from the X House Billy site, 21% are interior flakes.

Thinning flakes comprise our fourth flake type. These also lack cortex and display scars (from previously removed flakes) on their dorsal faces, but they are much smaller and thinner than our category of interior flakes (Table 2). Although platforms are diverse and lack overhang on the inner (ventral) face, thinning flakes are believed to be the byproducts of making bifacially flaked tools. Some have rather prominent bulbs and are considered to result from using small hammerstones or heavy antler (elk?) billets. At least 48% of the flakes from the site are attributable to this flake type.

We also distinguished obvious biface thinning flakes. These are characterized by bifacially flaked platforms that overhang the ventral face (e.g., Crabtree 1972:75). The examples in the studied collection tend to be small, curved, and without prominent bulbs. Biface thinning flakes made up 8% of the debitage recovered from this site.
Table 2. The Length, Width, Thickness, and Weight Ranges for Selected Hornfels Flake Classes.

<table>
<thead>
<tr>
<th>Flake Type</th>
<th>Range of Length (mm)</th>
<th>Range of Width (mm)</th>
<th>Range of Thickness (mm)</th>
<th>Range of Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Flake</td>
<td>13.48 - 49.09</td>
<td>10.63 - 44.76</td>
<td>2.60 - 16.06</td>
<td>0.2 - 41.4</td>
</tr>
<tr>
<td>Secondary Flake</td>
<td>7.87 - 70.57</td>
<td>6.37 - 46.30</td>
<td>1.69 - 27.59</td>
<td>0.2 - 99.8</td>
</tr>
<tr>
<td>Tertiary Flake</td>
<td>4.70 - 61.64</td>
<td>1.26 - 52.02</td>
<td>0.52 - 18.45</td>
<td>&lt;0.1 - 62.8</td>
</tr>
<tr>
<td>Biface Thinning Flake</td>
<td>7.10 - 41.46</td>
<td>4.41 - 36.18</td>
<td>1.00 - 11.37</td>
<td>&lt;0.1 - 7.0</td>
</tr>
<tr>
<td>Core</td>
<td>8.92 - 38.20</td>
<td>7.28 - 37.22</td>
<td>3.33 - 14.69</td>
<td>0.1 - 16.6</td>
</tr>
<tr>
<td>Rejuvenation Flake</td>
<td>9.10 - 70.57</td>
<td>7.02 - 46.30</td>
<td>1.86 - 27.59</td>
<td>0.2 - 99.8</td>
</tr>
<tr>
<td>Core Trimming Flake</td>
<td>5.30 - 40.47</td>
<td>7.83 - 52.02</td>
<td>2.5 - 18.45</td>
<td>&lt;0.1 - 40.7</td>
</tr>
<tr>
<td>Interior Flake</td>
<td>4.96 - 6.75</td>
<td>4.98 - 5.65</td>
<td>0.85 - 1.21</td>
<td>&lt;0.1 - &lt;0.1</td>
</tr>
<tr>
<td>Pressure Flake</td>
<td>4.70 - 40.76</td>
<td>1.26 - 30.47</td>
<td>0.78 - 8.33</td>
<td>&lt;0.1 - 5.6</td>
</tr>
<tr>
<td>Thinning Flake</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Our last recognized flake type is represented by pressure flakes. The few (1% of the total debitage) that were recovered are very small and narrow with little bulb prominence. The available examples are believed to result from applying pressure to retouch or resharpen both uniface and biface tools (e.g., Whittaker 1994: 127-176). The low frequency identified for the X House Billy site probably results from the small size of such flakes and their being overlooked during the respective collecting episodes.

Platform Attributes

Intentional modification of a platform aids in successful flake removal from a core or tool (Crabtree 1972; Whittaker 1994). Sometimes, platforms also retain clues to the type of percussor being used. In our analysis, flakes with platforms were relegated to one of three categories: unmodified, crushed, and ground. Unmodified consist of flakes with no visible platform preparation, whereas crushed are those with platforms largely destroyed by impact (probably by hard hammer, but possibly by heavy antler billets). Ground platforms exhibit smoothing or abrading marks created by rubbing the platform to strengthen it and thus helping to keep the percussor from crushing or slipping off during the application of force (Patterson 1979; Whittaker 1994).

Over 50% of the flakes with platforms showed no evidence of any kind of platform preparation. We interpret this to indicate that hornfels was being expediently worked because of its less than ideal isotropic character. Around 18% of the flakes with platforms are those that are crushed, and these are considered as evidence that a lot of force was being applied when working hornfels (a practice we have found important when knapping this stone). The X House Billy collection does contain a slightly higher proportion (25% vs. 18%) of platforms showing abrasion than crushing. Clearly, this site’s occupants found it helpful to strengthen edges when working hornfels.

Flake Termination

Differences in flake termination are directly attributable to amounts of force applied in removing flakes (Faulkner 1972:97-143), but they also convey subtle clues to the application of percussors to different kinds of stone and, ultimately, to the knowledge and skills of the individuals working the stone (Andrefsky 1998; Cotterell and Kamminga 1987, 1990; Crabtree 1972; Faulkner 1972;
We recognized five kinds of flake terminations in the collection. First is feather, which is when a flake gradually thins to its distal end; such terminations imply that the appropriate amount of force was applied to the platform spot where force was applied (Faulkner 1972:97-143). In the X House Billy collection, flakes with feather terminations total only 37%. Because hornfels often fractures in unexpected ways, such a low percentage is understandable.

Hinge terminations result when there is insufficient contact time between the percussor or force applicator and the piece being worked, and as a result the force is insufficient to drive the fracture front through the material (Faulkner 1972). Such results can create stacked flake scars and very thick areas on bifacially worked implements. Of the identifiable flake terminations for X House Billy, 11% display hinge terminations.

Like hinge terminations, step terminations represent an error on the part of the knapper. Basically, not enough force was applied to the spot where the force applicator struck the objective piece (Faulkner 1972). The termination basically has a 90° angle from the inside (ventral) to the outside (dorsal) face. It is possible that not all hinge terminations result from knapping errors. Hornfels flakes frequently break in two as they come off objective pieces. Also, livestock trampling could cause flakes to break in a similar manner. Consequently, with the X House Billy collection, close attention was paid to whether or not the step termination was patinated to the same degree as the rest of that flake’s surfaces. If it was, then we believed it was a knapping mistake; if not, then it was possible that cattle, elk, or deer might have stepped on the flake and broken it. This site’s flake assemblage exhibits more step terminations (40%) than any other kind. The combination of step and hinge terminations is 51%, but that high proportion is reasonable given the brittle fracture properties of hornfels.

Our last recognized termination category is outrepassé or overshot, and this refers to flakes that retain a notable portion of the side or edge opposite from where force was applied. Such terminations result from applying sufficient force to carry through the objective piece but the force being applied too far back from the platform edge (Faulkner 1972). Only two flakes from the X House Billy site exhibit outrepassé terminations.

** Flake Tools **

Eleven flakes show marginal trimming or flake scar sequences resulting from being purposefully shaped and used by X House Billy campers. Two of these are scrapers of hornfels; one is an end scraper formed by unifacial (dorsal) retouching around the flake’s margin. The rest are hornfels flakes exhibiting some retouching along one or more of their margins. These flake tools have dimensions consistent with flake scars on the cores and early stage bifaces described below, and we interpret them to be expedient implements made to accomplish tasks performed at the site. Overall, we suggest the paucity of flake tools at the X House Billy site results from a very short-term encampment, perhaps by a very specific task oriented, small group (Binford 1973; Hayden et al. 1996; Shott 1986, 1989).

** Cores **

Only four cores were recovered from this site. All are multidirectional and made from hornfels (Figure 5). These have very irregular forms which, along with their thicknesses and many different platform surfaces, are clues that they were not part of the continuum of making bifaces at this site.

** Bifaces **

Biface manufacture and use is well represented here. Diverse approaches are available for classifying bifacially flaked objects recovered from North American archaeological sites (Callahan 1979; Frison and Bradley 1980; Yohe 1996). After reviewing the site’s hornfels bifaces, we recognized three stages or classes of such artifacts. Our **Biface I** stage is composed of the thickest specimens, and these exhibit very sinuous edges; five examples are in the collection. Our **Biface II** stage consists of six ovate specimens which are thinner and
have less sinuous edges displaying bifacial flaking along their entire margins; examples are shown in Figure 6. Overall, although they may have been used as tools, all are broken in ways (usually transversely) that we believe occurred during thinning and shaping into hafted projectiles. Lastly, our Biface III stage consists of 14 thin specimens exhibiting well thinned blades and/or formal stems indicating their use as hafted knives and/or dart points (Figure 7). The haft areas were created by corner notching, resulting in rather wide stems with convex bases (Figure 7). Two blades display impact fractures emanating from where the tip would have been. Also, most blades are narrow and manifest several series of overlapping flake scars, suggesting they were resharpened more than once. One specimen has its basal corners broken (Figure 7).

CONCLUSIONS AND SUMMARY

Technological details from the chipped stone artifacts reveal that the X House Billy site was briefly frequented by a hunting oriented group who depended heavily on Baldy Mountain hornfels for flake and biface tools. Among these latter is a series of corner-notched, bulbous stem dart points displaying impact fractures from use as projectiles as well as transversely broken blades that snapped from bending stress while serving as knives. Also present are a few Stage II (unfinished) bifaces that are transversely or linearly snapped, most likely while they were being thinned for hafting to replace the broken, often resharpened projectiles/knives recovered here.

Two hornfels reduction trajectories are evident at the X House Billy site. The primary trajectory was making moderate size, thick bifaces; these could be sources for usable flakes as well as precursors to finished hafted bifaces (Figures 6 and 7). The other trajectory involved blocky, multifaceted cores (Figure 5). These bidirectional approaches to working hornfels might be gender related, but the scarcity of recovered cores and flake tools (such as a scraper that might attest to women’s activities) limits findings that could support such an interpretation. The X House Billy site is slightly more than 10 km from the Cimarron River where hornfels cobbles could be procured. A paucity of decortication flakes, the few shaped blocky cores, the many thinning flakes, and the several stages of shaped bifaces attest to the site’s inhabitants bringing hornfels to the camp in already shaped forms.

The collection recovered from the X House Billy site manifests a limited array of tools, and all of them are...
hunting or refurbishing hunting implements. The site's position high above and just downstream from a very narrow (30 m) segment of Chase Canyon leads us to believe that this was an occasionally used camp where hunters refurbished broken or expended projectiles/knives while watching for and plotting how to kill game.

Two arrow points found widely apart on the site indicate that the spot was visited by late prehistoric hunters. But the rest of the recovered artifacts are believed to relate to a brief occupation in earlier Holocene times. We estimate this occupation occurred between roughly 4500 and 3500 years ago. Our estimate is based on comparing the prevailing bulbous stem spear points with similar forms from stratified and/or dated contexts elsewhere in the Park Plateau, farther north in the Colorado foothills, generally in the Southwest, and in portions of the Southern Plains. In the Southwest, similar stemmed dart forms are assigned to the San Pedro type, which is thought to have been in use between 3500 and 2000 years ago (Beale 2007). In the Colorado foothills near Denver, bulbous stem spear points recovered at the Magic Mountain site occur in deposits interpreted to be 5000 to perhaps 3500

**Figure 6.** Broken Stage II bifaces of Baldy Mountain hornfels from the surface of the X House Billy site. The scale is in centimeters.

**Figure 7.** Broken or expended dart points of Baldy Mountain hornfels recovered from the surface of the X House Billy site. The two specimens on the left of the bottom row display impact fractures. The scale is in centimeters.
years old (Irwin-Williams and Irwin 1966). Zier (1999:113-137) reports similarly aged hunter-gatherer sites in the Purgatoire River section of the Park Plateau north of the X House Billy site. And in Texas and southwestern Oklahoma, the bulbous stem Palmillas spear point type was in use during our estimated period (Turner and Hester 1993:167).

Finally, because of its preceramic character, the X House Billy site is one of the first Archaic sites described for the southern Park Plateau. As mentioned in the beginning, a similar occupation is manifest at a mixed component site adjacent to the mouth of Chase Canyon. Other sites with comparable diagnostic artifacts undoubtedly occur in the Poilai drainage (where they may be deeply buried; Lail 2009:45-49) as well as along the Cimarron River where Baldy Mountain hornfels occurs as secondary deposits. We hope our brief report will stimulate the search for such sites so that more can be learned about hunter-gatherer adaptations prior to the arrival of horticulture.

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The Galisteo Basin has attracted archaeological and public interest for more than a century due to the dramatic and well-preserved landscape, impressive ruins with hundreds-to-thousands of rooms, world-class rock art, and dramatic roles in Spanish Colonial history, from the entrada to the Pueblo Revolt (Lippard 2010; Mednick 1996). It is easy to forget that the historic qualities of the Basin are no more or less dramatic than what was happening at the same times within the Santa Fe River Valley or the Tewa Basin, but the qualities of landscape preservation (minimal post-seventeenth century human damage and clutter) allow us to appreciate the Galisteo Basin in unique terms.

The underlying factor in the modern landscape preservation of the Galisteo Basin is a simple observation with major ramifications: through the modern time period, the region has been suitable for ranching but not farming. Not only has this narrow economic potential preserved the ancient ruins from the risk of modern overlays and destruction, but it also highlights the role of climate change in the history of the region. Although maize cannot be dry-farmed in the Galisteo Basin today, we have significant evidence of large pre-Spanish Pueblo communities that clearly were subsisting on maize as the staple of their economy.

The starkness of the contrast between the past and the present, and the apparently discrete nature of the Puebloan occupation in the Galisteo Basin, point to a climate anomaly that is dramatic. But that drama has not been self-evident in the existing paleoclimate reconstructions for the northern Rio Grande Valley. This paper focuses attention on this issue and proposes a climate model that appears to be applicable both inside and outside of the bounds of the Galisteo Basin.

PEOPLE AND ECONOMIC POTENTIAL

There is value in maintaining independence between settlement pattern reconstructions and climate reconstructions when seeking evidence of cause and effect. However, in the semi-arid and often “marginal” context of the Southwest, committed agriculturalists are as constrained by climate variation as is tree growth. The archaeological record suggests that the Galisteo Basin was effectively colonized and then abandoned by a farming economy within relatively narrowly defined threshold dates.

There is little evidence of residential agricultural settlement of the Galisteo Basin in the Early or Late Developmental periods, either anecdotally or in sample surveys (Lang 1977), and the Galisteo Basin is generally viewed as a hunting and gathering preserve prior to the Coalition period. This contrasts with a strong record of Coalition period homesteads and hamlets that are beginning to attract concerted research interest (e.g., Snead 2004, 2008). Late Coalition period components (late thirteenth century and later) are well documented in the Laboratory of Anthropology’s tree-ring collection program of the 1930s and other excavations (Robinson et al. 1973). The glossing of the rhythm of Galisteo Basin settlement as “Coalition” complemented that of the rhythm of abandonment of the Four Corners area, especially the late thirteenth century abandonment of the Mesa Verde region, implying a linkage (but see Boyer et al. 2010).

A survey of the catalog of tree-ring dated sites (Robinson et al. 1973), however, shifts attention to several earlier sites along the eastern margins of the Basin, in the
vicinity of Lamy and south along the route of U.S. 285. Mixed in with mid-to-late thirteenth century construction materials at LA 27 are several cutting dates in the A.D. 1180-1210 range (Robinson et al. 1973:20-23). One of the roomblocks at LA 1104 yielded non-cutting dates in the 1180s-1190s, but other roomblocks with cutting dates in the 1270s-1300s didn’t yield any non-cutting dates earlier than the 1230s (Robinson et al. 1973:24). Highway excavations at LA 3333 by Bertha Dutton yielded a sequence of tree-ring dated pit structures, the earliest of which has a cutting date of 1204rB with remodeling into the A.D. 1220s (Robinson et al. 1973:36).

John Ware conducted additional investigations at LA 3333 in the 1980s, confirming the nature of the early 1200s component. Dean Wilson (2008) has analyzed the pottery from the site, and the assemblage includes both Santa Fe Black-on-white and sherds that reflect early technological adaptations to local resources that culminate in pottery characteristic of Galisteo Black-on-white. Nancy Akins has studied both the fauna and burials from LA 3333 and characterizes the adaptation as one of greater mobility and diversification of subsistence than intensified agriculture (Ware and Akins 1992). These observations are consistent with a colonization model, and they suggest that we should look as early as the very late twelfth and very early thirteenth century for the “opening” of the Galisteo Basin to maize agriculturalists if not to maize agriculture.

Hamlets dominated by Galisteo Black-on-white pottery define the Late Coalition period, but this pottery also characterizes the Early Classic period through most of the fourteenth century. These latter components are defined at sites such as Las Madres by local Galisteo Black-on-white with small admixtures of glaze-on-red pottery (Schaafsma 1969, 1979). These fourteenth century components underlie several of the super pueblos (e.g., San Marcos and San Lazaro [Ramenofsky et al. 2009; Ware et al. 1996]), and contemporary sites are widely distributed outside of the boundaries of the super pueblos (Dutton 1964; Robinson et al. 1973; Snead 2008). This dispersed fourteenth century settlement pattern focuses attention on A.D. 1400 as the threshold for dramatic aggregation of population into the super pueblos. (We need to stop thinking about the large Galisteo Basin Pueblos as characteristic of the Classic Period and start thinking of them as a phenomenon within a portion of the Classic period.)

The tree-ring catalog (Robinson et al. 1973), systematic analyses of surface sherds (Ramenofsky et al. 2009; Ware et al. 1996), and anecdotal observations of Glaze B through Glaze D pottery define the fifteenth century as the peak of the eight large Galisteo Basin Pueblos. Scarcity or absence of Glaze E pottery at the five southernmost pueblos and a confirmatory stratigraphic record at San Lazaro Pueblo (Ware et al. 1996) suggest an abandonment of these sites at the beginning of the sixteenth century that was either permanent (Pueblos Largo and Colorado) or that lasted multiple generations (Pueblos She, Blanco, and San Lazaro). The historic record suggests that three large pueblos formed the heart of the Basin at the time of the Spanish entrada (the mid-sixteenth century), four pueblos were occupied during the seventeenth century missionization of the area, and the landscape was abandoned by the time of the reconquest at A.D. 1692 (Kessell 1979; Kessell et al. 1995; Nelson 1914; Schroeder and Matson 1965; Winship 1990). Observations of Glaze F at the non-mission pueblos of She and Blanco suggest small seventeenth century components at these sites; whether these reflect Pueblo or Spanish occupations is unknown.

The changing pattern of Galisteo Basin occupation is remarkable for its discreteness. In economic terms, the landscape supported non-residential hunting and foraging through the late twelfth century. It was colonized rapidly by farmers beginning in the A.D. 1190s and accelerating through the thirteenth century. Homesteads gave way to hamlets in the fourteenth century, culminating with the formation of large super-pueblos at about A.D. 1400. By A.D. 1500, these super-pueblos were in decline, progressing from south to north. After A.D. 1600, Spanish colonists added wheat, rye, and
domestic livestock to the economy, and the mission communities survived on this new economic mix until the 1680 Pueblo Revolt. By the time of the reconquest in 1692, the Galisteo Basin had been abandoned, and pueblos supported by maize-based economies were limited to the Rio Grande Valley, the Santa Fe area, and the Española and lower Rio Chama basins.

**CLIMATE RECORDS**

Tree-ring based climate reconstructions provide our most precise window on detailed climate variation. Northern New Mexico climate reconstructions for the period of interest (circa A.D. 1100 through 1600) include Palmer Drought Severity Indices (PDSI) (Orcutt 1991) and precipitation reconstructions (Rose et al. 1981). The underlying data are substantially similar, but the transformations and presentations differ.

Orcutt’s summation (Figure 1) consists of five-year running means of PDSI values, plotted on the fifth year. Her presentation begins at A.D. 1150, but it records the end of the Northern Rio Grande manifestation of the mid-twelfth century drought. The PDSI values reflect a brief strong positive moisture record for the late 1190s through early 1210s, coincident with the initial agricultural colonization of the Galisteo Basin. Significant negative values follow, and the 1230s through 1300 experience a few wet periods contrasted with more persistent and deeper dry periods that are nearly continuous from the 1270s through 1300. Nearly two generations of positive precipitation values, with almost no drought periods, characterize the 1300-1335 period. A deep and persistent drought lasts until the 1350s, and the remainder of the fourteenth century is a period of brief low-amplitude oscillations between dry and wet periods. A.D. 1400-1405, the threshold of large pueblo formation, is a five-year period of sharp drought, and the remainder of the fifteenth century is generally dry with decade-long wet periods beginning in the late 1420s and 1485. After a wet period that lasts until 1495, and through 1575, the sixteenth century has low-amplitude oscillations between short wet and dry periods. At 1575, a protracted and severe drought strikes that persists for a generation until 1595.

Rose et al. (1981) reconstructed past annual precipitation estimates based on data from Santa Fe, Arroyo Hondo, Arroyo Hondo Tree-Ring Departures

![Figure 1](image_url). Moisture reconstructions for the Northern Rio Grande region. The Arroyo Hondo curve represents August-July precipitation departures plotted as 10-year means calculated every five years (adapted from Rose et al. 1981:Figure 34). The PDSI values are five-year running means for the northern Rio Grande for the A.D. 1150-1600 period, with wet and dry periods marked for emphasis (adapted from Orcutt 1991:Figures 3, 6). Both figures were assembled by splicing scans of the originals, and there are slight misalignments in date scale registrations.
Figure 2. High elevation tree-ring series from the San Francisco Peaks, Arizona, and Almagre Mountain, Colorado. Both curves are data-derived and are presented as five-year running means plotted on the fifth year. San Francisco Peaks data are reconstructed mean maximum temperatures (Salzer 2000; Salzer and Kipfmueller 2005); Almagre Mountain data were compiled by Donald A. Graybill in 1984. Both data sets are available at ftp://ftp.ncdc.noaa.gov/pub/data/paleo/treering, San Francisco Peaks at /reconstructions/northamerica/usa/colorado-plateau2005.xls and Almagre Mountain at /chronologies/northamerica/usa/co524.crn.

and Glorieta Mesa. These are presented as departures from the mean in Figure 1, with 10-year means plotted every five years. The 1130s drought is the deepest and most persistent of the summary, but conditions oscillate around “normal” until the 1190s. Nearly 20 years of strong precipitation are centered near A.D. 1200. Drought periods at 1220 and in the 1250s and mild wet periods in the 1230s and 1290s are the highlights of relative low variability through the thirteenth century. A short severe drought at A.D. 1420 is followed by brief wet periods at 1430 and 1440. With only minor wet and dry from departures from “normal,” the 1450-1600 period is one of relatively low-amplitude variation. The 1560s through 1585 are characterized as a period of persistent negative departures but within the statistically normal range.

Tree-ring records of cold temperatures (shortened growing seasons at higher elevations, more effective moisture at lower elevations) are much more limited than precipitation records. Two high elevation tree-ring series have been applied to Southwestern climate reconstructions (Figure 2), one from Almagre Mountain (Petersen 1988) and one from the San Francisco Peaks (Salzer 2000). Petersen’s use of Almagre Mountain in his Southwestern Colorado climate reconstructions was initially dismissed as being non-applicable to the Southwest (Van West 1990). The subsequent development of the San Francisco Peaks record substantially parallels the Almagre record, validating the applicability of both to the Southwest region as a whole (Salzer 2000).

These records include a protracted cold period, initiated in the 1180s-1190s and persisting through the mid-thirteenth century. Additional cold periods occur in the mid fourteenth century, and from the 1430s through the early sixteenth century. These variations don’t stand out particularly, and by themselves they don’t suggest a categorical change in regional climate that would constitute shift to an agriculture-compatible climate in the Galisteo Basin. However, Petersen (1988) links the protracted continental cold with systematic modifications...
to the monsoon rainfall pattern in the Southwest: delayed onset and shallower penetration of the moisture laden air masses into the continental land mass. This model was proposed (and criticized) based on its relevance to the Four Corners area, but there are implications for the rest of the Southwest as well (from the northern Rio Grande Valley to Chihuahua).

The most intriguing element of current Southwestern climate models is the identification of a climate anomaly in a principal components analysis (PCA) of tree-ring chronologies from across the greater Southwest (Dean and Funkhouser 1995). Data for the study were averaged for 100 year periods, beginning in A.D. 689 and overlapped by 50 years. The study revealed a relatively consistent or “normal” pattern of spatial variability for most of the record, interpreted to reflect the modern pattern of bimodal (summer and winter) precipitation to the northwest and unimodal (summer) precipitation to the southeast (including the Galisteo Basin). This normal pattern gave way to a more chaotic situation for the A.D. 1239-1488 data aggregation periods. However, because of the aggregation intervals used, the disruption of the normal pattern was initiated at some point within the A.D. 1189-1239 period and returned to “normal” at a point within the A.D. 1489-1539 period.

Interpretation of this anomaly has focused on the Four Corners area (Cordell et al. 2007; Van West and Dean 2000), but the timing is remarkably coincident with the pulse of agricultural exploitation of the Galisteo Basin. The nature of the PCA pattern during the anomaly is that there is greater spatial coherence of tree growth in the southeastern than in the northwestern zone. There has been a tacit assumption that this represents a persistence of normal conditions in the southeast, but that need not be the case. The minimal implication of the PCA is one of synchronic coherence rather than a lack of diachronic change, and the anomaly may have been characterized by a new climate pattern over the Galisteo Basin and central New Mexico as a whole.

ALLUVIAL OBSERVATIONS

Unfortunately, we have no systematic and independent environmental observations for the Galisteo Basin. Fortunately, we have a variety of anecdotal observations that suggest potential yields from future research. I focus on two Galisteo Basin Pueblos that I know well: Pueblo San Lazaro and Pueblo San Cristobal. These pueblos are cut by deep arroyos that have reached a bedrock-controlled base level, exposing both natural and cultural deposits in the cut banks, and they represent both ends of the alluvial chronology sequence.

San Lazaro

In the late 1980s, a consortium of Southern Illinois University and the Museum of New Mexico conducted mapping and test excavations at San Lazaro Pueblo, supported by funds provided by the owner, Mr. Forrest Fenn. A cut bank created by the Arroyo Chorro exposed stratigraphic profiles through rooms and midden deposits, and a pit structure was exposed at the base of the cut. The pit structure’s surface of origin was near the modern arroyo base level, and the pit structure was associated with black-on-white pottery. Masonry rooms exposed in the cut bank above had floors more than 2 m below the surrounding plaza surfaces. These rooms were filled with laminated sands and silts, reflecting short depositional events with little evidence of structural collapse. The rooms were surmounted by later masonry rooms associated with the higher elevation of the fifteenth century plaza surfaces. A midden at the elevation of the buried room floors had been cut by the modern arroyo and was dominated by Galisteo Black-on-white with a scattering of Glaze A Red, dating the midden to the fourteenth century.

The early pit structure was constructed adjacent to the arroyo when the base level of the Arroyo Chorro was at its bedrock-controlled low elevation. Early rooms were also constructed adjacent to the arroyo at slightly higher elevations, but they were abandoned and subsequent construction was placed well above and farther back from the arroyo. My presumption is that the floodplain was
aggrading dramatically through the fourteenth and early fifteenth centuries. Stratigraphic observations that would distinguish room fill through architectural degradation vs. slack water inundation have not been made, but no evidence of catastrophic flooding has been observed in the arroyo profile. The model-to-be-tested is that the fourteenth and fifteenth century occupation of San Lazaro Pueblo was characterized by high effective moisture and aggradation, which forced residents of the pueblo to move back from their first homes adjacent to the floodplain and arroyo.

San Cristobal

San Cristobal Creek has been downcut to bedrock, and lateral movement of the channel is threatening the pueblo’s southeastern plaza and roomblock complex with erosion along a steep cut bank. The erosion is currently sectioning a large masonry-lined pit structure that has no visible surface depression on the floodplain above, contrasting with a later pit structure that is clearly evident back from the cut bank and at a slightly higher elevation. No date estimate is available for the sectioned structure, but it was abandoned and filled completely with laminated sediments while the roomblocks farther from the creek were still occupied. The glazeware types associated with this portion of the site are pre-Spanish, dominated by rim forms B, C, and D. There is no evidence of high energy deposition within the pit structure fill, but low energy deposition completely filled and obscured the pit structure location.

The more stark contrast at Pueblo San Cristobal is the landform segregation of the mission and convento complex from the Puebloan roomblocks and plazas (Huelster and Toll 2009:Figure 5). The mission and convento were built on a broad flat expanse of floodplain surface at the toe of the higher landforms on which the Puebloan roomblocks and plazas were constructed. If floodplain aggradation had been active in the seventeenth century, this construction location would have been untenable. The lack of Puebloan construction of any age on the same landform suggests that the construction at that elevation was off limits within the memory and traditions of the residents. Whether consciously or not, the mission exploited a newly stable landscape surface that was created and preserved by cessation of the previous period of floodplain aggradation.

CONCLUSION

Because of dependence on an agricultural economy, Puebloan culture history in the Galisteo Basin was controlled by an underlying rhythm of climate change. Since today’s climate will not support maize agriculture, we look to the past for evidence of both farmers’ settlement decisions and climate change. The mid-twelfth century drought that marks the end of Chaco as a central place was also expressed in the Rio Grande Valley. We see the first movements of Northern Rio Grande farmers onto the Pajarito Plateau (Harmon and Vierra 2008; Orcutt 1999) and, by the late twelfth century, into the Galisteo Basin. This initial movement coincides with both a clearly defined moist period between A.D. 1190-1210 and the onset of a continental cold period. Both the cold and wet may be correlated with the onset of a categorical change in Southwestern climate as documented in the PCA of tree growth (Dean and Funkhouser 1995). This change, bracketed within the A.D. 1189-1539 period, not only allowed maize agriculture in the Galisteo Basin, but it may also have redefined agricultural potential from the Four Corners (negatively) to northern Mexico (positively).

In the Galisteo Basin, the apparent environmental consequence of the climate change was an increase in effective moisture (floodplain aggradation). In the complicated scenarios of Southwestern climate systems, it is tempting to interpret the nature of the categorical climate change as the persistence or even slight intensification of the summer monsoon pattern (moisture that was no longer reliably being delivered to the Four Corners area), coupled with a stronger and more consistent pattern of winter moisture. More winter moisture would stabilize the landscape with more spring vegetation, as well as preparing the soil moisture balance for more reliable germination conditions for maize agriculture.
Human response to the new agricultural niche was immediate (late twelfth century) and progressive (through the thirteenth and fourteenth centuries). The only detailed investigations to date are at the northeastern portion of the Basin, and they point to homesteading by populations with ties to the Rio Grande Valley, not the San Juan Basin (Wilson 2008). No site unit intrusions that can be linked to “Mesa Verde migrants” have been identified despite intensive if unsystematic searches (see Dutton 1964), although one component at Pueblo Colorado with pottery reminiscent of Middle Rio Grande affiliations hints that the search for migrant origins needs to keep a broad focus (Steven A. Lakatos and C. Dean Wilson, personal communication, 2010).

The super-pueblo phenomenon in the Galisteo Basin appears to be a discrete period of aggregation that begins about A.D. 1400. The identification of environmental correlates of the aggregation is weak in measures of both temperature and precipitation. This lack apparently validates the investigation of social variables (conflict or threat of conflict) in the decisions to aggregate. PDSI values are dominantly negative through the middle fifteenth century, with a longer period of cooler temperatures. Nothing in either the annual precipitation or temperature reconstructions suggests a crisis or tipping point at the start of the super-pueblo abandonment at about A.D. 1500. However, warmer temperatures and severe drought in the PDSI record define the threshold of Spanish colonization in the 1590s.

The slow sixteenth century decline and abandonment of the southern Galisteo Basin is poorly explained by the annual record of precipitation and temperature, but it is coincident with the macro-climate anomaly identified by Dean and Funkhouser (1995). The return of the “normal” geographic pattern of tree growth coincides with: 1) the progressive abandonment of the Galisteo Basin pueblos; 2) the precipitous decline in Northern Rio Grande population (see Dean et al. 1994:Fig. 4.9 [but with the proviso that the population peak should be pushed later from A.D. 1300 to circa 1450, eg., Maxwell 1994]); and 3) the transformation of Apachean occupants of the Four Corners region into horticulturists (Wilshusen 2010). Petersen’s (1988) moving agricultural window is a useful analogy, but at an interregional scale.

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In 1948, as a fifteen-year-old Senior Girl Scout, I met Bertha Dutton. The two weeks I spent on her Girl Scout Mobile Archaeological Expedition through northern New Mexico and Arizona opened my eyes to another world of landscapes, peoples, and history. It was an experience which helped shape my life. Therefore, to write or talk about Bert it is important to talk about her teaching and mentoring more than 280 teenage girls during the 1940s and 1950s. We called ourselves Dutton's Dirty Diggers from the beginning. We are part of the legacy she has left to the field of anthropology and archaeology and to the broader world of history. She was one of the people who taught me that history includes all aspects of human culture. For many of us she was a teacher, a role model, a mentor, and a lifelong friend.

Born in Nebraska in 1903, Bertha Pauline Dutton grew up a small town girl with a limited future. Her father farmed, operated general stores, and moved the family about regularly in Nebraska and Kansas. Eventually Bertha was able to attend high school in Ottawa, Kansas, where a teacher awakened her interest in ancient history and archaeology.

A move to Broken Bow in the sand hills of Nebraska interrupted high school in Ottawa. With a new store, farm, and partner, Mr. Dutton found he was overworked and enlisted his daughter to help with the farm work. The University of Nebraska maintained an extension of its School of Agriculture in Broken Bow, however, and Bertha took advantage of its classes. In 1923, she finally graduated from high school in Ottawa, Kansas, where a teacher awakened her interest in ancient history and archaeology.

In 1932, she arrived in Albuquerque and registered at the University of New Mexico. Interestingly, almost half of the 1,100 students at the university were enrolled in anthropology, thanks to Dr. Edgar Lee Hewett. Hewett’s dynamic teaching combined with fascinating field schools attracted the students. Bertha had the opportunity to learn from outstanding teachers such as Clyde Kluckhohn, Marjorie Ferguson (Lambert), and Lansing Bloom (history). At the end of her first year, she was hired as department secretary, working directly with Hewett. She met many dignitaries and became friends with the faculty. And she continued to study. She attended field school in Jemez and Chaco Canyon as well as in Peru and Bolivia. In 1935, she received her undergraduate degree.

In 1936, Bertha moved to Santa Fe to become the Director’s Assistant at the Museum of New Mexico.
Since Dr. Hewett was Director, Bertha continued to juggle his activities with hers. In 1937 she went on a field school in Guatemala after receiving her Master's degree. The year 1938 saw her back in Guatemala working with Hulda Hobbs. That same year the Museum of New Mexico created a Department of Ethnology and made Bertha curator, in addition to being the Director's Assistant. She designed the hall and the exhibits for the new Hall of Ethnology which opened in 1941.

She traveled the state for the Museum, speaking about the cultural heritage of New Mexico. These lectures provided good publicity for the many small museums which were developing in places like Mountainair, Portales, and Silver City, and stimulated interest in New Mexico museums and history. She also made many friends around the state. Among these friends was the Lee H. Marmon family of Laguna Pueblo. Lee Marmon was a noted photographer and his daughter Leslie Marmon Silko became a famed novelist and poet. Bertha became a member of the family. Mrs. Marmon regularly wrote to her in Santa Fe, opening each letter with the phrase, “This is little mother speaking....”

She took a sabbatical leave in 1945–46 and completed most of her doctoral work at Columbia University. She lived in New York much of time. In December 1946 her apprenticeship was finished; that was also the year Dr. Hewett died.

That same year, after her return from New York City, the Girl Scouts of the USA approached her about organizing and leading mobile archaeological trips for Senior Girl Scouts (high school students). Subject matter for the trips would include Indian Pueblos, forest and desert flora and fauna, geology, archaeological excavations, and museums. Thus the girls would come to understand the relationship of humankind to nature, the theme of Hewett's field schools, which Bertha whole-heartedly endorsed. Travel would be by automobiles, and the girls would camp for the two-week trips. In 1947, the first Girl Scout Mobile Archaeological Expedition completed a circle tour from Santa Fe to Flagstaff and back and set the model for future expeditions.

The number of girls for each trip was set at 16 high-school-age Senior Girl Scouts. Bert selected the girls from their applications, looking for camping experience and interest in archaeology and history. The route varied on each trip, because many girls returned. Two girls, Evelyn Stobie of St. Louis, and Vorsila Bohrer of Prospect Heights, Illinois, never missed a summer with Bert, taking trips and helping in the excavations. By 1949 there were two groups each summer and eventually she led as many as three trips in a summer. Starting in 1951, girls excavated Pueblo Largo in the Galisteo Basin, camping onsite for two weeks. Between 1947 and 1957, about 280 girls participated in the expeditions and excavation. Bert, as we called her, was our role model, our mentor, and an encyclopedia of knowledge.

The mobile expeditions required scouting every route in detail before the girls arrived. Bert visited each site, arranged speakers, checked camping facilities, and spotted good stores and post offices. This travel widened her knowledge of the area and increased the number of her friends throughout northern parts of New Mexico and Arizona. It also meant that there were fewer mishaps on the trips. Travel by automobiles in the post-war period meant frequent flat tires, broken springs, and occasional other mishaps. During the 1948 expedition, for instance, 13 flat tires and two broken springs occurred. The girls learned to help change tires and pack the vehicles. This was all part of their education.

Camping was both a joy and hard work. Tents were pitched each night. By using a Girl Scout kaper chart, a method for assigning camp jobs, the girls came to experience every aspect of group camping and traveling from gathering firewood to cleaning latrines. They helped with cooking, even though a cook accompanied each group. They learned to pack quickly in the mornings and to enjoy brief lunch stops.

For each trip or dig, the group gathered during the first year at Hyde Memorial State Park outside Santa Fe and in later years at Bert's home on Zia Road. They were oriented to the trip during a day in Santa Fe. At the Museum of New Mexico they listened to Margaret Tichy
and other staff. The National Park Service welcomed them with talks by Natt Dodge, Charlie Steen, and others. By the time Tuesday morning broke, the girls were ready for adventure.

Each trip included a visit to Mesa Verde or Chaco Canyon. Because many girls returned for several summers, routes were changed and camping sites varied. Wupatki National Monument and Sunset Crater were about as far west as they went. Visits were made to the Four Corners area and southern Colorado. For several summers a camping stop was made at Datil, New Mexico, to have Agnes Morley Cleaveland tell stories about her life around the campfire. Among the people the girls met and listened to and questioned were Albert Schroeder, Dr. John Colton, Dr. Watson Smith, Gordon Vivian, and many local persons.

As they traveled, the girls learned more about the geology, flora, fauna and human life around them. A naturalist accompanied every trip, along with a Girl Scout staff member. Jack Stacy, who had been in the tour business in New Mexico and Arizona since 1926, accompanied the group as driver, master mechanic and owner of the vehicles. Those riding in Bert’s vehicle also listened to her narratives about the country and the people.

Girls from all over the country came to learn, camp, and enjoy. Over the years, more than half the states were represented. Twins and sisters came. The Girl Scouts included African-Americans. Two of Agnes Cleaveland’s nieces were campers. Bert also made a special effort to include girls from the Pueblos and the Navajo Reservation. Scholarships were provided by the American Association of University Women and Bert’s friends. Costs were kept as low as possible, and the members of the staff on trip and digs were volunteers.

The excavation at Pueblo Largo was a unique experience. Bert realized, listening the girls, that many really wanted to dig, to participate in an excavation. So through her connections she obtained permission to work at Pueblo Largo in the Galisteo Basin. For six years, Girl Scouts camped and dug. Bert taught each how to make accurate, complete field notes. Today, those notebooks are in the archives of the Laboratory of Anthropology where archaeologists can consult them. Someday maybe they will be published. When the girls started work they were the second group to excavate at Pueblo Largo, a large site. A previous survey and some digging had been done in 1912 but nothing since, until the Dirty Diggers appeared. And no further excavating has been done since they left.

By the end of two weeks, a spirit of camaraderie prevailed. Songs had been written, photos taken and intellects awakened. Dutton’s Dirty Diggers became a unique sisterhood. Many friendships continued over the years as the girls headed for college or business school or marriage. Letters and Christmas cards kept them in touch with Bert, who always had a special Christmas letter for the alumnae.

Senior Girl Scouts are generally an exceptional group, for it takes confident, capable young women to stay in Girl Scouting through the high school years. Thus, the Dirty Diggers were an unusual group to begin with, and Bert gave them more confidence and more inspiration to adventure and achievement. Of approximately 283 Girl Scouts who were Diggers, about 20% went on to earn doctorates. Several became physicians, one of whom set up practice in Santa Fe. There were lawyers and historians. Chemistry, physics, and English were also represented among the Ph.D.’s. Mary Ann Stein, Vorsilla Bohrer, Catherine Fowler, Nettie Adams and Ernestine Green made careers in anthropology, ethnology and archaeology, along with Larry Hammack who was inspired by his aunt, a cook at the dig at Pueblo Fargo.

Despite the amount of work involved with the Girl Scouts and her regular duties at the Museum of New Mexico, Bertha found time for other activities. In 1952, she received her doctorate from Columbia University. Listening to questions from her Girl Scouts and museum visitors, she realized that a good, short history of New Mexico Indians would increase awareness and understanding. Her New Mexico Indians Pocket Handbook first appeared in 1948. Revisions appeared regularly over the
next years with various title changes until 1975 when her major book *Indians of the American Southwest* was published. She was also appointed to judge pottery and other crafts at the Indian Market in Santa Fe, the Gallup Inter-tribal Indian Ceremonial, the New Mexico State Fair, the Arizona State Fair, and other places.

Meanwhile, she continued her archaeological research and excavations, working in southern Mexico, Yucatan, Guatemala, and at Las Madres in the Galisteo Basin. She received grants and fellowships to support her work and published the results regularly. Another major publication, *Sun Father's Way*, resulted from a decade of finding blocks of time for research and writing. This *magnum opus* reproduced and discussed the kiva murals from the pueblo of Kuaua at Coronado State Monument near Bernalillo, New Mexico.

Her title and responsibilities at the Museum changed over time. From Curator of Ethnology, she became Curator of Exhibits, Curator of the Division of Anthropology, and finally Curator of Research. Retiring from the Museum of New Mexico in 1965, she began a new career as Director of the Museum of Navajo Ceremonial Art (now called the Wheelwright Museum of the American Indian). For ten years she worked to modernize the museum and to effectively portray Navajo culture.

Bert traveled extensively to attend international conferences, both as speaker and audience. In Spain, Argentina, Italy, France, and Japan, she found friends, made new friends, and explored different cultures and history. She also served on the Board of the International Council of Museums. Her interests in archaeology were wide ranging, and she enjoyed foreign visits, which often included archaeological sites.

She loved Santa Fe and was deeply involved in the community. The Community Concert Association, the Santa Fe Theater, Altrusa, the League of Women Voters, and the Old Santa Fe Association benefited from her contributions. She was deeply involved with the American Association of University Women over the years. The Santa Fe branch supplied scholarships for girls to go on the archaeological expeditions. At least one member was on the staff of a trip. In 1952, she received that Minnie Comnock Blodgett Research and Excavation Fellowship from the AAUW Educational Foundation. This fellowship enabled her to work in Guatemala and Metapa, Mexico. The Albuquerque Branch of the AAUW developed an exhibit at the Museum of Albuquerque honoring 13 outstanding women of New Mexico, including Bertha Dutton, Natachee Scott Momaday, Laura Gilpin, and Pablita Velarde. The exhibit ran from February 1 to June 6, 1976. This was the year that Bertha retired a second time.

New Mexico State University recognized her in 1973 by awarding her an Honorary Doctor of Law. The university recognized her constant work to preserve and disseminate the Indian culture of the southwest. She also served on the Board for New Mexico State’s Kent Museum. Other honors followed. The Girl Scouts gave her the Thanks Badge, the highest award for Girl Scout volunteers. The National Park Service appointed her New Mexico’s representative on the National Park Service’s Southwest Advisory Committee. In 1978, the Archeological Society of New Mexico made her an Honorary Life Member. Despite her retirement, Bert was still busy.

In 1983, on the occasion of her eightieth birthday, the Dirty Diggers came together to honor their leader and mentor. Gathering in Santa Fe, they shared memories of the past and toasted Bert. She spoke of the many girls, now grown women, who had become friends and colleagues. All of us felt privileged to have traveled and worked intimately with such a extraordinary woman, a true “Treasure of New Mexico.” For us, she was the person who opened our eyes and minds to new worlds and opened our hearts to the southwest.
NOTE

Jo Tice Bloom was a member of the 1948 expedition. She went on to earn a Ph.D. in American history at the University of Wisconsin-Madison. Over the years she taught in Wisconsin, Maryland, Virginia, the District of Columbia, Afghanistan, California, and finished her formal career at New Mexico State University. Her husband, John P. Bloom, is a native New Mexican whose family knew Bertha, beginning with her studying at the University of New Mexico. Both the Blooms feel like frustrated archaeologists at times, but continue to work in Southwest history. They now live in Las Cruces, New Mexico, where Jo continues teaching New Mexico history at the New Mexico Farm and Ranch Heritage Museum.

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Bertha P. Dutton Collection (unprocessed), Laboratory of Anthropology Archives, Museum of Indian Arts and Culture, Laboratory of Anthropology, Santa Fe New Mexico. [Note: Diane Bird, Laboratory of Anthropology Archivist, advises that as of 2010, the Dutton Collection, including the subseries “Girl Scout Collection,” is not available to researchers, pending completion of processing. Jo Bloom and three other “Dutton Dirty Diggers” have been assisting with the processing.]

Bohrer, Vorsila

Fowler, Catharine S.

Jo Tice Bloom: Personal papers and conversations with other Dirty Diggers.
ECHOES OF THE POCHTECAS

INTRODUCTION

Many years ago I was struck by a similarity between the layout pattern of a map of space and time from Codex Fejérváry-Mayer, a Mesoamerican book dating from the Postclassic, and modern Navajo drypaintings based on a radial layout. It was not until recently that I learned that this codex was a guide for the pochtecas, the long distance merchants of Mesoamerican city-states (León-Portilla 1985). This increased for me the probability that there may have been Mesoamerican inspiration for this particular layout in religious art in the Southwest. In this paper I consider that possibility.

THE POCHTECAS

León-Portilla (1985) calls the Codex Fejérváry-Mayer a "Tonalámatl de los Pochtecas" and describes it as a manual carried by these merchants in order to be able to know on which dates they should appeal to their gods, the offerings to be made, and the dates propitious for setting out on a trading expedition as well as those on which to begin their return. The name "pochteca" in Spanish and English derives from the Aztec's Nahuatl language pochtecatl, "merchant." Tonalámatl in the same language is "almanac" or "calendar" (Herrera 2004:140, 196). The pochtecas traveled "all over Mexico" to obtain the products of varied ecological zones and foreign cultures and are said to have acted as spies who provided the Aztec rulers with information that might lead to future conquests (Valliant 1948:114). The profession of merchant was recognized by other Mesoamerican cultures as well such as the Mayas (Tedlock 2010:205, Figure 55) and the Mixtecs (Spores 1984:81-85)."
The first page of the manuscript, which is painted on deerskin and folded rather than bound, displays a remarkable depiction of space and time as conceived by its author. It has features characteristic of diverse peoples including Nahuatl-speakers, Mixtecs, Zapotecs, and Mayas, numbers being written in the system of the latter (León-Portilla 1985:13-14; Seler 1901-1902:3).

The layout of the “map” on the first page is a radial pattern enhanced by color-directional symbolism (León-Portilla 1985:31). Dots in the border count the days of the 260-day divinatory calendar that was long integral to Mesoamerican reckoning of time. A somewhat similar calendrical representation of Mayan origin is in the Madrid Codex, one that is more concerned with calendrics than geography. A simpler representation of the day-count alone by holes carved in rock outcrops and temple floors show that it was in use at least as early as the occupation of Teotihuacan (Aveni et al. 1978; León-Portilla 1985; Tedlock 2010:231-232).

In the tonalamatl of the pochtecas the outline of the design forms four trapezoids located in the cardinal directions with 13 day counts on each side and across the top. In the intercardinal directions a very long arch resembling a narrow horseshoe has 13 day counts on each side. This produces 20 sets of 13, totaling 260. The outlines of the trapezoids are color-coded to indicate the cardinal directions and delineate four wide pictorial fields. In the intercardinals the outlines, except for one, are not colored and each borders a narrower field. A square in the center represents the center of the world (León-Portilla 1985; Seler 1901-1902).

The Fire God is in the central square. In each trapezoid is a tree flanked by a god on either side and with a bird perched on top. There is a plant in each intercardinal field, on two of which a bird is perched. Above each plant and superimposed on the outline is a bird facing inward, wings spread and a shield on its back. In addition, glyphic motifs appear in various locations, each with calendrical and divinatory significance (León-Portilla 1985; Seler 1901-1902).

East is at the top of the map, this orientation best indicated by the War God standing with his head in that direction. The gods, trees, and plants all radiate outward, feet and roots toward the center and heads and tops toward the outline.

The depictions in the trapezoids appear to relate to geography. León-Portilla (1985) and Seler (1901-1902) provide species identifications for some of the trees, plants, and birds. Although I do not feel confident that all their identifications are correct, allusions to geography and products of native commerce seem clear, especially in the cacao tree in the southern field and a thorn-covered tree in the north, indicating the humid tropics in one case and the arid deserts in the other.

**NAVAJO RADIAL DRYPAINTINGS**

(see Figure 2)

Figure 2. Sketch of a generalized radial Navajo drypainting with emphasis on features similar to the Tonalámatl layout.
Drypaintings, more popularly called “sandpaintings,” are used in Navajo curing ritual to attract the deities’ aid in restoring a patient to good health. They lack calendrical significance and only rarely are made for divination. There are three major layouts—radial, linear, and extended center, the radial being the most common. There are literally hundreds of compositions known with a great diversity of motifs (Wyman 1983).

A guardian border surrounds the paintings, but is open on the east. When copies are made on paper or in weaving, this opening is at the top. The border may appear in various motifs, the rainbow deity being most frequently used, but others include a rainbow rope, a rainbow garland, a mirage garland, lightning arrows, snakes, and paired sunflower plants. A central motif locates the composition. This is often a circle variously outlined and representing a body of water or a mountain. Other central motifs include a house of a deity, an ant hill, a hearth, and many others.

There are eight radial pictorial fields, four wide fields in the cardinal directions, and four narrower intercardinals. In the cardinal fields the most usual motifs are depictions of deities. Their number may vary from one to four, but one or two are most common. They stand with their feet toward the center, either erectly parallel or diverging on a radius. Faces are always frontal, but bodies may be either frontal or in profile.

Plants are most usual in the intercardinals. Favorites are the four sacred crops (maize, beans, squash, and tobacco), but maize in all four directions is not uncommon and medicinal herbs in the four directions are frequently shown. Though not common, small birds are sometimes shown perched on, or in flight above, the plants.

There are two guard motifs at the opening in the border, generally life-forms such as insects, snakes, birds, small mammals, or supernaturals, although objects such as tobacco pouches and stars sometimes appear. A multitude of subsidiary motifs may be included in various locations within the border depending on requirements of the particular ceremony.

COMPARISONS

The fact that only one example of a pochteca almanac from central Mexico is known while we have hundreds of copies of Navajo drypaintings precludes comparison on strictly equal terms. The almanac is a more complex composition than any single drypainting, but the unending variation in motifs and combinations in the drypaintings presents another kind of complexity. My description above is based on a subset of the totality of radial paintings that most approach the layout of the almanac, rather than on the diversity that Navajo creativity has introduced over several centuries.

Color-directional symbolism is a very general concept that is widespread in Native American religious thought. The four directions are themselves of more concern in low and middle latitudes, whereas in the high latitudes of the Subarctic and Arctic, directional usage is more often in terms of the landscape such as “up-river” and “down-river.” When and where the Navajos’ Athabaskan ancestors first learned to emphasize the cardinal directions and color associations is unknowable, but in the Southwest these concepts were doubtless learned at an early date, possibly along with the spread of agriculture from the south. That they should be manifested in both the almanac and the drypaintings is not evidence of immediate Mesoamerican influence for they were present in both areas long before the almanac and the drypaintings existed. The same may be true for the mutual use of an eastern orientation.

The use of a locator symbol, whether with relation to the universe as a whole or to a vicinity or region as it appears in these two traditions may be the result of diffusion directly or through intermediate peoples. The cosmic view of a sedentary people contrasts here with that of a more mobile society.

The radial layout of four major pictorial fields in the cardinal directions and four minor fields intercardinally is a not uncommon idea interculturally, but in its content a more specific relationship seems indicated.
The use of two deities in each major field positioned with feet inward and heads outward is another specific correspondence.

The lack of trees in the cardinal fields is a difference that must be noted.

The parallel in the use of plants in the intercardinal fields is another specific similarity.

Birds above the plants, whether perching or flying, is another specific trait in this complex.

**DISCUSSION**

It is important to keep in mind three things in consideration of the similarities and differences in comparing the almanac map and the drypaintings. First is the fact that it is a comparison on the one hand of a product of the very complex culture of a strongly stratified society with cities, impressive architecture, a large population, and an economy long based on intensive agriculture, opposed to that of a small tribal society with a rural settlement pattern practicing a balance of hunting, gathering, and horticulture in which the people were accustomed to considerable mobility. Second, the artistic traditions of Mesoamerica and the Southwest differ dramatically. The almanac was done in an as yet poorly understood style within the Mesoamerican tradition. The sandpaintings are in a distinctive style within the Native American art tradition of the Southwest. Finally, the purposes of the two kinds of illustration are entirely different as mentioned above.

The complexity of the map in the almanac is preserved in permanent physical form that could be kept and carried by the leader of a party of traders and the information it contains makes possible calendrical knowledge requiring mathematical computations for divination in terms of astronomical observations.

Traditionally, Navajo drypaintings were, and in ritual use today are, impermanent. Their production depends on knowledge in the minds of Navajo religious practitioners for accurate reproduction on each occasion of use at the homesites of scattered patients. The actual production is done by assistants and volunteers under the direction of the curer.

Under these differing circumstances, codices, the work of trained professionals, can include considerable detail in a single production, but a drypainting is in a medium in which many can participate in its production. It contains only the information that can be depicted in a portion of a single day. This requires a frugal inclusion of only the detail considered necessary on each occasion of use.

Under these circumstances, the fact that any one drypainting is simpler than a codex illustration intended for repeated use can be understood. Complexity in drypaintings is produced by the diversity of a multitude of paintings to fit differing circumstances.

The absence of trees between the deities in drypaintings may well be one aspect of this simplification in terms of detail. It might be noted that the use of a maize plant or sunflower plant flanked by deities does sometimes appear in Navajo linear compositions (Wyman 1983:48, Figures 10, 12, 64, Figure 22), a possible transposition of a concept into another pattern. Lineal layouts are frequent in Mesoamerican codices, including upper and lower rows. These layouts seem too basic to allow any strong argument that Mesoamerica is the source for the Navajo usage in its entirety, but the use of horizontal ranks above and below may well be another trait of Mesoamerican origin.

Although the forms of the borders differ, the mere fact that the use of borders is a shared idea, providing a space within which human beings can assert control of an orderly environment, is significant.
CONCLUSION

Overall I feel that the two layouts have sufficient similarity that a hypothesis that one influenced the other is worthy of consideration. The direction of influence would almost certainly have been from Mesoamerica to the Southwest. There is enough similarity in the layouts that direct contact should not arbitrarily be discounted, but it is not a necessary assumption.

The manner of transmission of influence can only be considered with quite speculative scenarios, but it is worth presenting a few here. My favorite, but not necessarily the most likely, would be direct contact by a pochteca carrying a codex with a picture similar to that in the tonalámatl, either in late precontact times or after having come north with one of the very early Spanish expeditions. In the latter case, only the Coronado entrada is convincingly early enough for trade by pochtecas to be considered likely. Coronado had far more native Mexicans than Europeans under his command, people who were not well described in the surviving documentation of the expedition (Flint 2008:58-62). It is not difficult to imagine a few native traders who still followed pochteca-like customs joining for their own purposes and separating from the army once they reached places where they wished to do business.

A Navajo oral account that may dimly reflect direct contact with pochtecas describes the Navajo in the story of the origin of a ceremony being shown paintings on a deerskin by the Holy People who told him to memorize the paintings, but to do them as drypaintings when conducting the ceremony (Wyman 1983:43).

In precontact times less direct influence seems possible as well. Should pochtecas have reached the Southwest and influenced the art of a Pueblo society, transmission of that influence to the Navajos is not at all unlikely. As far as we know, no other Southwestern people use this radial layout today (Wyman 1983). In this case it might have been a culture that did not survive into the present from whom the Navajos learned.

In dealing with an artistic medium as ephemeral as drypainting, archaeological remains cannot be expected to provide the kind of traces that would fill in the story. Perhaps kiva murals will yet reveal something relevant. In any case, I believe my hypothesis is worthy of consideration in terms of the art history of the Southwest.

ACKNOWLEDGMENTS

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NOTES

1. Spores (1984:81-85) considers Mixtec merchants to have been only part-time specialists, but this is an inference, based on limited data. The possibilities for full-time specialization in a society where extended family support could assist need to be considered here.

2. Rock art symbols consisting of two concentric circles crossed by lines at right angles to each other were produced by pecking or drilling 260 pits, 100 in the outer circle and 80 each in the inner circle and the lines. They are found from Guatemala and Yucatan through the Valley of Mexico to Durango near the Tropic of Cancer, both in open sites and in temples (Aveni et al. 1978).


4. Two pre-contact cultures that no longer exist or do so in altered form but that may have had contact with pochtecas are the Chaco culture in the northern Southwest and the Casas Grandes culture in Chihuahua, Mexico. The late date of the latter suggests it was a more likely intermediary for the influence suggested here.

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THE DEPOSITIONAL SEQUENCE AND CERAMIC CHANGE AT THE TSOGUE SITE, LA 746, ON TESUQUE PUEBLO LAND, SANTA FE COUNTY, NEW MEXICO

BACKGROUND

Quivira Research Associates (QRA) conducted tests in June 1999 at Tsogue, LA 746, at the request of the Pueblo of Tesuque. The Pueblo feared the possibility of damage to subsurface cultural deposits and slumping of the midden on the site's east face during proposed road construction. Prior work at LA 746 was conducted by J. W. Allen (1973), who excavated a Pueblo I-II (P I-II) pithouse in conjunction with road construction.

PREHISTORY IN THE TESUQUE VALLEY

(Note: Portions of this section are from Condie et al. [1999:3-4], but McKenna searched files at the Laboratory of Anthropology, Santa Fe, and conferred with Steve Lakatos at the Office of Archaeological Studies to bring this brief overview up to date. Lakatos was kind enough to provide us with an advance copy of a chapter to be included in the final report on the widening of U.S. 84/285 [Lakatos and Montoya 2007].)

Although a few scattered sites in areas adjacent to the Tesuque Valley hint at Basketmaker occupations (Lang 1995:23), Anasazi life seems to have been a late starter in the Tesuque Valley itself. However, when village construction began, it began with a vengeance. Perhaps as part of the A.D. 800s P I–II (middle Rio Grande Developmental period) expansion into the San Juan Basin from the Red Mesa Valley near Grants, settlers flooded into the Tesuque Valley during the latter part of that century, building on hills and terraces near well-watered floodplains. In his detailed overview of the Tesuque drainage, Lang notes (1995:24-26) that 40 sites contain Red Mesa Black-on-white (B/W) ceramics. One of us (McKenna) adds (in 2010):

A real boom in population takes place at A.D. 900 and pretty much skyrockets thereafter as we proceed down a Developmental time-line leading to eventual aggregation of population into nucleated settlements. An overview of the early Developmental settlement pattern in the Tesuque Valley suggests that there are at least three central places or key settlement clusters: LA 835 (the Pojoaque Grant site), the Tsogue ridge (where the Tsogue site is located), and the Tesuque Y area. So—settlement is NOT scattered willy-nilly all over the valley but is organized around focal communities.

The A.D. 1100–1200 late Rio Grande Developmental period (the equivalent of P II in the area) is also well represented in the Tesuque Valley, with 46 sites containing Kwahe’e B/W, the key pottery for this time period. As in the Red Mesa period, aggregation into villages was still occurring (Condie and Franklin 1992:12), but Lang believes (1995:28) there may have been a decrease in population resulting from a decrease in precipitation that lasted throughout the whole period.

Santa Fe B/W, a carbon-paint ware that appeared about A.D. 1200, marks the Rio Grande Coalition period (A.D. 1200–1325) or P III in the Pecos classification. Lang reports (1995:28-29) 19 sites that contain both Kwahe’e and Santa Fe B/W and 17 sites that contain Santa Fe B/W but no sherds of the earlier Kwahe’e B/W or of post-Santa Fe B/W types. The increase in population density over the A.D. 1100-1200 period is
doubtless a result of the increase in precipitation recorded for this time period (Lang 1995:29).

The Rio Grande Classic period (A.D. 1325–1600) equates with P IV (A.D. 1300–1600). In the Tesuque Valley and elsewhere along the Rio Grande the period is characterized by large villages constructed along permanent watercourses. Rio Grande Glazewares appear and carbon-painted Wiyo B/W (which developed from Santa Fe B/W) and Biscuit wares are the hallmark ceramics.

LA 746, TSOGUE SITE

The Tsogue site lies within the Pueblo of Tesuque and is located on and around a residual terrace (Figure 1). The site’s extent was once believed to be approximately 250 m northwest-southeast by 100 m southeast-northwest (20,000 m²), but an archaeological testing project to the north and utility excavations to the south indicate a larger, but still undefined, site area.

LA 746 is primarily a P I-III village. It was founded sometime between A.D. 700 and 800, and was finally abandoned in the period of A.D. 1200–1300. It contained at least one pithouse on the south side of the east-west road into the present village from U.S. 84-285 (this pithouse, partially destroyed when the original road was cut, was excavated in 1972 [Allen 1973]). Two extant P III room blocks on the terrace top (marked by Santa Fe B/W sherds) were presumably constructed of adobe, now melted. Tsogue contains a large midden on the east side, but subsurface charcoal stains and artifacts are present on the west slope and on the north and east flats below the terrace. A sherd and lithic scatter covers the site.

FIELD PROCEDURES

QRA conducted a series of tests (see Condie et al. 1999:4, 7, 9), but the most relevant here is that we hand-excavated, prepared measured drawings, and photographed two test (“phone booth”) columns, each 50 cm deep (into the face) by 1 m wide. Column 1 reached a depth of 200 cm from the top of the face. Column 2 reached a depth of 150 cm. Figure 2 shows profiles of the columns and contains a description of the strata. As will be apparent from Figure 2, the Tsogue midden reflects a formation sequence similar to that of many other middens (as opposed to a sequence of flat, parallel living floors)—intermittent dumping at different locations along the east midden face. Continuity in the ceramics, however, indicates that habitation was essentially uninterrupted for 400 years beginning about A.D. 700 and continuing to
about A.D. 1050. After that, until about A.D. 1300, habitation apparently continued, but dumping shifted away from the east face.

Peter McKenna, of the Bureau of Indian Affairs, was in the field at the same time as QRA and excavated a .5 m by 1 m test pit on the flat to the east of the terrace (Test Pit 8). The test pit extended to a depth of 110 cm, but did not reach sterile (see Condie et al. 1999).

**PREVIOUS CERAMIC WORK AT TSOGUE**

Allen’s salvage work (1973) established the Tsogue site as having a long series of deposits extending from P I through early P III. Allen characterized the site as having a strong “Red Mesa horizon.” He noticed that the Red Mesa B/W appeared to have been traded in, but the neck-
banded utility along with it seemed to be locally made (Allen 1973). His observations remain valid today.

In the early 1990s a sourcing study, using x-ray fluorescence (XRF), on pottery from the Pojoaque Grant Site (LA 835) showed that most of the decorated ware was imported from sources outside the region, likely from the southwest of the northern Rio Grande, prior to A.D. 1100 (Wiseman and Olinger 1991). Subsequently, further work with LA 835 tree-ring data established that LA 835’s ceramic sequence, and hence the history of occupation in the region, was coeval with events in the Four Corners area, indicating that the occupation of the northern Rio Grande was not a delayed or anomalous colonization of the region as was previously held (Wiseman 1995).

McKenna (1998) conducted a cultural resource survey for a road running next to the site. Condie and Franklin (1992) reported the results of testing and ceramic identification at five proposed house lots nearby. Our LA 746 analysis (Condie et al. 1999) confirmed and further expanded the findings of earlier investigators. The following is a summary of that more detailed report.

RESEARCH GOALS AND CERAMIC METHODOLOGY

The extensive midden deposits and long occupational history at Tsogue provide a unique opportunity to study ceramic change from about A.D. 700 to 1200. No other locality in the Tesuque Valley has been shown to possess this time depth. Thus, a major goal was to trace the history of its occupation through its ceramic changes (Condie et al. 1999). Fortunately, the stratigraphic sequence could be compared to the typological sequence of ceramic types. The types represented have all been dated elsewhere, some better than others. This allows a comparison of stratigraphic and typological change in the midden deposits.

Analysis methods included identification of Southwestern pottery type and variety by both Franklin and McKenna independently. All pottery collected was analyzed—most of it twice. Samples included all ceramics collected on this project, including midden, surface transects, and other tests. McKenna also re-examined Allen’s material stored at the Museum of New Mexico (see Table 1). Paste and temper were examined using binocular microscopes (10-30x). In addition, many samples were refired (oxidized to 910°C) to reveal the brightest oxidized clay colors in the paste. Identification of the resulting colors was made using a Munsell Color Chart. These colors were later divided into major color groups, following the Munsell color groupings in a scheme Windes (1977) had devised for the Coal Gasification Project. These groups, ranging from dark red to light yellow and buff, reflect the presence of iron and other impurities in the original clay body. These in turn help identify clay sources over wide geographical areas. Thus, we were able to utilize the dimensions of pottery type, tempering material, and refired color to view groupings or associations of these three variables. These in turn were examined with respect to stratigraphic change in the midden.

CERAMIC TYPES AND GROUPS

In general, the Tsogue ceramics belong to recognized types in the region, and have typically been previously described in the literature. They possess dated associations, although some are better dated than others. Together, these types span the Basketmaker III (BM III) to P III periods. Previous work by McNutt (1969), Allen (1973), and McKenna (1998) had established that Tsogue had a long ceramic history.

The ceramic inventory at LA 746 shows considerable temporal breadth, possibly spanning as much as 600 years in total (Table 1). The earliest types date from BM III times, estimated to begin perhaps as early as A.D. 700. This early complex (Table 2) consists of White Mound and Kana’a B/W from the Cibola Whiteware series. There are minor amounts of Drolet B/W from the Chuska area. Rosa B/W, San Marcial B/W, and Mogollon Red-on-brown (R/Br) are also part of this assemblage. Redwares include Sanostee and Abajo Red-on-orange (R/O) from the Four Corners—northern San Juan. Utility pottery of this complex includes Lino series grayware, both plain-surfaced and neckbanded. Some
Table 1. Ceramic Summary from the 1973 and 1999 Excavations at the Tsogue Site (LA 746).

<table>
<thead>
<tr>
<th>Pottery</th>
<th>A.D. date span</th>
<th>Column 1</th>
<th>Column 2</th>
<th>Test Pit</th>
<th>Other 1999 Summary</th>
<th>Allen 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Column 1</td>
<td>Column 2</td>
<td>Test Pit</td>
<td></td>
<td>tests</td>
</tr>
<tr>
<td></td>
<td></td>
<td>*U</td>
<td>*L</td>
<td>*U</td>
<td>*L</td>
<td>*L</td>
</tr>
</tbody>
</table>

**Grayware**

**Tesuque tradition**
- plain gray: 600-1050
  - 215 103 133 254 219
  - 1466 2390 65%
  - 635 448
- striated plain: 650-750
  - 20 26 7 9 43
  - 70 175 5%
  - 128 59
- fugitive plain: 650-750
  - 5
  - 5 <1%
- wide neckbanded: 770-900
  - 3 4 2
  - 14 27 1%
  - 62 23
- narrow neckbanded: 850-1050
  - 10 6 4 2 35
  - 124 181 5%
  - 138 70
- neck corrugated:
  - - -
  - 7 9 <1%
  - 8 4
- indented corrugated: 1050-1300
  - 1 - 3
  - 106 110 3%
  - 124 208
- smeared indented: 1200-1400
  - 3 - 1
  - 142 146 4%
  - 11 3
- Honani/Taos Toolied:
  - - -
  - 6 6 <1%
  - 2 -
- rim fillets:
  - - -
  - 4 23 27 <1%
  - -

**Cibola tradition**
- plain gray: 575-1050
  - 2 3 - - 2
  - 16 23 <1%
  - 28 10
- wide neckbanded: 760-920
  - 2 - 5
  - 7 <1%
  - 4 2
- narrow neckbanded: 870-1050
  - 2
  - 1 <1%
  - 4 2
- indented corrugated: 1030-1200
  - - -
  - 4 -

**Other utility**
- Pajarito grayware:
  - - -
  - 5 3
- brownware, plain:
  - - -
  - 14 3
- micaceous plain:
  - - -
  - 1 - trace
- Sub-totals:
  - 401 426 307 1976 3110 85% 2002

**Percent**
- 87% 85% 90% 84% 81%

**Whiteware**
- Rosa B/W:
  - 700-900
  - 1
  - 1 7 <1%
  - 2 -
- Mogollon R/Br:
  - 700-760
  - - - - - - 1 1
- White Mound B/W:
  - 700-850
  - - - - 2 - 2 <1%
  - 5 -
- San Marcial B/W:
  - 750-950
  - - 1 - - 1 1 <1%
  - 1 3
- Drolet B/W:
  - 825-900
  - - - - - - 1 trace
  - -
- Kiatuthlanna B/W:
  - 825-950
  - - - - - - - 4 -
- Early Red Mesa B/W:
  - 895-910
  - - - - - - 3 6 <1%
  - 15 15
- Newcomb B/W:
  - 875-1000
  - - - - - - 1 1 trace
  - -
- Red Mesa B/W:
  - 900-1050
  - 2 3 4 8 10 36 63 2%
  - 63 17
- Gallup B/W:
  - 1025-1150
  - - - - - - 2 2 <1%
  - 5 6
- Puerco B/W:
  - 1030-1200
  - 1 1 trace
  - -
- Kwah'ee B/W:
  - 1030-1200
  - - - - - - 1 trace
  - -
- Taos B/W:
  - 1090-1400
  - - - - - - 1 1 trace
  - -
- Santa Fe B/W:
  - 1180-1350
  - 2 5 2 84 94 3%
  - 5 -
- Wiyo B/W:
  - 1300-1400
  - - - 3 3 <1%
  - 2 1
- Chaco-McElmo B/W:
  - 1075-1150
  - - - - - - - - 2
Table 1. (continued) Ceramic Summary from the 1973 and 1999 Excavations at the Tsogue Site (LA 746).

<table>
<thead>
<tr>
<th>Biscuit A &amp; B</th>
<th>1375-1550a</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>1</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P I-III m/w and unpainted white</td>
<td>18</td>
<td>22</td>
<td>7</td>
<td>41</td>
<td>18</td>
<td>165</td>
<td>271</td>
<td>7%</td>
<td>134</td>
</tr>
<tr>
<td>&gt;P II c/w</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>61</td>
<td>64</td>
<td>2%</td>
<td>9</td>
</tr>
<tr>
<td>Sub-totals</td>
<td>54</td>
<td>76</td>
<td>33</td>
<td>368</td>
<td>531</td>
<td>460</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>11%</td>
<td>15%</td>
<td>10%</td>
<td>15%</td>
<td>14%</td>
<td>19%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Red &amp; Other Wares</th>
<th>smudged brown</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>-</th>
<th>1</th>
<th>1 trace</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanostee R/O</td>
<td>825-875b</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
<td>&lt;1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Abajo R/O</td>
<td>725-850b</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>&lt;1%</td>
<td>-</td>
</tr>
<tr>
<td>San Juan Redware</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>3</td>
<td>&lt;1%</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>White Mountain Redware</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>&lt;1%</td>
<td>3'</td>
<td>-</td>
</tr>
<tr>
<td>Tsegi Orangeclayware</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Jornada Red</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>&lt;1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>glazeware</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>historic matte</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
<td>&lt;1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tewa buffware</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Sub-totals</td>
<td>8</td>
<td>2</td>
<td>0</td>
<td>17</td>
<td>2</td>
<td>2</td>
<td>&lt;1%</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Percent</td>
<td>2%</td>
<td>trace</td>
<td>-</td>
<td>1%</td>
<td>2%</td>
<td>1%</td>
<td>trace</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand totals</td>
<td>463</td>
<td>504</td>
<td>340</td>
<td>2361</td>
<td>3668</td>
<td>100%</td>
<td>2469</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*U = upper unit; L = lower unit; see Table 2 for 10-cm units included in “U” and “L” in Columns 1 and 2 and Test Pit 8.

B/W = Black-on-white, B/R = Black-on-red, R/B = Red-on-brown, R/O = Red-on-orange, m/w = mineral paint on white; c/w = carbon paint on white.

Jornada Brown-12, Alma Plain-5; Chaco B/W-1; Escavada B/W-3; Biscuit A-5; Puerco B/R-1.

Condie et al. (1999), Wiseman and Olinger (1991); Toll and McKenna (1997); Windes and McKenna (2009); Peckham (1989), Windes (1977); Breternitz (1966); Powell (1996);

sherds display fugitive red pigments. Other sherds appear more brown than gray in actual hue. Firing methods were not yet standardized, and a range of firing coloration was the result. Cibola grayware composes only 2% of the utility at the site, however, and is present mostly in the earliest levels.

A second group or “suite” of types spans the time of A.D. 900–1050 or 1100, or P I–P II (Table 2). Included are Kiatuthlanna, early and late Red Mesa, Gallup, and Puerco-Escavada B/W. Contact with the Chuska Valley continues, in the form of Newcomb B/W. Local production of mineral-painted ware in the Tesuque Valley is represented by Kwahe’e B/W after A.D. 1050. Utility wares of the period are typified by a local Tesuque utility ware (granite and schist tempered). This striated-surface Tesuque grayware dominates the utility assemblage in P I and afterward. Smaller quantities of Chuska Grayware, tempered with sandstone basalt (trachyte), and Cibola Grayware (sand tempered), are also present. Included are texturing stages of plain gray, neck banded, and indented corrugated, spanning the P I to P II phases.

A third suite of associated types spans the period of A.D. 1050 or 1100 to 1300, conforming closely to the P III time frame (Table 2). This complex is dominated by Santa Fe B/W, although smaller amounts of Kwahe’e, Taos, and Chaco-McElmo B/W are minor accompaniments. Later post-1300 carbon-painted types of Wiyo B/W and the Biscuit types A and B of the northern Rio
Table 2. Pottery Assemblage Percentages in the Tsogue Midden (Columns 1 and 2, Test Pit 8).

<table>
<thead>
<tr>
<th>Pottery Assemblage</th>
<th>Lower* Unit Percentages</th>
<th>Upper* Unit Percentages</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Early</strong> (White Mound, Kana'a, Drolet, Rosa, &amp; San Marcial B/W's; Mogollon R/Br; Sanostee &amp; Abajo R/O's; Tesuque utility)#</td>
<td>79%</td>
<td>21%</td>
<td>127</td>
</tr>
<tr>
<td><strong>Middle</strong> (Kiatuthlanna, Red Mesa, Gallup, Puerco-Escavada, Newcomb, &amp; Kwah'e B/W's; Tesuque utilities, Chuska &amp; Cibola graywares)</td>
<td>73%</td>
<td>27%</td>
<td>114</td>
</tr>
<tr>
<td><strong>Late</strong> (Santa Fe, Kwah'e, Taos, Chaco-McElmo, Wiyo, &amp; Biscuit A &amp; B B/W's; Tesuque utilities)</td>
<td>31%</td>
<td>69%</td>
<td>16</td>
</tr>
</tbody>
</table>

*Lower unit consists of all 10-cm units in Test Pit 8 (0-70 cm), 10-cm units below 110 cm in Column 1, and 10-cm units below 90 cm in Column 2. Upper unit consists of 10-cm units above 110 cm in Column 1 and above 90 in Column 2 (essentially, to modern grade). See Fig. 2, herein, for scale drawings of Columns 1 and 2.

#B/W = Black-on-white, R/Br = Red-on-brown, R/O = Red-on-orange.

Grande are also present, but scarce at this site. As Santa Fe B/W is the latest type with significant numbers at Tsogue, it is likely that population was in decline by A.D. 1250, and may have ceased by 1300. Utility pottery is typified by indented corrugated and smeared-indented corrugated, conforming to area-wide styles, but produced in the local Tesuque Valley almost entirely.

**STRATIGRAPHY AND CERAMIC CHANGE**

Ceramics were obtained from several loci in and around Tsogue in 1999. The best stratified deposits were in the midden, where depths approached two meters. Here, two test columns were excavated in 10 cm levels. Test Pit 8, on the flat east of the terrace, also contained stratified deposits. The natural stratigraphic changes through time (Figure 2), as well as 10 cm depth control, produced good means of evaluating temporal change.

Stratigraphic change in ceramic frequencies tended to confirm the sequence of dated types mentioned above. Although the stratigraphic sequence is not entirely clean or “layer-cake,” in these test pits and columns, it represents the longest complete deposition in the area. The body of the midden itself is a record of about 400 years of occupation and deposition starting at about A.D. 700 and ending at about 1050. The later pottery types, especially Santa Fe B/W, appear mainly in other areas of the site, rather than in the loci chosen for testing the midden profiles.

The trends in the three midden tests are substantially the same, and can be summarized together. Lowest levels are dominated by White Mound, Kana-a, and some Kiatuthlanna B/W. Early trade ware from the San Juan (Abajo R/O) and the Chuskas (Drolet B/W) are part of this assemblage. With time, large amounts of Red Mesa B/W replaced Kiatuthlanna in the middle and upper layers. Near the top, Red Mesa declined, and a bit of Puerco-Escavada is present. Scattered in the top layers are some Gallup B/W and Santa Fe B/W. After A.D. 1050, deposition of material ceased at the east midden face.

In the utility category, Tesuque tradition granite- and mica-tempered ware dominated in all strata. However, some verified Cibola and Chuska graywares occur in the early levels. Slow change from wide to narrow neckbanding is detected through time. Indented corrugated is present in minor amounts only in the topmost levels, with Santa Fe B/W.
The specific frequencies per 10-cm midden level are given in Condie et al. (1999:59-61). Here, we will summarize by simply condensing these figures into two major units—upper and lower—according to the three major pottery assemblages described above. The relation between three major ceramic groups and upper versus lower location in the midden is shown in Table 2. There is a strong concentration of Early assemblages in the lower midden strata (79%). The Middle assemblage is still associated with the lower part of the midden, although less so. A more major break occurred in the upper part of the midden, where the Late ceramic assemblage composes 69% of the sherd totals. Despite having been “collapsed” into Table 2, the data still display a clear trend from Early to Late assemblages as we go upward in the stratigraphic record. A more drastic change occurs between the Middle and Late assemblages in the upper strata. This may signal altered residential and depositional patterns starting about A.D. 1050. After this, occupation until A.D. 1300 is apparent, but deposition shifted to other parts of the village area.

**LOCAL PRODUCTION AND CERAMIC TRADE**

Data on manufacturing areas were collected through ceramic typology, paste, clay, and tempering materials analyses. Results yielded information on the original manufacturing locations of Tsogue ceramics and, thus, the directions of trade and exchange—sometimes over long distances.

**Production Areas**

Assignment of specimens to a ware, series, and type provides immediate geographical referencing to a region. Accurately done, typological identification carries geographical information. Additional paste color and temper data serve to confirm and solidify geographical origins. Every sherd was analyzed for temper and 660 sherds were refired to assess origin.

Local Tesuque Valley utility of all ages at the site is heavily tempered with granitic rock or micaceous schist, which is easily identifiable. Local whiteware, developing in the form of Kwahwe’e and Santa Fe B/W also utilized

<table>
<thead>
<tr>
<th>Table 3. Pottery Wares by Refired Color Groups, Tsogue Site, LA 746.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pottery</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Utility Ware</strong></td>
</tr>
<tr>
<td>Tesuque tradition</td>
</tr>
<tr>
<td>Cibola tradition</td>
</tr>
<tr>
<td>Pajarito tradition</td>
</tr>
<tr>
<td>Brownware</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Whiteware &amp; Redware</strong></td>
</tr>
<tr>
<td>San Juan Basin*</td>
</tr>
<tr>
<td>Northern Rio Grande**</td>
</tr>
<tr>
<td>Unidentified whiteware</td>
</tr>
<tr>
<td>Redware***</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Percent</strong></td>
</tr>
</tbody>
</table>


The color groups are based on Windes’ grouping of Munsell color names for use in analyzing the ceramics from the CGP survey (Windes 1977:Table 10.5). For example, “buff” includes Munsell names “white, very pale brown, pink, pinkish gray,” etc.
Table 4. Pottery Tempers by Refired Color Groups, Tsogue Site, LA 746.

<table>
<thead>
<tr>
<th>Primary Tempers</th>
<th>Color Groups</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>buffs 0-3</td>
<td>yellow-reds 4-5</td>
<td>reds 6-7</td>
</tr>
<tr>
<td>Granite*</td>
<td>5</td>
<td>397</td>
<td>25</td>
</tr>
<tr>
<td>Sand/sandstone</td>
<td>125</td>
<td>44</td>
<td>1</td>
</tr>
<tr>
<td>Tuff</td>
<td>20</td>
<td>26</td>
<td>1</td>
</tr>
<tr>
<td>Trachyte</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>San Juan igneous</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Unknown igneous</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>156</td>
<td>468</td>
<td>36</td>
</tr>
<tr>
<td>Percent</td>
<td>23.6%</td>
<td>70.9%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

*Tradition distributions: Granite—Tesuque-87%, Sand/sandstone—San Juan and Cibola wares-94%, Tuff—Northern Rio Grande whiteware-72%.

+See Table 3 note on color groups, herein.

Fine granitic rock together with sherd temper. These Rio Grande-Tesuque Valley types oxidize to a yellow-red or red based on local clay sources. The Pajarito tradition is spatially related, and fires to a yellow-red, although temper is dominated by volcanic tuff. Table 3 demonstrates that the Tesuque and Pajarito utility, as well as northern Rio Grande whiteware, tend to fire yellow-red or red.

By contrast, Cibola graywares and whitewares made in the wider San Juan Basin (especially the Cibola-Chaco district) contain white or light buff pastes. Temper is sand or sandstone. The separation of the Cibola-Chaco series wares from the others is shown clearly in refiring tests (Table 3). Previous work has consistently demonstrated the use of low-iron buff-firing clays with sand-sandstone temper in the Cibola whitewares of the Chaco and wider southern San Juan Basin (Franklin 2006; Reed 2006; Toll and McKenna 1997:118-152).

Farther west, ceramics from the Chuska Valley are clearly identified by their unique sanidine basalt (trachyte) temper. Paste colors remain similar to those of the central Cibola-Chaco Basin, white to buff.

Table 4 demonstrates the association between refired color and tempering materials. Salient correlations exist between granitic-mica tempers and red and yellow-red clays. These are typical of Northern Rio Grande production. On the other hand, sand-sandstone temper with buff pastes is a hallmark of the Cibola-Chaco wares.

The correlations between pottery type, paste color, and temper were tested statistically. A chi-square test showed a significant relationship between ceramic traditions and oxidized paste color (Table 3). This suggests basic differences in fabric source selections by potters (n = 619, chi square = 430.97, df = 4, p. = 0.0000).

A second chi square test examined the strength of the relation between oxidized paste colors and tempering materials (Table 4). A significant difference was shown, with local granitic tempers occurring more often with redder firing pastes, compared with sand-sandstone tempered pottery which has a white to buff color; (n = 656, chi-square = 366.52, df = 3, p. = 0.0000).

Ceramic Trade

Based on the regional attribute trends seen above, we can now identify local versus imported ceramics with some confidence. The overall trend reveals that painted whitewares and redwares were imported to Tsogue throughout most of its occupation. Utility pottery however, typified by Tesuque tradition graywares, remained the major utility ware in all time periods. Evidence of decorated imports starts early, with small amounts of Rosa and San Marcial and White Mound B/W. Minor quantities of San Juan Red Ware and Tsegi Orange Ware reached Tsogue early on. Drolet B/W signals an early connection to the Chuska region. Occasional fugitive red and brownware utility may also have been brought in.
Subsequently, large amounts of decorated wares were brought from the Cibola-Chaco basin, including Kitatulanna and early and late Red Mesa B/W, followed by Puerco and Gallup B/W. Between about A.D. 900 and 1100, Cibola whitewares were brought to Tsogue, although the utility assemblage production remained persistently local. Continuous contact with the Chuska area is evidenced through trachyte-tempered Newcomb B/W. It should be emphasized that these are verified intrusive specimens, not local “copies.”

A local black-on-white tradition did develop after A.D. 1050 in the northern Rio Grande, and is represented here by Kwahe'e and then Santa Fe B/W, present in the latest deposits. The local Rio Grande series continued with Wiyo B/W and the Biscuit wares, although these are almost absent from the Tsogue record.

Early importation from various areas gave way to importation of whiteware from the Cibola-Chaco-southern San Juan Basin region, peaking during the period of A.D. 900-1050. Quantitatively, this is impressive. Table 1 shows that virtually all major pottery types from White Mound through Gallup B/W in time were brought into the community from Cibola White Ware production sources to the west. The quantities of these intrusive types are also quite high. The totals for the 1999 project (Table 1), show that over 50% of all typable whiteware sherds were of imported Cibola White Ware types. Moreover, in Columns 1 and 2, 82.1% of the painted pottery derived from Cibola White Ware sources to the west. Another 6.2% was composed of Chuska White Ware, San Juan Red Ware, and Tsegi Orange Ware.

The processes involved in the extensive trade into Tsogue can be now be inferred. This co-occurrence of Cibola White Ware and Chuska White Ware with minor amounts of Tsegi Orange Ware and San Juan Red Ware is not surprising, as these types “travel together” over a wide area. The effect of the Cibola-Chaco trading network in distributing this “suite” of related types over a wide region is noteworthy. If this was the result of organized trade, then the Chaco-based network, uniting widely dispersed communities across the San Juan Basin, may have had an effect as far east as the Tesuque Valley, at least during the period of A.D. 900-1100.

Alternatively—or likely, additionally—early immigrants from the west settled at Tsogue, and maintained contacts with their cultural relatives over a long period during much of BM III, P I and P II times. This encouraged persistent ceramic trade with communities to the west, regardless of any formalized trading networks that may have evolved during the Chacoan florescence. After A.D. 1100, especially after 1150, trade clearly dropped off, and its decline may be locally reflective of the decline of the Chacoan distribution system. In fact, Cibola White Ware imports began to decline in quantity after A.D. 1050, as Red Mesa gave way to Gallup and Puerco B/W. The drop in western Cibola White Ware imports was accompanied by the ascendancy of the Rio Grande tradition, which eventually supplanted it. After A.D. 1150, inhabitants at Tsogue now made or imported whiteware from local Rio Grande tradition villages. Increasing amounts of Kwahe'e and Santa Fe B/W replaced Cibola imports.

This last phase of the Tsogue sequence also brought changes in the habitation/deposition patterns at the site. The mound of debris built up since BM III times was no longer used. Abundant Santa Fe B/W is now present, but not concentrated in the same traditional parts of the site area used for the long previous period. Clearly a cultural shift occurred, resulting in loss of old trade connections, acceptance of new ceramic methods of painting and decorating, and a shift in residential patterns across the community. Since Santa Fe B/W is the latest type present in significant amounts, any local habitation of Tsogue probably ceased at about A.D. 1300. Of course, the ceramic sequence continued at other locations in the Tesuque Valley, and the Rio Grande ceramic tradition was carried unbroken into historic times.
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As Dave Kirkpatrick is in charge of Archaeological Society of New Mexico (ASNM) Special Publications, it seems fitting he should have an awareness of the trials and tribulations that transpired over a horrendously long period of time to finally place the Tech Series reprint (with numerous additions) in his capable hands. In addition, I am quite sure Meli would have said, "It's wonderful to have the historical background for this tremendous undertaking—imagine, over 30 years!"

In 1960 one could not fully comprehend Rio Grande glazewares without H. P. Mera’s "Proposed Revision," but it was long out of print. It is a relatively short publication, and with encouragement from Florence Hawley Ellis while taking her Southwest Pottery course at the University of New Mexico, I obtained permission from the Laboratory of Anthropology (the Lab) and the School of American Research to reprint it. Typing was done on my ancient 1920s Underwood Royale typewriter; its non-functioning carriage return was remedied by a chain of rubber bands attached to it and a nail at the far side of my desk. This machine made possible a perfect elite type replication while my faithful tracing of Mera’s drawings re-created the illustrations.

The 80 mimeographed copies sold like hotcakes at 50 cents each. A few years later I used the same process to reprint Mera’s considerably longer “Survey of the Biscuit Ware Area.” These were sold, at $1 per copy, primarily to students enrolled in Dr. Ellis’s summer field schools at Yunque Yunque (San Gabriel) in 1962, and in the following two years at Sapawe, where I served as her head field assistant.

Mera became more intriguing and important to me as my fieldwork experiences continued; he became “Mr. Rio Grande,” the personification of its ceramic prehistory, to me. During his years at the Lab, however he was commonly referred to as “Doc.” Several years passed and I decided that if I had obtained permission to reprint two of the Technical Series, why not reprint all 11 Bulletins? They were still important and, in addition, within academe there’s the old “publish or perish” adage to climb the ladder from assistant to associate to full professorial rank. This project, especially with additional original research, would facilitate that quest. In 1976 I received the permissions to proceed. I also wanted to learn more about Mera himself since little had been written about him. My plan included an in-depth biography which would be more than fitting to introduce the reprint volume, especially since he had been instrumental in not only founding the series, but had also contributed the majority of the papers. Another addition was to be his complete bibliography, which had never appeared in print. I began gathering the scant published data and corresponded with or interviewed many of those who knew or had worked with Mera over the next several years. The results of these endeavors were to be presented as front matter for the Tech Series reprints.

Although my proposed reprint of all 11 Bulletins never materialized, a tremendous amount of time, effort, and money went into the project. At the outset the first concern was to locate an excellent typist to prepare AB Dick mimeograph masters which would faithfully recreate each page of the original Bulletins. Ms. Ann Van Horn, Secretary, Department of Anthropology, Southern Illinois University, Edwardsville was such a person. She had done an impeccable job for me preparing camera-ready copy for the ASNM Volume 2, Collected Papers in Honor of Florence Hawley Ellis, which had been published
the previous year (1975). With departmental chairperson approval, Ann undertook the task, but with the stipulation that the Mera project could be worked on only when there was nothing else needing her attention. I provided Ann with the Bulletins from my library and eventually borrowed the two I was missing from the Lab.

After discussions in 1976 about creating the volume with Pat Beckett, book seller and editor/publisher of COAS; Ed Dittert, Director of the Lab; Doug Schwartz, Director, School of American Research; Bill Sundt, Editor, Pottery Southwest; “Stew” Peckham, Curator, at the Lab; and others, a hardback run of 300 numbered copies was planned. The prepared masters could easily produce this number. As I had written several introductions for the Rio Grande Press, Inc., and suggested additional titles for reprinting, I visited its President, Bob McCoy, in Glorieta and asked about acquiring hard covers. He suggested contacting school yearbook companies because in the off-season many of them provided hardback bindings at reasonable rates. Thus, I contacted Walsworth Publishing Company, Inc., in Marceline, Missouri and had success. Meanwhile, I had also discovered that the original negatives for all of the plates in the Bulletins were at the Lab. Since the quality of paper used in the originals was poor, the plates were deemed not usable. Late in 1978, I negotiated and contracted with Nancy H. Warren, photographer there, to print the entire set of 20+ 8x10 photos for $275. She completed the job in March, 1979.

As everything seemed to be moving along nicely, although the typing of the masters tended to get bogged down periodically, I decided to acquire the paper needed for printing. This was accomplished in a somewhat unusual way. During the summer of 1980, I taught a course for Elderhostel, “The Incredible World of Primates.” Instead of a paycheck, I asked for payment in paper. Needless to say, this request befuddled the administration because some 60 reams (6 boxes) of 8 1/2x11 and 20 reams (2 boxes) of oversize 10x15—all good bond quality—didn’t fit their modus operandi. I’m not quite sure how the Director worked it out, but within two weeks she called to say, “I have your paper; please pick it up, and ASAP—it’s cluttering up my office!”

The pre-publication announcement appeared in Pottery Southwest 3 (4):3-4 (1977); copies were priced at $16.50 each, postage paid. In addition to the reprinted Bulletins the volume was to include a Foreword, Biography, and Bibliography of H. P. Mera. Distribution was planned for October 15, 1981 to coincide with the fiftieth anniversary of the Laboratory of Anthropology, by then combined with the Museum of New Mexico. Forty individuals responded, checks included. As is customary, the price went up after the initial offer, in this instance, by $2. The announced distribution date came and went. The typing of masters slowed again, and my teaching load and other obligations escalated. This situation, of course, led to much embarrassment because there was no volume. Those who requested refunds of their payments received them; others inquired and were told progress was being made, and to please be patient.

In retrospect I now know that I made a fatal error by not printing each Bulletin as the masters were completed. The reason has to do with the Table of Contents. As each Bulletin retained its original pagination (for professional citation), there was to be a second pagination which would follow through the entire volume so that each Bulletin could be easily located. Because the preparation of the masters was dragging, so did my work on the front matter that I was writing for the volume. The completed masters were stored, and paper was at hand. Then Xeroxing appeared which allowed some of the site maps and charts to be copied. If, at the end of a month, the departmental allocation for Xeroxing had not been utilized, Ann would tell me how many copies I could run. This was always a last minute scurry procedure when the time came because the Dean’s secretary locked the Xerox room door promptly at 4:30, no exceptions! In this manner slow, but steady progress was made over an extended period of time.

In 1990, when I was finally able to give full attention to the project, I discovered it was impossible to proceed. In 1970, when I was finally able to give full attention to the project, I discovered it was impossible to proceed. Upon opening the box of typed masters I immediately
saw that they had deteriorated. The famed Midwestern humidity had taken its toll; the blue filament was brittle and crumbled in my finger, immediately reminding me of *piki*—or *hewe* (Zunian)—paper bread! (Do not ask how I reacted to this discovery. Fortunately this part of Illinois is flat—there are no lofty mesas or other precipitous locations!)

The paper I acquired for the volume in 1980, if the truth be known, cluttered up my office for 17 years, in fact, until I retired in 1997. Since it could not be used in Xerox machines or safely in computer printers, in the end it was donated to a local elementary school. Here it was happily accepted as scrap paper for the children to use for various projects. Unlike the paper, the Xerox copies did retain their usefulness, but their use has been deemed more of a hassle than their worth. Scratch paper anyone?

As none of those who had pre-paid for the reprint volume were asking, "when?" any longer, I decided to just let it ride. The unexpended funds collected for the project reside, untouched, in a savings account at the Bank of Edwardsville, in my Illinois hometown; all who contributed are still scheduled to receive their copies of the reprint volume, prepaid. Granted, it has taken a bit longer than anticipated! I firmly believe, however, that what they would have received in 1981 would not have contained the wealth of information I have been able to amass about "Doc" in the intervening years.

In 2001 I learned Rory Gauthier (National Park Service) and Emily Brown (Aspen CRM Solutions) had decided to work together to reprint the entire series. They began reproducing the texts and maps via Photoshop. Rory contacted Regge Wiseman (Office of Archaeological Studies, Museum of New Mexico) and a few others for updates because of their extensive knowledge of Rio Grande and other ceramics. Regge alerted them to my previous endeavors, and I was asked to participate in the venture. I was delighted because something I had begun over 25 years earlier was finally going to reach fruition. Permissions were again requested and received. However, the participants had other commitments and the project dragged on for several more years. Meanwhile Regge undertook the update of Mera’s five southeastern New Mexico publications, and both he and Rory solicited other knowledgeable archaeologists with specific expertise to update the remaining Bulletins. Seeking a publisher for the project was eventually undertaken, and the ASNM Special Publications chaired by David Kirkpatrick ultimately came to the fore.

Many of the new biographical materials noted above derive from learning that Mera had a granddaughter, Jane Carlson, living in Albuquerque, and a great grandson (Jane’s son), John McKendry, residing in Taos. Thanks to their willingness to share family background information, Mera’s biography has been tremendously enriched. Interviews, phone calls, and emails span the years from 2002 to 2006. Another addition came from Dr. Hal Ottaway of Wichita, Kansas who alerted me to woodcut illustrations Mera did for the literary magazine, *Laughing Horse*, and then provided copies of them for use as figures. The additions, in and of themselves, I hope, will make the wait for the Biography worthwhile.

When Regge had finally acquired all of the updates, writing one he originally hadn’t intended, as well as including my Mera Biography and Bibliography, all manuscripts were made available for perusal by Museum personnel. The Museum/Lab librarian, Allison Colborne, was asked by Regge to edit these works. She completed the task early in the summer of 2010, and Emily Brown returned edited copies to authors for proofing shortly thereafter, with a mid-October return deadline. Emily plans to turn the photo-ready copy over to Dave in 2011.

The result of our collaboration you may soon be able to hold in your hands, thanks to the Archaeological Society of New Mexico’s Special Publication series. I believe it is a set of volumes worth owning; they not only bring the important Laboratory of Anthropology Technical Series Bulletins back into print, but also provide extensive updates for each of them. Additionally, the Biography and complete Bibliography fill a void relating to the life of a Founding Father of Southwestern studies, Dr. Harry P. Mera.
POSTSCRIPT

That “Doc” would be pleased with the reissuing of a major portion of his work, I believe, goes without saying. He would also be (quietly) delighted with all of the additional material which has been incorporated to update his masterful publications. There is also a good possibility he might utter one of his favorite comments specifically about me: “Flitter mice in the campanile!” You will have to read “Doc’s” biography to decide whether or not you agree. Dave will have first crack at it. So, Dave, what do you think?
ASPECTS OF JICARILLA APACHE SETTLEMENT, SUBSISTENCE, AND POLITICAL ORGANIZATION DURING THE EARLY EIGHTEENTH CENTURY1

INTRODUCTION

A t the time of Spanish colonization of New Mexico, the Jicarilla Apache occupied lands in northeastern New Mexico and southeastern Colorado, east of the crest of the Sangre de Cristo Mountains and eastward onto the plains (Gunnerson and Gunnerson 1971; D. Gunnerson 1974; Schroeder 1958; Thomas 1974). Although scholars have offered a variety of hypotheses concerning when and by what route the Apache and Navajo, speakers of Southern Athabaskan languages, entered the western margin of the plains and the American Southwest (Opler 1983:381-384), available evidence indicates that Apachean presence in northern New Mexico does not date earlier than the late 1500s or early 1600s (Schroeder 1958:1-5; 1974a:244). Many, if not all, of the Jicarilla Apaches during the early 1700s were farmers who grew maize, beans, and squash (Gunnerson and Gunnerson 1971:21) and lived in adobe-walled dwellings similar in construction to those of the Puebloan peoples of the Rio Grande Valley. They made distinctive thin-walled pottery of micaceous clay (J. Gunnerson 1969) and regularly traded with the Taos and Picuris pueblos.

The diaries of two early eighteenth century Spanish expeditions into northeastern New Mexico and southeastern Colorado give first-hand accounts of the Jicarilla Apache settlements. Juan de Ulibarri led the first expedition in 1706, and Antonio de Valverde led the second. Other Spanish expeditions passed through the territory occupied by the Jicarilla both before and after these two (Thomas 1935), but the Ulibarri and Valverde diaries provide not only the earliest descriptions but also the most detailed. They include information about the location and character of Jicarilla settlements, the nature of their dwellings, their farming practices, and characteristics of their political leadership. As such, they are a valuable starting point for investigation of Jicarilla lifeways at a time just before they were seriously disrupted by incursions of Comanches and Utes from the north and more indirectly by Spanish colonization of New Mexico.

The objective of this paper is to glean information about Jicarilla Apache settlement, subsistence, and political organization from the Ulibarri and Valverde diaries, as translated by Thomas (1935), to serve as a basis for making sense of the archaeological record pertaining to the Jicarilla prior to the mid 1700s. The geographic focus is on the lands in northeastern New Mexico, between Rayado and Raton. To determine the locations of Jicarilla settlement, the geographic placement of the routes of the expeditions and correlations between places named in the diaries and modern place names is crucial. Thomas (1935) and Schroeder (1958, see also Schroeder 1974b) have attempted to reconstruct the routes of the two expeditions. Thomas (1935:17, 29) gives little basis for his assignment of names of locations mentioned in the diaries to modern place names, in large part because he does not specify a route over the eastern segment of the Sangre de Cristo Mountains. Schroeder does specify routes over this segment. With regard to Ulibarri’s route, he has the expedition descending into the narrow and heavily wooded Agua Fria and Rayado canyons before entering onto the plains (Schroeder 1958:20). Further, he has Valverde crossing this segment near the route of Highway 64, presumably down Cimarron Canyon.
(Schroeder 1958:30), which also is heavily wooded and very narrow along some portions. Both routes down canyons make no sense, as they would be extremely difficult to traverse. Schroeder does not consider the possibility of the expeditions traversing relatively more open country farther south.

Because these expeditions were essentially the first documented European incursions into the plains of northeastern New Mexico, their routes can be traced only by reference to the diarists' descriptions of geographic features—streams, mountains, ridges, lakes, etc.—and the distances between points mentioned in the diaries. Unfortunately, their descriptions are often too general to be associated confidently with specific geographic features, and their measurements of distance are often suspect. Moreover, each of the expeditions' leaders used their own names for the same locations; they frequently made no reference to the place names assigned by previous expeditions. My personal knowledge of the regional geography is the basis for identifying features mentioned by the diarists, and all actual distances have been measured on USGS topographic maps. I used the following criteria to develop the most plausible reconstructions of the routes.

1. The descriptions of geographic features had to match what actually exists, and where discrepancies were encountered, plausible explanations had to be apparent.

2. The real distances from identified geographic features mentioned by the diarists to ones of questionable identification had to be close to those specified by the diarist, although distances over rough terrain could be significantly in error.

3. The sequence of features mentioned in a diary had to be consistent with that which actually exists.

4. Prominent geographic features passed by the expedition generally had to have been mentioned by a diarist if similarly prominent features were mentioned elsewhere in the diary. In other words, a certain amount of consistency was expected in the sorts of geographic features selected for mention by a diarist.

The geography of the region under consideration is dominated by a sharp demarcation between two markedly different environments: the wooded foothills of the Cimarron Range and the rimrock canyon country of the Park Plateau on the one hand, and the mesa-studded short-grass high plains on the other (Figure 1). Emanating from the mountains and the Park Plateau are a series of watercourses, the larger of which are perennial. Many of the recorded Apache sites are on terraces or bluffs overlooking perennial watercourses near the point at which they leave the canyons of the mountains and the plateau.

THE EXPEDITION OF JUAN DE ULIBARRI

Ulibarri left Taos on 20 July 1706 and spent the first night at a spot he called La Cieneguilla. The next day he ascended a wooded mountainside, crossed a rough, wooded canyon that he named La Palotada, and then passed through a series of "extremely beautiful valleys." In the first valley was a large pond that he named La Laguna de Santa Tomas de Villa Nueva. He named the second valley La Valle del Espiritu Santo, and from this one he ascended to a pass he called Puerto Florido, "because of its pleasing appearance." This last valley of the three, which he named El Valle de San Cayetano, ended in a small pool he called Santa Cruz because a cross was found painted on a tree nearby. The last summit was then reached, from which the plains could be seen in the distance. Descending from the mountains, he crossed a stream he called Río de San Francisco Xabier, lined with poplar and other trees. He stopped on the next, larger stream named by him the Río de Santa María Magdalena (Thomas 1935:62-63).

This description of slopes, valleys, and ponds fits well with the country between the junction of Highways 64 and 434 in the Moreno Valley and the northeastern edge of Ortega Mesa (Figure 1). Ulibarri undoubtedly spent
the night of the 20th on Cieneguilla Creek (which preserves its eighteenth-century name), and on the 21st he ascended just east of West Agua Fria Creek, crossed the south fork of Saladon Creek (La Palotada), and entered the picturesque parkland north of Agua Fria Peak. He passed Saladon Lake (La Laguna de Santa Tomas de Villa Nueva) and Garcia Park (La Valle del Espiritu Santo). Passing over a rise (Puerto Florido) in the vicinity of dry La Grulla Lake, he came to a park (El Valle de San Cayetano) that ended at Rimrock Lake (Santa Cruz). Looking down the Rayado gorge from this lake, he saw the flat plains in sharp contrast to the mountain parklands through which he had just passed. Having descended the mountains, the expedition crossed a stream, undoubtedly Rayado Creek (Río de San Francisco Xabier). Continuing on, the expedition stopped for the night of the 21st on Cimarroncito Creek (Río de Santa María Magdalena) in the vicinity of the headquarters of Philmont Scout Ranch. Ulibarri mentioned having traveled 10 leagues (about 26 miles) on that day, which coincides well with the actual distance.

Turning for a moment to Ulibarri’s return trip over a month later through the same region, he spent the night of August 27 on the Río de San Francisco de Xabier. On the 28th, he “crossed the first part of the sierra and halted on the pond of Santa Tomas de Villanueva, having passed by the dry pond of Santa Cruz, Puerto Florido, and the valleys of Espiritu Santo and San Cayetano.” In comparing the description of his return trip with that of his eastbound journey, one notes an inconsistency. On the latter, the pond of Santa Cruz was mentioned as
having a pool of water, but it was dry on the return. Possibly the pool lost its water due to dry weather during the month of time intervening, but a more plausible explanation is that the reference actually was to La Grulla Lake on the return trip instead of Rimrock Lake, which is clearly the body of water to which he referred during the eastbound journey.

As Ulibarri's journey continued onto the plains, groups of Indians, presumably Apaches, came to Ulibarri's camp on the Cimarroncito, having just returned from visiting Taos Pueblo. Ulibarri said these visitors to his camp were of the Conexero, Acho, and Río Colorado bands, and their rancherías (residential bases) apparently were nearby (Thomas 1935:63). The Río Colorado band probably takes its name from the Canadian River, about 20 mi east of where Ulibarri was camped (Thomas 1935:263, note 12), and such a group could have resided anywhere along the considerable length of this river.

On the next day, July 22, Ulibarri continued north, probably traveling several miles east of the Park Plateau that rises abruptly along the western margin of the plains in this region. Ulibarri wrote:

After marching to the north eight leagues, we crossed another large stream which I called the Río de la Santísima Cruz. These other small streams unite with it and the largest, the Río de San Nicolás de Tolentino. From this one, we crossed to another which I found very swollen, so much so that it detained me. I was forced to make a bridge of large trunks of poplars which grow thickly on this stream, which I named Río de San Blas...The little stream above, very miry and marshy, I ordered called El Arroyo de las Ancias, because of the many troubles I had in cutting through it (Thomas 1935:63).

Ulibarri and his entourage spent the night beside this latter stream.

Considering the time Ulibarri took in crossing these two streams, it would seem that the 8 leagues (about 21 mi) he mentioned at the beginning of this day's entry refers to the distance travelled over the full course of the day, not just to the Río de la Santísima Cruz. Another confusing point is his placement of the Río de San Nicolás de Tolentino with respect to the other streams he crossed. He does not specifically mention crossing it, and the referent in his next sentence may refer either to this stream or to the Río de la Santísima Cruz. Fortunately, his entry on his return clarifies this vagueness. Having crossed the Río de San Blas the previous day, he wrote in the entry for August 27, "we crossed the Río de Santa Cruz, San Nicolás de Tolentino, Santa María Magdalena, and came to a halt on the Río de San Francisco de Xavier" (Thomas 1935:76). Consequently, the Río San Nicolás de Tolentino was probably the first river Ulibarri crossed on July 22, and the Río de Santísima Cruz the second.

Starting out, then, from the Cimarroncito Creek, Ulibarri crossed the Cimarron Creek (Río de San Nicolás de Tolentino) at a point in or just east of the present town of Cimarron, crossed the Ponił Creek (Río de Santísima Cruz) about a mile northeast of Cimarron, and finally crossed the Vermejo River (Río de San Blas), probably near the town of Colfax or somewhat downstream. Saltpeter Creek, Stubblefield Arroyo, or some other marshy arroyo in the vicinity could have been Ulibarri's miry and boggy El Arroyo de las Ancias. Ulibarri mentioned that miry conditions were frequent along the route, not only during this day but also during the succeeding two. He probably was referring to marshy areas at stream crossings as well as to patches of marsh in low spots scattered on the plains between the Vermejo River and Raton.

The next day, July 23, the expedition traveled another 8 leagues (about 20 mi), crossed the Río de Santo Catalina, and made camp at the spring of Naranjo. Ulibarri set out from the Vermejo River, crossed the Canadian River (Río de Santo Catalina) and stopped at one of the conceivably many springs at the foot of mesas at or southeast of Raton. Ulibarri wrote:
Other heathen Indians of La Xicarilla, Flechas de Palo, and Carlanas tribes came down to this place from the Sierra Blanca, under the leadership of different chiefs. The head chief was a lame man whom they called Ysdalnisdal. They showed a great deal of friendship toward us, saying that in the name of all Indians of their tribe and of Chief Ucase, they were coming to give me many manifestations of gratitude for having entered their land without doing them any injury; that they were all very happy; and that on my return I would find them together in their rancherías of the Jicarillas. There they would give me raisins which they always preserved for the most worthy Spaniards, and that not only they were supplying them but also the tribes that were living along the banks of all the streams I had seen and others that I had failed to cross, and others that I will meet further on; that they were good people; they had not stolen anything from anyone, but occupied themselves with their maize, frijoles, and pumpkins (Thomas 1935:63-64).

These visitors to Ulibarri’s camp probably came from their settlements near the mouths of canyons emanating from the Park Plateau directly west of Ulibarri’s route. “Sierra Blanca,” in this context, appears to be a general referent to the Park Plateau and the Sangre de Cristo Mountains west of it. The quoted passage above reveals the Apaches of this area to be farmers, and the raisins they had in great quantities may have been dried wild grapes, although they may have been dried gooseberries and chokecherries that come into season in the canyon country in late July and August. Apparently the Indians were organized into three bands, each headed by a minor chief and all headed by a regional chief (Ysdalnisdal). Apparently another aggregation of bands, under another regional chief (Ucase, or Ucate—see J. Gunnerson 1969:36), lived nearby but was not present.

These data are supplemented by Ulibarri’s comments concerning his return on August 27. He wrote, “We were among the rancherías of El Coxo [the lame one, Ysdalnisdal] and the rest of the chiefs who were awaiting us, and who entertained us a great deal. They gave us the news that the Utes and Comanches had attacked two rancherías: one of the Carlanas and Sierra Blanca tribe, the other of Penxayes tribe” (Thomas 1935:76).

Apparently Ulibarri visited the Jicarilla rancherías on his return, whereas on his way eastward he indicates that the Indians came to his camp. Perhaps he was traveling somewhat farther west on his return, closer to the edge of the Park Plateau where the rancherías most likely were located. It is noteworthy that he encountered these rancherías somewhere between, but not including, Vermejo River and Rayado Creek, the region passed over that day. A month earlier these Indians had come to Ulibarri’s camp about 20 mi north or northeast of the Vermejo River. This fact will have added significance when comparable parts of Valverde’s diary are considered below.

Ulibarri named another band, the Penxayes, and apparently “Carlana” and “Sierra Blanca” refer to the same band in this passage. Ulibarri also implied that each band was composed of more than one ranchería.

**THE EXPEDITION OF GOVERNOR ANTONIO DE VALVERDE**

Valverde followed essentially the same route as Ulibarri, at least up to the vicinity of Raton. This is not surprising, as Valverde’s entourage was composed of at least one member of the Ulibarri expedition, the scout and interpreter Captain Joseph Naranjo. Although Valverde’s diary is much more general than Ulibarri’s, lacking in geographic detail, Valverde’s diarist does give more information on exact locations of Apache rancherías. Indeed, Valverde evidently had more interest in visiting these than did Ulibarri.

Valverde and his expedition set out from Taos on September 20, 1719, and spent that night at La Cieneguilla. The next day he traveled 7 leagues (about 15 mi) through timbered country to a pleasant wooded stream that Valverde named San Joseph. Before
descending the mountain country, Valverde’s diarist observed a small lake, opposite which at a distance of a league were “some red hills with many outcroppings of ore, apparently mineralized.” The plains were met at the base of the wooded slope leading down from the small lake, and on these plains the diarist indicated that many stone landmarks built by the Indians were found at intervals (Thomas 1935:111-112).

It is clear that Valverde left La Cieneguilla and passed through the parklands of the Saladon Lake-Garcia Park-La Grulla Lake region. There is no question that the small lake with red hills opposite is Rimrock Lake, opposite which, on the other side of Rayado Gorge at a distance of a couple of miles, is Crater Peak with large, prominent exposures of red basaltic rock on its face. Ulibarri had called this lake Santa Cruz. Valverde stopped at Rayado Creek (stream of San Joseph) near the present hamlet of Rayado. Ulibarri had called this creek Rio de San Francisco Xabier.

The stone landmarks to which Valverde’s diarist referred could have been one or more of a number of cultural features in the region. House or tipi rings are frequent, often quite prominent on the bluff edges overlooking the streams between Rayado and Raton. At a locality on Cimarron Creek is another type of rock feature, consisting of a cluster of about 12 low stone piles several feet in diameter. However, it more likely that the diarist was referring to artificial landmarks much farther out on the plains, where they may have marked routes through terrain lacking distinctive natural features.

While at the location on Rayado Creek, a member of Valverde’s entourage located a small adobe house and its Apache inhabitants about a mile distant, probably on Rayado Creek. These Apaches “had sown and reaped their maize fields” (Thomas 1935:112). This description of an Apache dwelling is the first known for the region between Rayado and Raton. Later during the same day a group of Apaches came on horseback from “the ranchería of La Jicarilla.” With their chief they had come to tell of depredations of the Utes and Comanches and to offer their services in reprimanding these marauders.

The next day, the 22nd of September, Valverde traveled another 3 leagues “over level ground” and stopped at a river, which according to the diarist the Apaches called La Flecha and which Valverde named Nuestra Senhora del Rosario (Thomas 1935:113). This river is probably Cimarron Creek (called Rio de San Nicolas de Tolentino by Ulibarri). The smaller Cimarroncito Creek, upon which Ulibarri camped 13 years earlier, was probably crossed by Valverde’s expedition with no mention being made in the diary because of its relative insignificance, or possibly because of having come to Cimarron Creek below its confluence with Cimarroncito Creek.

On Cimarron Creek Valverde found fields of maize, beans, and squash. The diarist states:

> Above on the river at a distance of an arquebus shot, a house of adobe was found where some Apaches were living with their women and children. On the flat roof of the house there was erected a most holy cross, about a yard in height. Farther up the river eight other houses were found where some families of the Apaches dwelt (Thomas 1935:113-114).

It is noteworthy that the Spanish had to travel up Cimarron Creek some distance to reach this settlement. It had to be located near the mouth of Cimarron Canyon, where it opens onto the plains. In other words, the settlement was somewhere near the present town of Cimarron or a short distance upstream from the town. The description of the first dwelling encountered on Cimarron Creek, as well as the one seen the previous day on Rayado Creek, reveals that their architecture was similar in construction to traditional Puebloan dwellings of the Rio Grande Valley and that two or more nuclear families apparently were accommodated inside each one.

Later on that day Chief Carlana and three other Apaches came down on horseback from the Sierra Blanca. He told Valverde that Utes and Comanches had displaced his people from their homes in the Sierra Blanca. Half of Chief Carlana’s people accompanied him to get help from the Apaches of La Jicarilla while the other half “had
gone for protection farther into the land of Apaches whom Chief Flaco governed" (Thomas 1935:114).

The next day, the 23rd, Valverde moved only 2 leagues (about 5 mi) to a "small river," not named by him, which most likely is the Vermejo River—Ulibarri’s Río de San Blas. The distance, however, between Cimarron Creek and the Vermejo River is at least 8 mi. The only other watercourse of significant size between these two drainages is the Pónil Creek, about a mile beyond the Cimarron Creek. However, if Valverde had stopped along the Pónil Creek, he would have had a journey of 35 mi (14 leagues) the next day to the Canadian River, a distance that is out of line with the 8 leagues (21 mi) he mentioned as having actually traveled that day.

Along the Vermejo the expedition encountered Apaches belonging to the band “La Jicarilla,” whose chief was El Coxo. Because El Coxo was away visiting in Navajo country, Valverde was greeted by his sons and the rest of the Apaches of the settlement. They told Valverde that Comanches and Utes had recently completely demolished a ranchería on the spot he was camped, killing 60 and carrying off 64 women, and had even destroyed heaps of maize and “a little house in the shape of a tower.” This depredation had induced the survivors to move farther upstream (Thomas 1935:115).

In the afternoon of that day Valverde, in the company of several others of the expedition, rode 4 mi upstream, where they found “seven terraced houses” inhabited by Apaches. The women and children fled to the hills at the arrival of the Spanish, but the men remained. The Spanish observed many “walls” of freshly reaped maize piled half a yard high and “many ditches and canals in order to irrigate their fields,” where there was still unhusked maize in heaps. The diarist added, “In this spot and region where the chief, Carlana, was domiciled there were counted twenty-seven tipis. The Indians showed great hospitality because they gave the soldiers many ears of green maize” (Thomas 1935:115-116).

It appears that the Spanish encountered these Apaches at the time between the harvest of green maize and the major harvest of fully mature maize. From the mention of extensive crop yields and irrigation canals and ditches, it is obvious that these Apaches were not simply casual horticulturalists. This is consistent with the existence of adobe houses, involving significant investment of time and energy to build, seen by the Valverde expedition along three different watercourses in this region. Although people were apparently living in these, some of their rooms, or possibly separate buildings, probably served as granaries.

It is unclear what is meant by “seven terraced houses” in this passage. One interpretation is that the houses were terraced several stories high, as in Taos Pueblo today. However, in a letter to Viceroy Valero in November, 1719, Valverde made no specific mention of multi-storied houses having been encountered at this location, although he does mention flat-roofed houses (Thomas 1935:142). Consequently, the adobe houses on both the Cimarron and Pónil Creeks probably were of the same type. The presence of 27 tipis (or wickiups?) seen on these two creeks may be interpreted either as an additional type of dwelling or possibly temporary shelters erected by Apaches recently displaced from other localities, such as Chief Carlana’s group mentioned above. In support of this interpretation, Valverde notes in the letter to Valero that in this region he “passed through many depopulated rancherías where ruins only were to be seen (Thomas 1935:142).

Thirteen years earlier Ulibarri also mentioned “Carlanas,” his name for a band that came to his camp near Raton from the Sierra Blanca, and Chief El Coxo, mentioned as living somewhere on the Vermejo River or between the Vermejo and Rayado Creek. Thus the localities in which these two groups were living is consistent between the two diaries.

The Apache population of this region is difficult to estimate on the basis of the data provided by Valverde’s diarist. If the 27 tipis seen by the expedition were each inhabited by a family of five or six members, the total would be somewhere between 135 and 160 in the Cimarron Creek—Vermejo River region. To this may be
added the 124 men and women who were living at the completely destroyed ranchería where the expedition had encamped. A day later, at his next camp, Valverde was joined by 20 Apache men who lived on Cimarron Creek (La Flecha), and two days later Chief Carlana came with 69 of his men. Thus, a total of 79 Apaches (assuming they were all men) joined the expedition, a number that implies a population of men, women, and children possibly three to five times this number, or between 240 and 500. Whatever the actual population was at this time in the Cimarron Creek–Vermejo River region, Valverde probably saw only portions of it. In his letter to Valero, he mentioned that each ranchería contained houses “at some distance from one another,” so it was probably the case that more rancherías, or additional segments of the ones he actually contacted, were scattered farther up and down the watercourses he crossed.

To return to the progress of the Valverde expedition, on the next day, September 24, Valverde marched 8 leagues north and camped on an arroyo called by the Apaches Río Colorado, which undoubtedly was the Canadian River, at a spot somewhere near Raton. The next day Valverde crossed the mountainous country between Raton and Trinidad, probably at a point west of Ulibarri’s crossing. That portion of the diary covering Valverde’s return to Santa Fe is missing.

CONCLUSION

The routes of the Ulibarri and Valverde expeditions were relatively close to each other from Taos to the vicinity of Raton. Contrary to the routes across the section of the Sangre de Cristo Mountains from the Mora Valley to the plains proposed by Thomas and Schroeder, the two expeditions undoubtedly took the same route through the parklands south of the Cimarron Range. As D. Gunnerson (1974:173) points out, this route persisted into the next century and was known as the Taos-Rayado trail. Their routes then were northeastward toward the vicinity of Raton. Although the concordance between place names mentioned in the diaries and modern place names proposed here may be partly in error, it is the most parsimonious considering distances and geographic information given in the diaries. Moreover, this concordance is more complete than either Thomas’s or Schroeder’s (Table 1).

Both expeditions encountered Jicarilla Apache dwellings along watercourses, these being ones large enough in size to warrant mention by the diarists (Rayado, Cimarron, and Vermejo creeks). Most dwellings appear to have been relatively close to canyon mouths at the juncture between the mountains or plateau and the plains, although some may have been downstream of the expeditions’ crossings. As well, some may have been located within the canyons of the Park Plateau, to which references to residence in the Sierra Blanca likely pertain. Houses appear to have been occupied by individual family groups, and many were described as constructed of adobe and having flat roofs. They probably were similar to an Apache dwelling near Ocate, the remains of which were excavated by Gunnerson (1969:25). Other dwellings were described as tipis; these may have been similar to the classic skin-covered tipi of the plains, but at least some may have had other sorts of covering, resembling instead wickiups or the dome-shaped structures described by Opler (1936:205). J. Gunnerson (1969:30-31) encountered the remains of a structure of this general sort during his excavation at a Jicarilla site in lower Ponil Canyon. The expeditions encountered both individual, apparently isolated, dwellings as well as clusters of several. Most likely, communities consisted of dispersed groups of dwellings distributed along a watercourse. The unusually large number of 27 tipis seen by Valverde appear to be of refugees from rancherías depredated by Comanche and Ute raiders.

The Jicarilla people encountered by Ulibarri and Valverde were serious farmers, perhaps depending on maize, beans, and squash for annual subsistence as much as their Pueblo neighbors at Taos and Picuris, and they watered their fields through irrigation. As D. Gunnerson (1974:164) hypothesizes, the Jicarilla encountered by these two expeditions south of Raton may have become the Ollerio (Hoyero) division of the Jicarilla of the nineteenth century, whereas other bands, located farther
Table 1. Concordance of Place Names between Diarists and Scholars

<table>
<thead>
<tr>
<th>Ulibarri's Placenames</th>
<th>Herein</th>
<th>Thomas</th>
<th>Schroeder</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Cieneguilla</td>
<td>Moreno Valley</td>
<td>Moreno Valley</td>
<td>Moreno Valley</td>
</tr>
<tr>
<td>Río de San Francisco Xabier</td>
<td>Rayado Creek</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Río de Santa María Magdalena</td>
<td>Cimarroncito Creek</td>
<td>Cimarron or Rayado Creek</td>
<td>Rayado Creek</td>
</tr>
<tr>
<td>Río de San Nicolás de Tolentino</td>
<td>Cimarron Creek</td>
<td>—</td>
<td>Cimarron Creek?</td>
</tr>
<tr>
<td>Río de la Santísima Cruz</td>
<td>Poñil Creek</td>
<td>—</td>
<td>Vermejo River?</td>
</tr>
<tr>
<td>Río de San Blas</td>
<td>Vermejo River</td>
<td>—</td>
<td>Canadian River</td>
</tr>
<tr>
<td>Río de Santo Catalina</td>
<td>Canadian River</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Valverde's Placenames</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Cieneguilla</td>
</tr>
<tr>
<td>Stream of San Joseph</td>
</tr>
<tr>
<td>La Flecha²</td>
</tr>
<tr>
<td>A small river (unnamed)</td>
</tr>
<tr>
<td>Río Colorado⁴</td>
</tr>
</tbody>
</table>

¹Same as Ulibarri’s Río de San Francisco Xabier
²or River of Nuestra Señora de Soledad
³Presumably Cimarroncito Creek
⁴or Nuestra Señora de Soledad

north, became the Llanero division according to her. Alternatively, the Llaneros may have descended from Jicarilla who lived farther out on the plains and who may not have been so dependent on farming during the early eighteenth century.

Socio-political organization of the Jicarilla appears to have had two levels, as implied by Ulibarri’s reference to two regional chiefs, Ysdalnisdael (El Coxo) and Ucase, and to other chiefs who apparently headed local groups within a region. Nonetheless, it is possible that the two regional chiefs were simply more influential chiefs of the same sort as the others. In any regard, as Schroeder (1958) and D. Gunnerson (1974) have pointed out, the diarists gave names to groups occupying distinct territories, and each apparently had political independence of the others. Each of these named groups apparently consisted of several rancherias. The population size of a rancheria probably varied. The number of people who occupied a ranchería that had been destroyed by Comanches and Utes shortly before Valverde’s arrival appears to have been around 125. However, the number that may have inhabited the “seven terraced houses” that Valverde saw on the Vermejo River may have been closer to 50. If several rancherias comprised one of the named groups, their populations probably averaged a few hundred.

To conclude, the diaries of Ulibarri and Valverde offer glimpses into the lifeways of the Jicarilla Apache of northeastern New Mexico at the end of a period of relative cultural stability. They were successful farmers living in small communities organized into larger political entities. Each community consisted of dispersed to somewhat aggregated dwellings, and their members were taking advantage of the rich, well-watered bottomlands along the watercourses emanating from the Sangre de Cristo Mountains. Despite the fact that the
information about Jicarilla lifeways in these diaries lacks much detail and is perhaps not always accurate, it can serve as a basis for the kind of archaeological investigation that J. Gunnerson pursued during the 1960s. Future research of this sort would fill in the many obvious gaps of knowledge about the origins and cultural development of the Jicarilla within this region.

ACKNOWLEDGMENTS

I am indebted to Jim and Dee Gunnerson for stimulating my interest in the Jicarilla Apache and particularly to Dee for guiding me to relevant historical sources. Both were wonderful colleagues and supportive of my research while I was a graduate student. Al Schroeder kindly loaned me his 1958 report and answered questions concerning information in the Spanish diaries. The staff of Philmont Scout Ranch provided housing while I was undertaking surveys and reconnaissances, and the Director of Camping at the time, Joe Davis, helped arrange permission to enter the properties of ranches adjacent to the Philmont property. Those who granted permission were W. J. Gourley and J. Gourley of WS Ranch, G. Sammis of Chase Ranch, and M. McDaniel of McDaniel Ranch. Financial support for a survey in 1966 was provided by the Department of Anthropology, University of California, Los Angeles. Dave Kirkpatrick kindly read an earlier draft of this paper and offered suggestions for its improvement.

ENDNOTES

1Major parts of this paper were written in 1967 while I was a graduate student at the University of California, Los Angeles. Reconstruction of the Spanish expeditions’ routes considered in this paper are a product of reconnaissances and archaeological surveys that I carried out between 1963 and 1969 in the localities near the routes of the expeditions through northeastern New Mexico. One of the reconnaissances was along the approximate route of the old Taos-Rayado Road, which is essentially the route of the Ulibarri and Valverde expeditions.

2Schroeder’s 1974b publication is a facsimile of his 1958 report. I used the original 1958 report, which he loaned me in 1966 because it contained his subsequent interlinear corrections and additions.

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LIVING HISTORY: OBSERVATIONS ON THE REALITY OF LIVING IN A HISTORIC NEW MEXICO COMMUNITY

Twenty-three years ago, Bob was completing a master’s in Public History at New Mexico State University. We were contemplating what life would be like back at Hovenweep National Monument, near Cortez, Colorado (from which Bob had taken an educational leave of absence), since there was apparently no made-to-order National Park Service job waiting in the wings for the newly qualified historian. But as our spirits sank, longtime friend and Linda’s boss, Dave Kirkpatrick, arrived with news of a museum job opening in Lincoln—no, not Nebraska, New Mexico—a sleepy little burg nestled in the foothills of the Capitan Mountains (Figure 1) and destination of nearly every Billy the Kid aficionado west of the Pecos. It also happened to be the location of Dave’s current archaeological project with Human Systems Research, the McSween House excavation. The rest, as they say, is history, and by mid-summer 1987 Bob was the new Deputy Director of the Lincoln County Heritage Trust and we were ensconced in a cozy little New Mexico adobe four-square, getting to know the fine folks of Lincoln Town—all 70 of them.

Lincoln sits in the Rio Bonito valley and is best known for its association with the Lincoln County War and Billy the Kid. It has as its neighbor Fort Stanton, one of the best-preserved remaining cavalry posts in the country. Twenty-seven miles away from Lincoln is White Oaks, a former gold-mining town killed by its own greed. Thirty-

Figure 1. Aerial view of Lincoln, looking northeast, September 1987.
six miles away is the Mescalero Reservation, home to the
descendants of some of the most legendary warriors of
the Southwest (Mescalero and Chiricahua Apache). This
approximately 800-mi² area has almost unmatched
potential for interpretation of the Old West. What a
playground for a public historian!

In describing Lincoln to the uninitiated, we frequently
liken it to Colonial Williamsburg in that the street
through town—yes, the only one—is lined with
museums and historical homes, a number of which can
be toured. This analogy gets the general idea across, but
that is about as far as the similarities go. Unlike Colonial
Williamsburg, Lincoln is more than a tourist destination;
it is home. People live and work in Lincoln, they get their
mail there, raise their families and their livestock there,
and they bury their friends and families there. But while
Lincoln is definitely not Williamsburg, it is not your
typical small town, either. Its historical character sets it
apart, and in order to retain some semblance of its
nineteenth century flavor, a variety of regulations govern
construction and remodeling. Commercial development
is limited to the museums, a historic hotel, a couple of
B&Bs, and a handful of small shops and eateries; there
are no gas stations or quick stops, no grocery stores,
banks, or doctors' offices.

"What will you do with all that free time?" our friends
asked. Linda looked forward to catching up on some
sewing and scrap-booking projects and putting a serious
dent in her "must read" list. Most of those projects are
still unfinished, for life in Lincoln is a fulltime job. When
the work day is over, the average person goes home, reads
the paper, catches up on email correspondence, hauls the
kids to soccer, watches some television, and perhaps
discusses the day's events or the world's woes with family
members. In Lincoln, the day's events are still going
strong. With so few residents, those who catered to the
needs and desires of the tourists during the day change
hats in the evening and take on the needs and desires of
their neighbors. There might be a meeting of the Water
Board, the Ditch Association, the Community Church
Board, the Pageant and Festivals Corporation, the
Preservation Board, or the Volunteer Fire Department,
or there might be a public hearing about the Highway
Department's plan to widen the shoulders through town.

During our tenure in Lincoln, we lived in three historic
adobe houses, not a single one with a truly square corner.
Trying to hang a picture or a set of curtains could drive a
person to drink. Our first home was the Gallegos House,
a small residence on the Heritage Trust Museum grounds
(Figure 2). We weren't the only ones who appreciated the
place. Visitors regularly assumed the building was part of
their Lincoln "experience" and wandered into our
kitchen for a tour! We got used to the door opening
without a preliminary knock and to the startled
expressions when people realized they had intruded on a
private residence. Along with more room for a growing
family, house number two came with a producing apple

![Figure 2. Bob, Linda, and Beth Hart on the front pond of the Gallegos House, December 1989.](image)
The orchard and the yard were watered via traditional flood irrigation. Fortunately for us novices, the property owner was on hand to manipulate the paraphernalia necessary to direct the water to both yard and orchard. We would have been hopelessly inept. Our final Lincoln home, an 1880s flat roofed-adobe now sporting a peaked roof clad in corrugated metal, was situated directly across from the Old Courthouse Museum. Having been both a store and dwelling over the years, the building had been expanded bit by bit, as the family grew and the business matured. While this resulted in some rather unattractive appendages, the sprawling front porch was one of the best in town—the ideal place to while away a summer evening.

Daycare possibilities in our town of 70 inhabitants were a bit limited. While working her volunteer shifts guiding visitors through the Doctor Woods House Museum, Linda frequently found it difficult to secure a babysitter for daughter Beth. So the one-year-old spent the occasional afternoon outfitted in an old-fashioned frock, charming the socks off those who toured the house, while Mom baked lemon cookies based on the doctor’s wife’s recipe on the old wood stove. Spur of the moment childcare was an even greater challenge. The day our second daughter, Kendra, was born, Beth was shuttled between three different friends while we drove the 60 miles to the hospital in Roswell.

**PRESERVATION**

Owning a home and/or dealing with property maintenance in a historic district involves much more than meets the eye, and sometimes the decisions regarding proposed changes can pit neighbor against neighbor. It’s one thing to be asked to conform to the historic scene when painting your house or adding a fence to keep the dog in. But what about keeping up with the rest of the world technologically and adding a satellite dish for TV reception? Or what if you want to be environmentally sensitive and install solar panels?

Lincoln’s 1972 historic preservation ordinance applied only to the narrow, ten-mile-long area one-half mile to either side of U.S. Highway 380, which bisected the town. Its provisions applied only to anything in public view within this corridor, so that parts of the valley were beyond the ordinance’s jurisdiction.

Recognition of Lincoln’s historic significance in New Mexico history began in the 1930s with efforts that eventually resulted in the establishment of what would become Lincoln State Monument. In 1976, Roswell businessman and philanthropist Robert O. Anderson established the Lincoln County Heritage Trust, a private organization, to aid in Lincoln’s preservation. During our time in Lincoln, the State Monument and the Heritage Trust were responsible for operation of nearly all the public buildings. The town is unincorporated, and its historic zoning is administered by the Board of County Commissioners.

One historic preservation controversy that simmered for years centered on a satellite dish. A local teacher whose house fronted the highway and was clearly within the half mile of regulated area had erected a large satellite dish antenna in public view to one side of his home. Such a dish was clearly prohibited in the ordinance’s architectural guidelines. He argued that his constitutional rights were being violated and the county was loathe to prosecute. The five-person Preservation Board suggested a vegetative screen. The teacher planted shrubs, ostensibly for a screen, but failed to water them, and had to be notified again that he was in violation. He waited until the last minute for the threatened prosecution to commence and then dismounted the dish. The Board won the battle and lost the war because he left the dish on the ground next to its former post and mount for everyone to see. The dish eventually disappeared with the sale of the property.

The next preservation battle involved both new construction and solar panels. The construction plans conformed to the architectural guidelines and the solar panels were to be hidden from public view. However, the solar panels turned out to be visible from the highway. After the issue was discussed, the approved plans mysteriously disappeared from the Preservation Board’s
files. The Preservation Board itself was split on how to proceed and the issue was so internally divisive that it was dropped.

An odd Preservation Board call dealt with a proposal to build a new structure with a picture window. A 1905 photograph showed a picture window in the original building on the site. However, picture windows were specifically prohibited in the ordinance's architectural guidelines, and the board eventually turned down the plans. Their rationale was that a waiver would set a bad example.

The ordinance's architectural guidelines prohibited some architectural forms common in other nearby towns. One such issue involved a stone arch constructed without approval across from the town's primary eatery, the Wortley Hotel, and was complicated by the mysterious status of the new property owners. The owners had earlier proven difficult to deal with over what was publicly visible on the property where their residence was located. Disliking sign size restrictions, they proceeded to exploit a loophole in the ordinance and erect a tipi in front of their business creating greater visibility for themselves (tipis were not part of Lincoln historically but, much to the chagrin of Preservation Board hardliners, were also not prohibited in the guidelines). Divided again, the Board ultimately took no action—even though the property owners consistently ignored Board correspondence. It should be noted that the County might not have acted against the property owners anyway; the property owners in question were rumored to be in the Federal Witness Protection Program.

One of the greatest long-term Lincoln preservation concerns was the effect of heavy truck vibrations on the town's adobe buildings. The State Monument borrowed a seismometer and took both readings and notes as traffic passed the Old Courthouse (Figure 3). They concluded that the trucks were not the sole problem; the many smaller vehicles changing speed and braking in the vicinity of the building were also at fault. The result of the study was the County's installation of a set of blinking lights at the west end of town to slow down incoming traffic. The posted speed in town was 35 mph. The

Figure 3. Old Courthouse Museum after a dusting of snow, December 1987.
Preservation Board had noted that school crosswalks in neighboring Capitan were posted at 20 mph, and Lincoln frequently had more visitors than Capitan had students. Another technique employed to slow traffic was an empty police patrol car parked in a conspicuous place near the center of town. This normally slowed down speeding tourists, but was ignored by the locals.

Long before there was a preservation ordinance, there was the cross high above the west end of town. Roman Maes, who ran the private La Paloma Museum, had run a jury-rigged electrical line to a promontory above town. There, on summer evenings, the illuminated cross was visible to all. This was Roman’s demonstration of his thanks to God for his good life. And perhaps God really was watching. Roman’s cross made it to the top of the ridge on the back of a donkey, which at one point lost its footing and both tumbled downslope. Donkey and cross emerged unscathed.

Roman and Teodora Maes spent their lives collecting antiques. They owned and occupied a cluster of buildings, including their La Paloma Museum, across from the Old Courthouse. The Maes collection had a lot to do with the past, but not necessarily only that of Lincoln. Roman’s complex of buildings would have been right at home with the kitsch on historic Route 66, with his faux hangman’s scaffold and dummy, horno oven, and concrete tipis. After the death of her parents, daughter Jenny brought in a professional auctioneer and sold off the Museum’s contents at a public auction held in the street. Townspeople watched in horror while what Lincoln antiques there were sold for high prices to out-of-state buyers. At one point a wall phone went for $300, and the one still functioning in the house was quickly taken off the wall and sold too. When we later rented that house we were reminded daily of how much power market value has in relation to historic preservation.

Evenhandedness was a professional requirement in this position, but special treatment was a real expectation from friends.

Bob and local artist Walter Henn (first Director of the Heritage Trust) co-authored a helpful pamphlet called “Living with Historic Preservation.” One of the most glaring of the historic preservation ordinance’s shortcomings was that realtors were not required to inform property buyers of the existence of the ordinance, or even provide copies of it. So the pamphlet welcomed new residents to the community, explained that an ordinance existed and that its regulatory burden was light, invited the newcomers to a Historic Preservation Board meeting, and offered Board advice in advance of submitting construction plans. Our pamphlet was designed to be available to realtors and provided to new arrivals.

**INFRASTRUCTURE**

Public utilities in an unincorporated community can take a bit of choreography. Garbage collection in Lincoln was accomplished from a communal dumpster located behind the fire station. Woe be the person who arrived with a couple of ripe bags the night before collection and found the bin full or overflowing. Leaving bags stacked outside was not an option because of the wild (and not so wild) creatures that would find the contents appealing.

Television reception in Lincoln was interesting. There was a cable system of sorts set up to receive signals from an antenna on one side of the valley. The cable wiring protruded from the ground and was shielded by a two-foot-high, gray, fiberglass obelisk. Along with the fire hydrants and the asphalt highway, Lincoln was hardly a pristine nineteenth century town. But it definitely had an air of the past.

The water system depended on a camouflaged, gravity-feed tank fed from the town’s wells. It was administered by the Water Board, which saw to it that required water-quality testing was accomplished. The water system was far from foolproof; the supply occasionally ran a bit low and water pressure was variable. It regularly took a hit in
early summer, when the only swimming pool in town was filled and everyone else’s water pressure dropped to zero for about two days. Try explaining that one to the guests at your B&B! The quality of Lincoln tap water was a bit of a joke, as it was heavily mineralized and would curdle cream in your coffee. Some residents preferred to haul better-tasting water from an improved natural spring on nearby Bureau of Land Management land. We participated in this ritual for several years until our systems adjusted to the mineral content of the stuff that flowed from the tap.

While on the subject of Lincoln water, flood irrigation needs to be mentioned. Water for the traditional ditch irrigation system came from the Rio Bonito, which paralleled the south side of town. The irrigation system was administered by the Ditch Association. Water was allotted to property owners for very specific amounts of time, which might work for an agricultural family of 15 or so, but played havoc with the 8-to-5 schedule of a museum director.

Floods were an ever-present potential problem during the summer monsoon season, but not from the Rio Bonito, which was dammed. Over the years, most families had bermed their properties to divert the hillside runoff to a neighbor’s property. Whose berms would hold and whose would give way was a question not answered during our stay.

Able-bodied younger adults in Lincoln were the backbone of the local Volunteer Fire Department and were always in demand; Linda and Bob were drafted in short order. Fortunately, we never had to answer a call to any of the historic structures in town, but we often thought about how devastating that would be. Mostly we fought grass fires during the windy season of March and April as well as those sparked by lightning in the sultry summer months. We did fight one blaze caused by spontaneous combustion of grass cuttings on a compost pile, and Bob broke a rib while cutting a hole in a roof on the only structural fire he helped extinguish. For a period of time, we were plagued by a local arsonist in the adjacent valley who was once almost captured with his gasoline and rags. It was commonly stated among the area fire crews that if ever actually caught, he would probably be “accidentally” backed over by the fire truck. What our small crew lacked in formal instruction we made up for in spirit. Nothing could get the adrenaline pumping like the fire call!

Lincoln’s battle with the New Mexico State Highway and Transportation Department was never-ending. It seems that because Lincoln was unincorporated, the Highway Department chose to ignore it, but Catch 22-like, its National Historic Landmark District status required some modicum of attention, normally as little as possible. Roughly coinciding with some of Lincoln’s first historic preservation efforts, the Highway Department created what passed for sidewalks in Lincoln (best described as asphalt paths) and then refused to take any further responsibility for them as they deteriorated. Since Lincoln was built before anyone was concerned with more than a dirt road on which two wagons could pass abreast, many historic buildings had structural frontage within the right of way established later. That the Highway Department marked their right of way with green-painted, steel I-beams always seemed somewhat ominous.

Visitors touring the historic town needed to repeatedly cross the highway to visit the various buildings open to the public. Yet the Highway Department’s repeatedly preferred solution to Lincoln’s conflict with through traffic was to widen the highway so that the cars and trucks could go faster. Historic Lincoln homes were built above the road level, but in modern times highway engineers had raised the road (in some places by several feet) and had given it a crown for drainage, which then threatened some of the historic adobe buildings. The highway engineers also floated an amazingly obtuse plan to dig deeper ditches alongside the highway to improve drainage. An unnamed, for purposes of this article, Highway Department archaeologist monitoring new ditching efforts claimed total ignorance of the loading dock a road grader struck in front of a Heritage Trust building, even though it was obvious in historic photos that should have been looked at before a blade was
lowered. No, the Highway Department had a consistently poor reputation for their sensitivity and commitment to historic preservation among Lincolnites.

WE GET INVOLVED

From 1986 to 1988, the Heritage Trust and Lincoln State Monument supported a public archaeology project at the site of the McSween House, the focal point of the climax of the Lincoln County War's Five Day Battle in July 1878. Human Systems Research was the archaeological firm contracted to conduct the excavation. We first got to see the excavation in progress as guests of Dave Kirkpatrick and Meli Duran in 1986, before we knew we were destined to live in Lincoln. The dig had a rocky start; principal investigator Dave and his crew initially found few artifacts and no structural remains and were perplexed by their results. But Nora Henn, pre-eminent local historian, stopped by one day and pointed out that the archaeologists were digging in the wrong place. It seems Nora knew, but apparently State Monument and Museum of New Mexico personnel had forgotten, that the historic marker for the house was inaccurately placed. Remains from the home and gun battle were later recovered from under the 1880s Fresquez House and beneath the driveway to the east. It was speculated that additional materials could exist under the adjacent structure, Lincoln State Monument Headquarters at the Watson House. However, the project ended before further excavation could take place.

Linda arrived in Lincoln in time to participate in the second season of excavation at the McSween House. After fieldwork was completed, she was frequently drafted to give tours of the site, describing what the archaeologists had found. Doing archaeology in a historic community under the watchful eyes of thousands of tourists was frustratingly slow, but it gave us the rare opportunity to do some serious public relations work and to show people that even though archaeology isn't like the Indiana Jones movies would have them believe, it can still be filled with mystery and surprise. Conducting daily site tours and chatting with the visitors was part of everyone's job.

The Wortley Hotel has enjoyed a long history in Lincoln. It bears the name of its founder, Sam Wortley, who started the operation in the 1870s. The original structure was destroyed by fire but was later rebuilt. The reconstruction has a handful of quaint, period rooms for rent, but its big draw is the restaurant, which not only feeds thousands of Lincoln visitors each year but serves as the morning gathering spot where locals can grab a cup of coffee and catch up on town news, much as folks probably did over a hundred years ago. Linda enjoyed her volunteer work with the Historical Society, Pageant and Festivals Corporation, and the Volunteer Fire Department, but after the McSween project wound to a close, she was looking for a more regular paycheck than the occasional archaeological survey assignment from Human Systems Research could provide. So, having heard that the Wortley was losing one of its cooks, she approached the manager about filling that vacancy. By the time she left the building, she had the job. The camaraderie among the staff members, the locals coming by for their morning coffee and cinnamon roll, and the historic venue made Linda's work in the kitchen a labor of love.

To liven up the interpretive scene in Lincoln (State Monument rangers gave tours of the Old Courthouse), the Heritage Trust stepped up to the plate when Bob adopted the historical persona of Sam Corbet, a clerk who survived the Lincoln County War violence and remained in the community, marrying into a local Hispanic family. Attired as Corbet, Bob took a position on the street and would engage passersby, asking if they had seen the expected train of supply wagons that were overdue. The most telling and complimentary comment on his interpretive efforts came from a museum visitor who asked the receptionist if she knew there was a nut out there who thought it was the 1870s. The nut, of course, was Bob/Corbet. The visitor understood that Bob was referring to the past, but not that Corbet was part of the Lincoln experience. During lulls between visitor exchanges, Bob enjoyed sitting on the porch across the street from the Heritage Trust Museum with Tony Leyba, a retired Basque shepherd who had worked sheep all over
the Rocky Mountain West. Bob’s experiment as Corbet transitioned into the use of graduate interns during the next four summers to portray other historic Lincoln personalities. In addition, costumed Museum interpreters gave regular tours of the town, guiding visitors up and down the street, explaining the Lincoln story.

The stabilization of the Peppin House was an odd Heritage Trust project. George Peppin was sheriff during most of the Lincoln County War. His adobe home, abandoned, overgrown, and fast going to ruin as the tin roof deteriorated, was identified as a significant structure in Lincoln’s first comprehensive preservation plan (1974). Aware of a plan by one heir to level the historic house, and with the advice of legal counsel because of only a partial ownership of the property, the Heritage Trust initiated a preservation project for the house. The roof was repaired and buckling adobe walls were stabilized. An amusing project anecdote was the visit by a pair of National Heritage Trust for Historic Preservation staff. Dressed for the office and not the field, the ladies tromped out to the Peppin House through tall grass, barbed wire, cow patties, all the while alert for snakes. They complimented us on our work, and had a great story to tell when they got back to the office. They were troopers!

The Trust’s most significant research project was a photographic study based on the authenticated tintype of Billy the Kid. By the summer of 1986, forensic anthropologist Dr. Clyde Snow had created facial reconstructions of deceased troopers at Custer Battlefield National Monument. After learning that Clyde Snow vacationed in Lincoln County, and knowing that the Heritage Trust had the loan of an original tintype of Billy the Kid, Bob asked Clyde if it would be possible to do a facial comparison of the tintype image with any of the myriad photos claimed to be of Billy the Kid. Clyde said it was theoretically possible and the project went from there.

R. Gary Miller, Heritage Trust Director, enlisted Dr. Thomas K. Kyle of Los Alamos National Laboratory on an unofficial basis (it seems that LANL was not interested in being publicly affiliated with the scientific investigation of an American outlaw). Gary also invited Lewis L. Sadler, a researcher in the Department of Biovisual Communication at the University of Illinois, Chicago, to join the team. He was featured in *Time* magazine for his photographic aging process, which produced the images of kidnapped children commonly seen on the milk cartons of that time. Eventually, a volunteer investigative team of scientists and historians was assembled to select, compare, and evaluate other possible Billy images against that of the tintype. Although the project was seemingly a shoehine for serious grant funding, Heritage Trust board-level leadership wished to retain total project control and nixed the idea of matching grant support.

The prestigious George Eastman House of International Photography participated in the project, and was for several years the chosen repository for the original tintype. Eastman House produced an analytical report on the tintype and its production, as well the best photographic copies of the tintype image. In September 1991, the Heritage Trust held a Billy the Kid symposium in Ruidoso at which the results of the initial comparisons were announced (Figure 4). A dozen potential Billy photos had been subjected to Sadler’s photo comparison process involving 15 points on the skull; all failed statistical significance in test comparisons with the original image. These results were presented again a year later during a panel presentation on “Researching an American Outlaw” at the 1992 annual meeting of the Western History Association.

Sadly, after a promising beginning, the project folded when the Department of the Army became interested in Sadler’s process and awarded him a contract. Concerned about conflict between the Army contract and project timetables and deliverables, Sadler chose to leave our project. The photo study brought noted historians and experts to Lincoln to confer on project direction and eventually, during the 1991 symposium as part of the event’s formal program, a tour of Lincoln was offered. A highlight for Bob was the impromptu debate between historians and authors Robert Utley and Fred Nolan at the Old Courthouse as to how Billy the Kid escaped from the...
the jail. The debate started at the head of the interior stairs and proceeded down the length of the street to the Heritage Trust Museum.

The Heritage Trust succeeded in creating an award-winning educational program on Lincoln County history. Offered for three years to the fourth grade children of Lincoln County, the crown jewel in the Lincoln field trip portion was an Apache dance group. Nathaniel Chee, a former tribal juvenile judge and practicing medicine man, brought his family dance group to town to help teach about Apache heritage and customs. The program was presented in a small amphitheater with a Chiricahua tipi pitched adjacent to it. The Chees performed Apache dances, explained a little tribal history, and then invited the visiting children to dance with them.

As a historian living in a historic area, Bob became a minor local celebrity and was sometimes asked to speak to groups. Dentists meeting at the Mescalero Inn of the Mountain Gods were irked because the tribal chairman was scheduled to greet them on arrival and stood them up without explanation. Asked to speak about local history, Bob also was asked to explain the observed Apache “chip on the shoulder” attitude. He explained that of all the poor treatment of Indians by whites, treatment of the Apache probably took the cake. After Geronimo surrendered, both Geronimo’s people and the U.S. Army’s Apache scouts who helped round them up were sent to Florida as prisoners of war. So the crime against whites was clearly racial; whose side an Indian was on was apparently irrelevant. All Apaches, “friendly” or “hostile,” were treated alike. After the talk an Apache waitress came up and thanked Bob for his answer and that made his day!
PAGEANTRY

Every historic community needs its annual heritage celebration, and Lincoln is no exception. Lincoln's biggest event of the year is the Old Lincoln Days folk pageant held each August in an outdoor amphitheater. The celebration draws an amazing crowd. Even the writing of the pageant script in 1940, "The Last Escape of Billy the Kid," was an amazing feat, given that the descendants of both sides in the Lincoln County War still live in the area. Although everyone will tell you that the Lincoln County War happened a long time ago and is over, don't believe a word of it! It still simmers and the battle lines are still drawn.

Lincoln's pageant grounds lie immediately adjacent to the scene of Billy's 1881 escape. The cast and support crew number about 100 individuals. Two of the three performances over the weekend take place at night. Though towering thunderstorms formed the backdrop for the seven consecutive pageant seasons we witnessed, it rained seriously only once. That year mud forced the normally mounted players to lead their horses, significantly decreasing the element of drama. During the gun battles, the opposing sides fire blanks and the burning McSween House is silhouetted by real flames. Significantly, Billy the Kid is not killed at the end of the performance, but allowed to ride off into legend or infamy, depending on your point of view. The script deals only with the events of the Lincoln County War and its immediate aftermath; no real judgment is made as to Billy's inherent sainthood or deviltry.

The Old Lincoln Days parade on Saturday morning is not just any parade, as the U.S. highway through town must be closed while participants wend their way from one end of town to the other, waving merrily at the large crowd of spectators. Lincoln is never as festive, or un-Lincoln-like as during Old Lincoln Days. Lincolnites proudly boast that they have no desire to be as commercial as Tombstone, Arizona. Yet during this celebration the pandemonium and commercial air approaches that of well-known tourist traps. Food booths, balloon sales, rubber tomahawks, and plastic pistols are everywhere in evidence. Although the Pageant and Festivals Corporation makes every effort to assure that the concessions have an Old West flair, even vacuum cleaner booths have been reported. Proceeds from admission and refreshment sales at the pageant grounds go toward upkeep of the grounds and keep the pageant financially afloat, but it is primarily the enthusiasm of the county's residents for their heritage that keeps the pageant going year after year.

Since 1930, the escapades of Billy the Kid have brought Lincoln repeatedly to the silver screen. The latest versions, two Young Guns movies, were released in 1988 and 1990. Many details of the Lincoln scenes filmed in Cerrillos were, of course, wrong, and caused a great deal of hilarity among the numerous Lincoln critics over morning coffee at the Wortley Hotel. The two-story, wood frame McSween House blazed away far too nicely, since the real one was a single story adobe and was quite reluctant to burn. Billy's dramatic shooting of L. G. Murphy at the end of the first movie was, of course, purely fictitious. Murphy actually was not even present at the time and died of cancer three months later. The second movie's "Brushy Bill" Roberts was not, of course, Billy the Kid and flunked in the photo project comparisons. But as Rafaelita Baca Pryor, granddaughter of early Lincoln Sheriff Saturnino Baca, said of Young Guns I, "It could have been worse."

Along with the resolution to never be as commercial as Tombstone, Lincolnites agreed that no gunfights would be allowed on the streets of town. This drove the numerous members of the Billy the Kid Outlaw Gang (headquartered in commercialized Fort Sumner) crazy. Gang members argued that such spectacle would bring tourists in ever-increasing droves, which was exactly why townsfolk didn't want gunfights!
TOWNSPEOPLE

Lincoln had its characters, none more distinct than Clark Pfingsten, known as the premier local pothunter. Clark must have been in his 80s by the time we met him and was stone deaf. He rapidly found out that Linda, although an archaeologist, would not shun him, and he would show up with a tablet of paper ready to “talk.” He offered to share some of his knowledge of the local area, one of his lessons being the yellowish-pink color that local sandstone turned when exposed to fire. This turned out to be a handy tidbit during the excavation of the McSween House.

Many of Lincoln’s non-Hispanic residents had come there to escape the hustle and bustle of big city life, charmed by the slower pace and the quiet, historic surroundings of this Hispanic village. The population consisted of farmers and ranchers, and those who worked at the various museums and small businesses in town, as well as doctors, lawyers, and teachers who made daily commutes to larger nearby cities. While the community was a haven for the retired set, the town also drew artists and musicians and an assortment of professionals (authors, an architect, even a marine valve engineer) who conducted their business long-distance from home. We even had our own movie star, Richard Farnsworth, who our girls adored as Matthew Cuthbert in the movie *Anne of Green Gables.* The caliber of the conversation at the frequent, small social gatherings in town was surprisingly sophisticated for such a rustic and isolated setting.

IN CLOSING

For generations people have been lured to Lincoln by the charm of the peaceful Bonito Valley. Some came to raise crops, livestock, and a family, others to make their fortunes. The town didn’t always remain peaceful, but it remained home. Theirs are the stories we learn about as we wander the streets of Lincoln today. We were welcomed warmly on our arrival, and it didn’t take long for us to put down roots. Maybe it was our professional interest in the past; perhaps there is just something special about a place that appreciates its heritage. Now, having moved on to other endeavors, we realize that we have become one small part of Lincoln’s history. And the lessons we learned during our time there will stay with us for the rest of our lives.
Over the last century and a half the Hopi have been the subject of studio, expeditionary, commercial, documentary, amateur, journalistic, and creative photography.

Members of two of the first exploratory expeditions to the Southwest, Elias Olcott “E. O.” Beaman, John K. “Jack” Hillers, and William Henry Jackson, created a baseline for the study of change in Hopi vernacular architecture and, in doing so, left a detailed record of their efforts and of Hopi responses.

Nineteenth century Hopi architecture—a built environment that included plaza, house blocks, kivas, shrines, and structures beyond the villages proper—was an organic, ever-changing phenomenon. The sandstone and mud used for the walls of the houses required frequent repair and re-plastering. Rooms were added and structures often torn down and rebuilt. Sequences of architectural change can be seen in the accurately dated photographs. Two examples will suffice here. First, beginning with E. O. Beaman in 1872, a number of photographers (e.g., Jackson in 1875; Hillers in 1876; Dellenbaugh in 1884; Wittick in 1885; Ames in 1887; and Mooney in 1893) made photographs from the roof of the three-storied structure at the northeast end of Tewa Village (Hano) with the plaza in the foreground and Walpi in the distance. During this time, on the southwest side of the Tewa plaza, a Tobacco clan house was taken down, rebuilt, and remodeled. Second, beginning with an unknown stereographer in the early 1870s, nearly every photographer visiting Hopi well into the twentieth century took a photograph of Walpi from the northeast, incidentally documenting a number of dry-wall sheep corrals on the talus slope below the village.

The early photographs show repairs and new walls being built, but by the turn of the century, the corrals have fallen into disuse and many of the walls have disappeared.

The narratives and work of Beaman, Hillers, and Jackson are the focus of this article. In addition, appended to this article is a chronology of photography at Hopi. The purpose of this timeline is to aid scholars of various disciplines in accurately identifying the names, the dates, and to a lesser extent the subject matter of this photography. Though by no means a complete listing of all photographers who worked among the Hopi in the nineteenth and twentieth centuries, it provides the framework for a larger historical perspective. The success of using photographs for the study of culture change depends on accurately identifying the date of creation of the images, even in the case of those made within the limited time frame of Hillers’s four visits to the Hopi between 1872 and 1881. Unfortunately, little attention has been given to providing accurate dates of creation in most published and on-line archives of Hopi photographs and this, in turn, has lessened the value of a number of previous studies of Hopi vernacular architecture including those of Richard V. N. Ahlstrom on the use of “casual repeat photography” (1992) and Catherine M. Cameron’s study of architectural history at Oraibi (1999).

EXPEDITIONARY PHOTOGRAPHY

The post-Civil War scientific exploration of the American West involved the creation of the four “Great Surveys” associated with the names Ferdinand Vanderveer Hayden, John Wesley Powell, Clarence King, and George

Photographers were associated with each of these surveys: E. O. Beaman and J. K. Hillers with Powell’s survey, W. H. Jackson with Hayden’s, William Bell and Timothy O’Sullivan with Wheeler’s, and O’Sullivan with King’s. As a member of the Wheeler survey, O’Sullivan made the first photographs of Canyon de Chelly and Zuni in 1873, but did not visit the Hopi and his work will not be considered here. On the other hand, Hillers continued to work with Powell and visited the Hopi again in 1876, 1879 and 1881 and as a member of James Stevenson’s Bureau of Ethnology expeditions to the Southwest. As François Brunet has made clear, “the American explorers’ unprecedented investment in photography responded to the constant need for self-promotion in the struggle for influence between the Departments of the Interior and War and the prospect—constantly revived in the course of the 1870s—of the formation of a centralized geological department” which occurred in 1879 with the creation of the United States Geological Survey (Brunet 2007:26).

Photography continued to be a part of a succession of scientific expeditions from those of the Bureau of Ethnology (1879-1888) and the Hemenway Southwestern Archaeological Expedition (1890-1894) to the Stanley McCormick Hopi Expeditions (1901-1902). In the 1880s there was a shift from an emphasis on the landscape of architecture to the documentation of Hopi ceremonial life. In the fall of 1884, John G. Bourke’s Snake Dance of the Moquis of Arizona was published, and the following year several dozen curious onlookers, including five photographers, were drawn to the Snake-Antelope ceremonies at Walpi. By the 1890s, cameras were the commonplace equipment of amateur and commercial photographers. On August 15, 1891, The Coconino Sun (Flagstaff) reported the widespread rumor that “the government is taking steps to discontinue the [Snake Dance] and...this will be the last one” (Anonymous 1891). That year the number of photographers increased to a dozen or more at the Walpi observances. A decade later, George Wharton James wrote of 1901 Walpi Snake Dance, “It was decided that the photographers present—at least there were legion—must be kept within a certain line... It will not be long before one can write a learned and accurate paper... on ‘the change in religious ceremonies owing to the camera’” (James 1902:7, 10). In 1913, photography of the Snake Dance was prohibited by the Commissioner of Indian Affairs, a prohibition extended to all areas of Hopi life over the next several decades.

Technological developments have also shaped the history of photography at Hopi. The wet-plate process used by the early expeditionary photographers required a portable darkroom and a small laboratory of chemicals. Advances in photographic processes and equipment made cameras relatively simple and easy to use. By the time of the 1891 Snake Dance at Walpi many visitors “carried kodaks with them” (Donaldson 1893:vii). In 1899, the first motion pictures were made of the Snake Dance at Walpi.

E. O. BEAMAN (1872)

The first photographs taken at Hopi were made following Powell’s second expedition through the Grand Canyon in 1871 and 1872. Powell’s first expedition in 1869 did not include a photographer, nor did a photographer accompany Powell during a two week visit to the Hopi in October 1870. The Hayden Survey, and before it the railroad surveys, had achieved popular interest and support by taking artists with them and Joseph Henry, Secretary of the Smithsonian, insisted that Powell do the same. Given the increasing popularity of photography, for the second expedition Powell hired professional photographer E. O. Beaman to make stereoscopic views of the landscape. To continue support for his work, Powell distributed prints to members of Congress and used transparencies on glass projected from a magic lantern in his public lectures. In January of 1872, after a disagreement with Powell over the ownership and use of the photographs he was making, Beaman resigned and was eventually replaced by J. K. "Jack" Hillers (Worster 2001:220, 237).
Following his departure from the Powell Survey, Beaman went to Salt Lake City. Two years later, in April and May 1874, he published a series of seven articles in *Appleton's Journal* entitled “The Cañon of the Colorado, and the Moquis Pueblos” in which he described his work with Powell and his photographic efforts among the Hopi in late August and early September 1872. Leaving Kanab, Utah on August 14 with James Carlton as his companion, Beaman reached Oraibi on August 25 prepared to trade indigo, powder, lead, and other materials for blankets and pelts and to take photographs. Between 1859 and 1872, over a dozen Mormon missions, all under the leadership of Jacob Hamblin, had visited Oraibi, with some missionaries for staying months in the village. When Beaman and Carlton arrived at Oraibi they were met by 10 Hopi men who were given “the idea we were from the Mormon settlements” and had materials to trade. Hopis trusted Mormons (*momonam*) considerably more than other Anglos (*pahaanam*). Although the initial welcome was “not especially cordial,” Beaman and Carlton were soon approached by Lie (or Lyee) who, like several other Oraibians, had visited Utah, and invited them to his house. The following day Beaman wrote, “For an hour or two I was a veritable Indian trader, my indigo being in especial demand” because of its use in weaving. Beaman was aware the Oraibians had recently “refused to accept annuities from the United States Government” and this, he states, “gave me much doubt as to my success in getting photographs of them.” He continues (Beaman 1874:642):

I began by showing them some pictures; with these they were greatly pleased, but when I gave them to understand that I wished to take their portraits, they retired within themselves, uttering the significant expression, “Moqui!” [*mooki*] which ... means “Die,” and, shaking their heads, added, “Kah-loo-lo-mi!” [*qa lobma*]—“not good.”

Beaman feared that if he brought out his camera “which hitherto I had kept closely concealed—I might find danger” but the following day “I boldly brought out my instruments and prepared for business.” He writes (1874:642):

I was immediately surrounded by at least a hundred people, men, women, and children, and before they were aware of what I was doing I had taken several groups. But as soon as they make the discovery they all had pressing business on the other side of the town, and presently I found myself master of an undisputed solitude.

Shortly after this, “I was perambulating the streets with my camera on my shoulder, prospecting for views.” Beaman was unable to take any other pictures of the people of Oraibi noting (1874:642), “Even our friend, Lie, who had lived long enough among the white to learn their language, positively refused to let me make a picture of either himself or family.”

Lie agreed to accompany Beaman and Carlton to Second Mesa but he refused to enter Mishongnovi with them. Beaman explains (1874:643):

Upon asking him the reason of his reluctance to introduce us to the people here, he after much urging stated that, should any harm come to the inhabitants of the *pueblo* by reason of my photographing them, they would kill him. I therefore told him to say nothing of my intent in that direction, but to tell them that I wished to trade ammunition and indigo for buckskins.

Beaman kept his word but Lie took “French leave.” The following day, after a brisk trade of beads and indigo for buckskins and blankets, Beaman and Carlton continued on to First Mesa.

Unlike Oraibi, whose Mormon visitors came from the west, most of the visitors to the First Mesa villages of Walpi, Sichomovi, and Tewa-speaking Hano (Tewa Village) in the years immediately before Beaman’s arrival came from the east and were with the United States military. Beginning in December 1869, Capt. A. D. Palmer, newly appointed United States Special Agent for the Moquis Pueblo Indians, made several extended visits from Fort Defiance to First Mesa. He was accompanied by William H. H. Metzger, farmer and Spanish
interpreter, who constructed the “government house” at the edge of Sichomovi. At the first of January 1871, Palmer was replaced by Williamson D. Crothers.

When Beaman reached the top of First Mesa on August 30, 1872, he was “accosted by a young Indian [Tom Polacca] who, addressing me in Spanish, stated that his father [Koicheve], mother, and two sisters [one of whom was Nampeyo, the potter], would like to have me visit their house and sell them some paint and beads” (Beaman 1874:643). Beaman was invited to join them for a meal and afterwards, he tells us (p. 644):

Having ingratiated myself into the family, I ventured to produce some pictures, and, contrary to my expectations, and in agreeable contrast to my past experience, they appeared delighted with them, and cheerfully agreed to allow me to take their photographs the following day.

This (to me) astonishing readiness to comply with my request was explained in the course of my conversation with the young man, by his stating that he had seen some of these “sun-pictures” when on a visit to Fort Defiance.

After bidding this hospitable family “Good night,” we returned to our camp on the flat rock at the foot of the cliff.

The next morning, bright and early, the young Tawahian came down to assist us in carrying up the camera and chemicals to his house. Arriving there, we found the women of the family on the qui vive—all excitement and expectation.

I prepared my materials in the room where the old chief was weaving, pitched my dark tent upon the top of the house, and soon had my subject posed in a group. The ladies had presumed too greatly upon their courage, however, for, no sooner had I leveled my camera at them than they fled like a pack of startled sheep. After considerable persuasion the young man was induced to stand up, and, before he had time to flinch, the deed was done. The girls, seeing that their brother was unhurt, became bolder, and allowed themselves to be persuaded to follow his example.

On September 2, Beaman and Carlton began preparation to return to Kanab. The following day they reached Mishongnovi and then Shipaulovi: “Here I succeeded in obtaining some fine views” (1874:686). They retraced their steps, passing Oraibi, before reaching Moencopi on September 10. They had stopped briefly at Moencopi on August 24 expecting to find “Tuba [Tuuvi, an Oraibi man] and his wife, Telashnimkie [Katsinmana] ... [who] had visited Utah the preceding summer [1871] and there imbibed some of the enterprise and goaheaditiveness of the Yankees” (1874:625). Back at Moencopi, they were welcomed by Tuuvi who “had been expecting Jacob Hamblin all summer [and] when we told them that we were from Kanab, Telashnimkie burst into tears, and inquired with the utmost concern after the health of every one she had known there.” Beaman tells his readers (p. 687):

Tuba’s settlement comprises six families, two of them being from Moqui [Walpi], and the other four from Orihaya. They seem determined to build unto themselves a colony upon the most approved plan of civilization, and the Mormons have promised to send them teachers, and otherwise assist them in carrying out their scheme.

Several days we spent among them, occupying time chiefly in making pictures, and becoming each day more interested in a race at once so intelligent, so palpably a link reaching down from America’s unresurrected archaeology, and so utterly unknown and neglected.
J. K. HILLERS (1872)

As Tuwu expected, Jacob Hamblin did return that summer. A little over a month after Beaman's visit, Hamblin led another party from Powell's second Colorado River expedition to the “Moqui villages.” On October 9, 1872, Hamblin, Walter Clement “Clem” Powell, first cousin of the explorer, John K. “Jack” Hillers, and Andrew J. Hattan, left Kanab, “being a Government expedition in quest of Aztec [Hopi] wares, implements, and manufactures” with “photographic apparatus, rations, ammunition, and goods for gifts and barter” including beads, indigo, knives, mirrors, “and a quantity of raw cotton” (W. C. Powell 1948/1949:379, 462, 487-88). The party reached “the Indian City of Oryba” on October 23 where they stayed overnight with Tuba (Tuuvi). “The Moquis all knew Jacob,” Powell wrote in his diary and it is clear Hamblin’s long established rapport with the Hopi facilitated both trading and photography.

The following morning the party decided “to go to the farther towns and work towards home” and by evening they reached First Mesa where they were “shown a house unoccupied” in Sichomovi. Hillers notes (1972), “The occupant had died of small pocks [i.e., small pox, possibly during an epidemic in 1853].” He adds, “We were greeted by two white men, one Mr. [Oren C.] Crothers, the agent’s son, the other, a Spanish interpreter, Mr. Wallace.” Hillers’ diary has only two more entries:

[Oct.] 25. Tried photographing but the traps were out of order. Spent all day fixing them. No better result. Kept on tinkering.


Eventually they were able to make photographs of “groups of Moquis gathered in front of our ‘Hogon’” [sic] but “the weather growing colder in the afternoon were compelled to suspend photographic operations” (W. C. Powell 1948/1949:464).

The following day, October 27, “the weather [was] very cold, the wind blowing a perfect gale, so the picture business was out of the question.” However, the next day Powell reported “taking pictures all day and finished up the 3 towns much to our satisfaction.” He noted, “a few of the Moquis have Navajo squaws. Saw one of them weaving and made a picture of her” (W.C. Powell 1948/1949:465).

Meanwhile preparations were being made for a “cochine [katsina] dance.” During the morning of October 29, Hillers took “more pictures of the Tawa [Tewa] town.” Powell continues, “at about noon we heard the drum sound” and they proceeded to Walpi where “during the afternoon we succeeded in making one or two instantaneous views of the dance” (W.C. Powell 1948/1949:465-466).

The party then moved to Second Mesa where, during the next two days, they took photographs of Mishongnovi where “the inhabitants regard us with suspicion,” Shipaulovi, and Shungopavi (W.C. Powell 1948/1949:466-467). The next morning they left early for Oraibi. Powell writes:

We were soon climbing up its stone steps and unpacked at our old place back of Tuba’s house. Mrs. T. gave us a dinner... After it was over we set up tent and camera and soon had the town of Oryba boxed up. Pictures have not been a success but the impression will be good to engrave from (W.C. Powell 1948/1949:468).

Many of Hillers’s photographs were good enough to be published as stereoscopic views (for separate prints, see Smithsonian Institution, National Anthropological Archives, Photo Lot 83-18). A few years later, a number of them were used as the basis of engravings for John Wesley Powell’s “The Ancient Province of Tusayan” (J. W. Powell 1875).

William C. Powell and Hillers also met Lie, who could “talk pretty good English.” On November 3, the party “bade Oryba good-bye and the Moquis’ towns farewell”
and returned to Kanab on November 11. Ten days later they met members of the Wheeler Expedition including William Bell, the assistant photographer. Powell noted:

Showed him our negatives. He pronounced them fine. Invited us up to his camp tomorrow to see his negatives.... Nov. 22nd. ... Bell showed us how to develop dry plates; do not like the process as well as the wet. Showed us his views; there is too much bare glass to make them first-class (W.C. Powell 1948/1949:472-473).

WILLIAM H. JACKSON (1875)

On August 12, 1875 a party from F. V. Hayden’s survey (First Division, Geological and Geographical Survey of the Territories), “three of us starting out with two pack mules, carrying our provisions and the photographic kit,” reached First Mesa. Over the next two days William H. Jackson made photographs on the First and Second Mesas. Jackson was accompanied by “Harry,” a guide, and E. A. Barber, a newspaper reporter who published an article detailing their visit in the New York Herald (Barber 1875).

When they reached Tewa Village, “two men advanced to greet us—one, the foremost, a bright, fine looking young fellow, dressed in a full American costume, with a cocked hat and red feather, who took off his hat, shook hands, and in broken English, interspersed with Spanish, bade us welcome.” The men were father and son, Koicheve (“Governor of the town”) and “Captain Tom” Polacca. They were invited to the Governor’s house where Jackson and Barber were attracted to “a beautiful girl...the pretty Moqui Princess”—Num-pa-you (Nampeyo). Jackson stored his camera with Koicheve and the party spent the night on the plain below.

“Ascending to the mesa early, in order to photograph the towns, we rambled around once more in search of good specimens of the modern pottery to bring away with us.” At noon “we packed up and started across the valley,” reaching Shungopavi at sunset. The following day after “obtaining some negatives of the principal buildings of Shung-a-pah-wee, we rode over to the next town on our return route, known as She-pau-lah-wee, and were welcomed, as we had been at Tegua, by the head man of the place, Na-kwap-she-o-ma.” They “obtained negatives of the principal views of the place and also of Moo-sha-neh [Mishongnovi].” The party returned to First Mesa “in order to take a few more desirable views before evening” and met the Hopi agent, W. B. Truax, and the “trader for the Moquis,” William “Billy” Keam (Barber 1875). In the evening they were treated to a farewell party (for Jackson’s sketch of the gathering, see Blair 2005:158). Jackson made two photographs (“negatives”) and a pencil drawing of Nampeyo, “the good-looking sister of Captain Tom” (Jackson, quoted in Blair 2005:156).

Jackson’s published photographs included six 5 x 8 images and three stereographs, including the one of Nampeyo. F. V. Hayden, an active “publicist and promoter,” would make the most of Jackson’s photographs at the Centennial Exhibition which would open in Philadelphia on May 10, 1876. Prior to his arrival at the Hopi villages, Jackson had photographed Two Story Cliff House on the Mancos River in Mesa Verde as well as cliff dwellings along the Rio de Chelly. His notes, sketches, and photographs were used to create scale models of the prehistoric and historic villages which, Jackson later recalled, “attracted more attention than many of the photographs and all of the rocks and relics of Dr. Hayden’s career” (Jackson 1940:243).

In April 1877, Jackson visited Oraibi and “made about 15 or 20 negatives.” Unfortunately for Jackson, instead of using “my slow wet-plate equipment” he chose to experiment with a newly developed dry, 8 x 10 sensitive negative tissue that came in strips of twenty-four. He took nearly 400 photographs on this trip to the Southwest before he had time for developing but “no method I could think of... would bring out the faintest trace of an image on any one of the exposures made” (Jackson 1940:246). This was Jackson’s last visit to the Hopi.
J. K. HILLERS (1876)

Rumors of Jackson’s photographic work among the Hopi and the preparation of architectural models for the upcoming Centennial Exhibition prompted John Wesley Powell to send an expedition to the Hopi in the winter of 1876 to make photographs of the villages and to collect examples of Hopi material culture (Hieb, in press). The party consisted of Hillers and Olin D. Wheeler, a young topographer who had been a member of Powell’s surveys. With money provided to the Smithsonian Institution through agreement with the Bureau of Indian Affairs, Hillers was able to purchase a huge 20 x 24 inch camera, glass plates in three sizes (20 x 24, 8 x 10, and 5 x 8), chemicals for wet plate (collodion) photography, a tripod, and materials for a tent darkroom. To barter, the party had a bale of cotton, beads, peacock feathers, over 1000 yards of calico prints, men’s hats, shirts, and other materials. From an inventory prepared on their return to Washington, D.C., it is clear Wheeler and Hillers acquired not only “arts” (examples of pottery, textiles, katsina dolls, and ceremonial paraphernalia) but also the “tools” (“loom with blanket,” “vessel for holding paint,” “smoothing stone,” “implements for working wood”) used in their creation. William Ream served as their interpreter from March 4 to March 22.

Most of the month was spent on First Mesa. Perhaps because of snow and cold, Hillers experimented by taking candid stereographic views of Hopi women and children in the dance plaza at Walpi. Eventually he arranged for Hopi men and women to pose and placed pottery in the foreground, draped textiles on walls, and moved ladders in an effort to create photographs that documented Hopi vernacular architecture and were, at the same time, aesthetically pleasing. Nine of the large, 20 x 24 inch images were exhibited at the Centennial Exhibition in Philadelphia, including four photographs taken at Mishongnovi (National Archives 106-IN-91-99).

For all the expense and effort, there was little public notice of the photographs and collections made by Hillers and Wheeler. Philadelphia Public Record writer Augustus C. A. Perkes, seldom given to superlatives, noted simply the presence of “views taken in the ancient province of Tusayan, Northern Arizona,” “some good specimens of pottery from the Moquis,” and “earthen bowls from the Pueblos [Tesuque], Santa Fe, New Mexico.” Far more popular were Jackson’s photographs and transparencies, a crayon drawing “of the interior of a dwelling of a Moqui Indian,” a model of a ruin “restored to its probable original state, [with] tiny men and women...at their daily work, grinding corn, carrying water, etc.” (Perkes 1876:114, 115). After the Centennial, Hayden continued to use Jackson’s photographs as propaganda to promote the work of his survey; Hillers’s Hopi photographs, on the other hand, were the property of the Indian Bureau and could not be published by Powell. Three years later the competition between the Great Surveys ended with their consolidation into the U. S. Geological Survey by an act of Congress on March 3, 1879 with Clarence King in charge (Hieb, in press).

J. K. HILLERS (1879)

Although many of Hillers’s photographs are given the date “1879,” there is no record of his visit to the Hopi. At Zuni Hillers made seventy 11 x 14 inch photographs (National Archives 106-IN-2384), many of which were duplicated in stereographic format. On October 12, Hillers went to Fort Defiance, where he made stereographic views of Navajos on an “Issue Day,” and proceeded to Canyon de Chelly, where he made photographs using a 20 x 24 inch camera (National Archives 57-PS-85-94). On October 18, Stevenson indicated he was going to the Navajo Agency at Fort Defiance and to “Moqui” where Thomas Keam had assembled a “six mule team load of specimens.” Unfortunately, the reports Stevenson sent to Spencer Baird on October 27 and November 7 (Green 1990:63) have been lost and there is no mention of Hillers’s work at Hopi in Stevenson’s annual report (Powell 1884:xxii) nor in newspaper clippings in a scrapbook assembled by Matilda Coxe Stevenson (Laboratory of Anthropology Archives, Santa Fe, Archive No. 91JSS000). However, it is clear from the size of the negatives used at Zuni in
the fall of 1879 that a number of stereographic photographs were taken of Hopis (and Navajos) at Keam's trading post, and at least one 11 x 14 inch photograph was made on First Mesa, an image, "Pueblo of Wolpi" (Morgan 1881:142, Figure 25).

J. K. HILLERS (1881)

As a member of James Stevenson's second Bureau of Ethnology expedition to the Southwest in 1880, Hillers continued use of an 11 x 14 inch camera to make a series of images (duplicated with a stereographic camera) of 16 Rio Grande Pueblos (National Archives 106-IN-1890-2227B). During the next field season, between late September and early October 1881, Stevenson and Hillers returned to Kearns Canyon. From there Hillers completed his photographic survey of the Pueblos by making 11 x 14 photographs on all three mesas (Powell 1884:xxii; National Archives 106-IN-1835B-1866B). An unidentified newspaper clipping in the Stevenson scrapbook reported:

[Oraibi's] inhabitants are so exclusive that they do not even visit the Government agency nor have they ever received any annuities. The people of this village are subject to influences from some source which induce them to object to any communication with the whites. When the inhabitants discovered the approach of the exploring party they became so much alarmed that they abandoned their homes, leaving only the aged and bed-ridden. The opportunity was thus presented to the party to make their investigations in the homes of the people at their leisure. A series of fine photographic views of exteriors and interiors was obtained, but it was thought best not to carry away any of the utensils or curious articles of furni

Hillers's photographs of Oraibi are of exteriors only (National Archives 106-IN-1859BB-BD). With the survey of the pueblos complete, Powell distributed a limited number of portfolios entitled Photographic Illustrations of Puebla [sic] Indian Villages in New Mexico & Arizona which included seven images selected from Hillers's work in 1876, 1879, and 1881. Hillers returned to Keams Canyon in 1882 as a member of Stevenson's expedition into Canyon de Chelly but did not visit the Hopi villages. On this field trip Hillers (and Ben Wittick) made the first photographs of ancestral Hopi villages in Canyon del Muerto (Hieb 2005; National Archives 106-INE-6-8).

The work of Beaman, Hillers, and Jackson laid the groundwork for future studies of Puebloan vernacular architecture beginning with Victor Mindeleff's monumental survey of ancestral and historic Hopi villages (Mindeleff 1891). Hopi architecture is more than sticks and stones. In it the categories and rules of kinship and social organization as well as the conception and practice of Hopi religious traditions were, and continue to be, embodied and given expression. All cultures change over time and the rapid culture change in all aspects of Hopi life is reflected in the photographic record begun by these three expeditionary photographers.
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Worster, Donald
Chronology of Photography at Hopi

[Studio, Expeditionary, Commercial, Amateur, Journalistic, and Creative]

1863 Charles W. Carter (1832-1918) (or Savage & Offinger?) makes a studio portrait of a Hopi delegation visiting Brigham Young in Salt Lake City.

ca. 1870 Francis A. Cook (1832-?) takes photographs of Hopis in his Prescott, Arizona studio.


1872-1881 In 1872 John K. "Jack" Hillers (1843-1925) makes stereoscopic views of First and Second Mesa and Oraibi. Engravings based on these photographs are published in John Wesley Powell, The Ancient Province of Tusayan, Scribner's Monthly 11 (December 1875:193-213). In March 1876, for the Centennial Exhibition in Philadelphia, Hillers makes stereoscopic, 8 x 10 and 20 x 24 inch photographs on First Mesa and the Second Mesa village of Mishongnovi. Returning in 1879, Hillers takes stereographs and 10 x 13 photographs at Keams Canyon and on First Mesa (and Second Mesa?). In 1881, with images made at Oraibi, Hillers completes a photographic survey of the Pueblos of New Mexico and Arizona using 10 x 13 inch glass negatives.

1875 With the Hayden Survey, William Henry Jackson (1843-1942) makes photographs of Nampeyo and the First and Second Mesa villages. Stereographs and 5 x 8 inch photographs.

ca. 1876 Santa Fe photographer Henry T. Heister makes stereographs of the Moqui Pueblo Indian Agency constructed in 1874, Walpi and Mishongnovi.

1877 An unknown photographer accompanying Gen. August V. Kautz takes a photograph of Walpi.

1880 Daniel Francis Mitchell (1844-?) makes portraits of Hopis in his Prescott, Arizona studio.

1882, 1887 Victor "Vic" (1861-1948) and Cosmos "Cos" (1863-1938) Mindeleff begin their architectural survey of the Hopi villages and report taking photographs at Awatovi as well as at the "seven inhabited villages." The Mindeleffs return to Hopi in 1887 to complete their architectural survey. Photographs are taken at/near Moencopi. As a member of their party, Alexander Middleton Stephen (1846-1894) reports taking photographs.

ca. 1882 Under the title Photographic Illustrations of Puebla [sic] Indian Villages of New Mexico & Arizona, a portfolio of photographs taken by J. K. Hillers between 1876 and 1881 is distributed to develop support of the Bureau of Ethnology.

ca. 1881-1883 Santa Fe's W. Henry Brown (1844-1886) publishes a stereograph of Walpi; photograph by his partner, George C. Bennett.

1884 George Benjamin "Ben" Witrick (1845-1903) visits Keams Canyon and takes photographs (stereographs and cabinet cards) of the "Keams Canyon Collection" of ancestral and historic Hopi pottery as well as of contemporary Hopi arts. See Ben Witrick and the Keam Pottery Collection, by Louis A. Hieb, American Indian Art Magazine 34 (Summer 2009:38-49).

1884 Frederick Samuel "Fred" Dellenbaugh (1853-1935) takes photographs on First Mesa, including ceremonies in Sichomovi.

1885 Cosmos Mindeleff photographs the Snake Dance at Mishongnovi. First known images of the ceremony.

1885 [Stephen Poole?] Sanders [an Atlantic & Pacific Railroad photographer?] makes a series of photographs of the Snake Dance at Walpi printed as cyanotypes and as albumin prints. Albuquerque photographer W. Calvin Brown also takes photographs of the ceremony.

From Flagstaff, Ben Witrick, assisted by Joseph Campbell Burge (ca. 1839-1897) takes photographs of the Snake Dance at Walpi. Witrick later takes photographs of the Snake Dance at Walpi (1889, 1893, 1897, 1899) and Oraibi (1898). In preparation for attending the Snake Dance at Walpi in 1903, Witrick captured a large rat-tlesnake to present as a gift to the Snake priests. The snake bit him and he died three weeks later at Fort Wingate. A selection of Witrick's Hopi photographs (many misidentified as to date, location, and subject) appear in Patricia Janis Broder's Shadows on Glass: The Indian World of Ben Witrick (Rowman & Littlefield, Savage, Maryland, 1990).
1889  Frederick A. Ames (1865-1925), visiting northern Arizona, takes photographs of the Moqui Pueblo Indian Agency and on First Mesa.

1889  A. M. Stephen, assisted by Hernando J. “H. J.” Messenger (1860-ca. 1916), takes photographs of the Walpi Snake Dance that are used as the basis of engravings in a New York World newspaper article (September 8, p. 9).

1890  Denver photographer Charles A. Nast (d. 1931) makes a number of domestic scene images.

1890  During the course of investigations for the 1890 Census, Julian Scott (1846-1901) takes photographs published in Thomas Donaldson (1893). Scott visits Hopi in October 1890 and again in July-August 1891 and July 1893.

1891  Jesse Walter “J. Walter” Fewkes (1850-1930), takes a limited number of photographs of several ceremonial observances at Walpi. Neither Fewkes nor Stephen, who assisted Fewkes (1891-1894), mention the use of a camera; however, photographs and engravings based on photographs appear in their published work. J. G. Owens (1865-1893), accompanying Fewkes in 1891, reports taking photographs. In 1896, Fewkes photographs the Snake and Antelope ceremonies at Oraibi and the Snake Dance at Shipaulovi. Fewkes’s use of photographs in his publications is extensive. For a complete list of his Hopi publications, see W. David Laird, Hopi Bibliography (The University of Arizona Press, Tucson, 1977).

1891  Charles Fletcher Lummis (1859-1928) attends the Walpi Snake Dance and reports taking 22 photographs (cyanotypes).

1891  Gustaf Nordenskiöld (1868-1895) takes photographs at Oraibi.

1893  James Mooney (1861-1921) takes photographs of ceremonies at Walpi.


1895-1901  George Wharton James (1858-1923) takes photographs of the Snake Dance at Oraibi (1896), the Snake Dances at Walpi and Mishongnovi (1897), and portraits of individuals, including Wiki (1897).

1895-1904  Adam Clark Vroman (1856-1916) visited the Hopi seven times during the decade taking photographs of the Snake Dance at Walpi (1895, 1897, 1901) and Oraibi (1898, 1900, 1902) and the Flute Ceremony at Walpi (1900) and at Mishongnovi (1900, 1902). See Dwellers at the Source: Southwestern Photographs of A. C. Vroman, 1895-1904, by William Webb and Robert A. Weinstein (Grossman Publishers, New York, 1973).


1896  Mrs. Hector Alliot takes photographs of the Snake Dance at Oraibi, as do George Wharton James and Frederic Hamer Maude.

1898  Walter Hough’s The Moqi Snake Dance, a promotional booklet with photographs by Freame M. Higgins, J. K. Hillers, G. W. James, F. H. Maude, H. R. Voth, and A. C. Vroman, is published by the Passenger Department, Santa Fe Route, Atchison, Topeka & Santa Fe Railway System.

1898  Visiting from Germany, Paul Ehrenreich (1855-1914) takes photographs of the Snake Dance at Oraibi.

1898  Burton Holmes (1870-1958) visits the Hopi and his account provides the text for his lectures on “Moki Land,” 1899-1901, illustrated with hand-painted photographs on slides and motion pictures of the 1899 Snake Dance at Walpi made by Oscar B. Depue (1869-). Holmes’s Hopi lectures first appear in Vol. 12 of his Travelogues (Travelogue Bureau, Chicago, 1917) and include photographs by H. [sic] C. Vroman and Sumner W. Matteson (1867-1920) of the 1900 Snake Dance at Oraibi.

1899 1902  Frederick Inman Monson (1865-1929) photographs at Hopi.

1899  Horace Swartley Poley (ca. 1864-1949) takes photographs of the Snake Dance at Walpi.

Sumner W. Matteson (1867-1920) takes over 200 photographs of the Snake Dance at Oraibi and the flute ceremonies at Mishongnovi. In 1901, Matteson joins the McCormick Hopi Expedition as a back-up photographer to Charles H. Carpenter (1859-1949) in documenting preparations for the Snake/Antelope ceremonies at Mishongnovi and flute ceremonies at Oraibi.

A film crew under the direction of Thomas Alva Edison (1847-1931) records the Walpi Snake Dance with a motion picture camera.

George Amos Dorsey uses Vroman and Matteson photographs in his *Indians of the Southwest* (Passenger Department, Atchison, Topeka & Santa Fe Railway System, Chicago).


Edward H. Kemp produces a series of lantern slides of a Snake Dance.

Kate Cory (1861-1958) lives in Oraibi and Walpi; 642 negatives survive of her photographs of Hopi social and ceremonial life. In 1983 a selection of her photographs were published by Robert Breunig and Michael Lomatuway'ma in a special issue of *Plateau* 55(1), "Hopi: Scenes of Everyday Life."

Victor Miller, a cinematographer for *Pathé's Weekly*, photographs the Snake Dance at Walpi. He is arrested after attempting to leave with the exposed film (which is confiscated) without signing a non-commercial release. Other photographers in attendance included Bartlett Heard, Emery C. (1881-1969) and Ellsworth (1876-1961) Kolb also make motion pictures of the Snake Dance at Walpi in 1911 and 1913. After the 1913 ceremony they sign an agreement limiting the use of their film for private or historical purposes. At various later dates Emery Kolb makes photographs of the Hopi villages as well as of individuals.

Forman Hanna (1882-1950) takes photographs of a Qola Katsina dance at Hotevilla.

Karl Moon (1879-1948) creates hand-colored photographs of Hopi subjects.
In 1956 in *The Hopi Indians* (Caxton Printers, Caldwell, Idaho), Harry C. James (1896-1978) publishes over 50 photographs of Hopi social and ceremonial life, villages and fields, as well as portraits of individuals taken in the 1920s.

Hattie and Burton Cosgrove accompany the archaeologist A. V. Kidder and take photographs at Awatovi and at several Hopi villages.

Clifford Paul (1892-1960) makes a motion picture of a Tasap Katsina dance on First Mesa.

With the assistance of a number of unidentified photographers the Atchison, Topeka, & Santa Fe Railroad develops a glass lantern slide series for use in lectures to promote tourism. Photographs of the Hopi are included.

Trader Elizabeth Hegemann (1897-1962) takes photographs of a Lalalonki ceremony in Mishongnovi and a Niman Katsina dance in Shipaulovi, 70 of which are published in 1963 in her *Navajo Trading Days* (University of New Mexico Press, Albuquerque).

Visiting the Hopi as part of a nine-month automobile tour across America, Carey Melville (1878-1963) takes photographs of Hopis and of Hopi daily life. Maud Melville and Ethel Muchvo, a Hopi potter, begin an exchange of correspondence and photographs.

E. D. Newcomer creates portraits of Hopi individuals.


Anthropologist Mischa Titiev takes photographs of Hopis he works with at Old Oraibi. He photographs a Buffalo Dance at New Oraibi in 1933 and at Old Oraibi ca. 1958.


Milton Snow takes photographs of Hopi economic life (agriculture, livestock operations), schools, villages and individuals. Snow's work includes an aerial photograph of the First Mesa villages.

The Aerial Mapping Co., of Boise, Idaho, makes aerial photographs of the Hopi villages, including Polacca and Hopi schools.


In his *Bird's Eye View of the Pueblos* (University of Oklahoma Press, Norman), Stanley A. Stubbs publishes aerial photographs of each Hopi village taken by the Cutter-Carr Flying Service.

Edward B. Danson (1916-) documents Hopi social and economic life in photographs.

Ulli Steltzer takes photographs of Hopi daily life, arts, and individuals.

*Qua'toqti = Eagles Cry* publishes news photographs by Hopi photographers.

Several Hopi tribal and religious leaders invite Suzanne and Jake Page to document Hopi life. This leads in 1982 to the publication of *Hopi* (Abrams, New York), illustrated with color photographs.


The Hopi Tribe grants permission to CBS Television to film a Butterfly Dance and scenes at Shipaulovi.


Helga Teiwes documents the work of Hopi Katsina artists.
1986+  Hopi Tutu-veh-ni publishes news photographs by Hopi photographers.

1987  The Bacavi School, Hotevilla, AZ, publishes a calendar, Pasing the Moon: The Hopi Ceremonial Year, illustrated with photographs by Emry Kopta, Jo Mora, Sumner Matteson, and Forman Hanna.


2009  Arcadia Publishing, Charleston, South Carolina, issues the aptly entitled The Hopi People, by Stewart B. Koyiyumptewa, Carolyn O'Bagy Davis, and the Hopi Cultural Preservation Office that includes photographs from the 1920s (Melville, Cosgrove) as well as more recent images from the files of the HCPO.

Note: To save space, bibliographic information in the Chronology is not included in the References Cited section following the article.

Note: Today, in order to protect ritual and personal privacy, photography on the Hopi reservation requires tribal permission.
CONTRIBUTIONS TO THE ARCHAIC PREHISTORY OF SOUTHWESTERN NEW MEXICO

INTRODUCTION

Despite decades of research and significant discoveries, basic questions regarding the nature, timing, and distribution of Archaic period populations in the low desert country of New Mexico remain unanswered. During a recent AT&T fiber optic project, Western Cultural Resource Management, Inc. (WCRM) investigated 69 sites along the AT&T right-of-way (ROW) in southwestern New Mexico (Jones et al. 2010; Kearns et al. 2001). Twenty sites contained artifacts or deposits indicative of Archaic components (Table 1). Eight sites in the low desert between the Rio Grande and the Continental Divide contributed most of the data (Figure 1). These included four sites with substantial Archaic period assemblages (LA 54812, LA 129554, LA 132142, and LA 144921) and four sites with sparse to moderate data sets (LA129532, LA 129538, LA 129548, and LA 129563). Eleven other sites had Archaic projectile points on the surface but no other demonstrably Archaic remains (see Table 1), and sherds were present at nine of those sites.

Figure 1. Southwestern New Mexico study area and sites with significant Archaic cultural deposits.
Table 1. AT&T Project Sites with Archaic Components, Southwestern New Mexico.

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<td>Middle Archaic?</td>
<td>Projectile point*</td>
</tr>
<tr>
<td>White Flat</td>
<td>132142</td>
<td>Camp</td>
<td>Early-Middle Archaic</td>
<td>Projectile points</td>
</tr>
<tr>
<td>Cambray Dunes</td>
<td>129553</td>
<td>Camp</td>
<td>Middle-Late Archaic</td>
<td>Projectile points*</td>
</tr>
<tr>
<td>Little Florida Mtns.</td>
<td>54811</td>
<td>Artifact</td>
<td>Early Archaic?,</td>
<td>Projectile points*</td>
</tr>
<tr>
<td>Little Florida Mtns.</td>
<td>54812</td>
<td>Camp</td>
<td>Middle Archaic</td>
<td>Projectile points,</td>
</tr>
<tr>
<td>Little Florida Mtns.</td>
<td>129554</td>
<td>Camp</td>
<td>Early-Middle Archaic</td>
<td>radiocarbon</td>
</tr>
<tr>
<td>Little Florida Mtns.</td>
<td>135296</td>
<td>Camp</td>
<td>Middle-Late Archaic</td>
<td>Projectile points</td>
</tr>
<tr>
<td>Deming Plain</td>
<td>129560</td>
<td>Camp</td>
<td>Middle Archaic?</td>
<td>Projectile point*</td>
</tr>
<tr>
<td>Red Mountain</td>
<td>144921</td>
<td>Camp</td>
<td>Middle Archaic</td>
<td>Projectile points</td>
</tr>
<tr>
<td>Red Mountain</td>
<td>54814</td>
<td>Artifact</td>
<td>Middle Archaic</td>
<td>Projectile point*</td>
</tr>
<tr>
<td>Continental Divide</td>
<td>129563</td>
<td>Camp</td>
<td>Late Archaic</td>
<td>Radiocarbon</td>
</tr>
<tr>
<td>Lordsburg Valley</td>
<td>129567</td>
<td>Camp?</td>
<td>Late Archaic</td>
<td>Projectile point*</td>
</tr>
<tr>
<td>Lordsburg Valley</td>
<td>129568</td>
<td>Camp</td>
<td>Late Archaic</td>
<td>Projectile points*</td>
</tr>
</tbody>
</table>

* Surface artifact only
One additional site, LA 135296, had likely Archaic age deposits, but severe bioturbation precluded separating Archaic from Mogollon remains. Excavation at all of the sites was restricted to a narrow corridor defined by the AT&T ROW. This was typically 7.2 m wide and arbitrarily placed through the sites, a circumstance that limited site structure studies and sampling choices. Another significant problem was the generally poor condition of the sites. Bioturbation and geomorphic processes had mixed the deposits and obscured any divisions between temporal components.

**CHRONOLOGY**

Radiocarbon dates and diagnostic projectile points from the AT&T sites span the Archaic era. Although organic material was absent or rare at most of the sites, 18 radiocarbon samples from nine sites are potentially indicative of Archaic period occupation (Table 2). One sample, on a hackberry seed from LA 144921, has a 2-sigma date range of cal 8770-7959 B.C., which dated the geomorphic sediment, not the cultural deposit. Another sample, on an indeterminate seed from LA 129554, has a conventional ¹⁴C age greater than 42,600 B.P. and is clearly aberrant. Two early dates from Early Pithouse

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**Archaic Age Radiocarbon Date Ranges, AT&T Sites in Southwest New Mexico**

![Archaic Age Radiocarbon Date Ranges, AT&T Sites in Southwest New Mexico](Image)

*Figure 2.* Archaic period radiocarbon date ranges from AT&T project sites in southwestern New Mexico. Light shading indicates 2-sigma values; dark shading indicates 1-sigma values.
Table 2. Radiocarbon Samples from AT&T Project Archaic Period Sites.

<table>
<thead>
<tr>
<th>LA No. (Beta)</th>
<th>Lab No.</th>
<th>Material *</th>
<th>Conventional (^{14}\text{C} \text{Age (BP)})</th>
<th>1-sigma range</th>
<th>2-sigma range</th>
</tr>
</thead>
<tbody>
<tr>
<td>54812</td>
<td>199492</td>
<td>Saltbush-type</td>
<td>2810±40</td>
<td>1000 to 910 BC</td>
<td>1040 to 850 BC</td>
</tr>
<tr>
<td>59652</td>
<td>199494</td>
<td>Mesquite</td>
<td>2020±90</td>
<td>160 BC to AD 70</td>
<td>350 to 310 BC, 210 BC to AD 150</td>
</tr>
<tr>
<td>129532</td>
<td>199456</td>
<td>Mesquite</td>
<td>2550±40</td>
<td>790 to 770 BC</td>
<td>800 to 750 BC, 700 to 540 BC</td>
</tr>
<tr>
<td>129538</td>
<td>199457</td>
<td>Mesquite</td>
<td>2440±60</td>
<td>760 to 620 BC, 590 to 410 BC</td>
<td>790 to 390 BC</td>
</tr>
<tr>
<td>129538</td>
<td>199458</td>
<td>Mesquite</td>
<td>2320±80</td>
<td>410 to 360 BC</td>
<td>760 to 680 BC, 550 to 190 BC</td>
</tr>
<tr>
<td>129538</td>
<td>199459</td>
<td>Mesquite</td>
<td>2480±40</td>
<td>770 to 520 BC</td>
<td>790 to 410 BC</td>
</tr>
<tr>
<td>129548</td>
<td>199460</td>
<td>Saltbush-type</td>
<td>2260±40</td>
<td>390 to 360 BC, 290 to 230 BC</td>
<td>400 to 200 BC</td>
</tr>
<tr>
<td>129554</td>
<td>199462</td>
<td>Indeterminate seed</td>
<td>&gt;42600</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>129563</td>
<td>199470</td>
<td>Saltbush-type</td>
<td>2150±40</td>
<td>340 to 320 BC, 210 to 160 BC</td>
<td>360 to 280 BC, 240 to 60 BC</td>
</tr>
<tr>
<td>129563</td>
<td>199471</td>
<td>Cholla</td>
<td>1760±40</td>
<td>AD 230-340</td>
<td>AD 150-390</td>
</tr>
<tr>
<td>129563</td>
<td>199472</td>
<td>Mesquite</td>
<td>1450±100</td>
<td>AD 530-670</td>
<td>AD 410-770</td>
</tr>
<tr>
<td>129563</td>
<td>199473</td>
<td>Saltbush-type</td>
<td>1880±40</td>
<td>AD 80-150</td>
<td>AD 50-230</td>
</tr>
<tr>
<td>129563</td>
<td>199474</td>
<td>Cholla</td>
<td>1950±40</td>
<td>AD 20 to 90</td>
<td>40 BC to AD 130</td>
</tr>
<tr>
<td>129563</td>
<td>199475</td>
<td>Mesquite</td>
<td>1880±40</td>
<td>AD 80-150</td>
<td>AD 50-230</td>
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<tr>
<td>129563</td>
<td>199476</td>
<td>Mesquite</td>
<td>2000±40</td>
<td>40 BC to AD 50</td>
<td>80 BC to AD 80</td>
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<tr>
<td>129563</td>
<td>199477</td>
<td>Saltbush-type</td>
<td>2120±40</td>
<td>190 to 80 BC</td>
<td>350 to 310 BC, 210 to 40 BC</td>
</tr>
<tr>
<td>135343</td>
<td>199484</td>
<td>Mesquite</td>
<td>1990±40</td>
<td>40 BC to AD 60</td>
<td>60 BC to AD 90</td>
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<tr>
<td>144921</td>
<td>199491</td>
<td>Hackberry seed</td>
<td>9160±170</td>
<td>8590 to 8240 BC</td>
<td>8770 to 7950 BC</td>
</tr>
</tbody>
</table>

* Samples are wood charcoal unless otherwise noted.
period habitation sites LA 59652 and LA 135343 may reflect old wood use, not Archaic components. Ten samples, all on wood charcoal, indicate Late Archaic occupation with 2-sigma date ranges between cal 1040-850 B.C. and cal 40 B.C.-A.D. 130 (Figure 2); just one sample is associated with diagnostic Archaic artifacts. Saltbush charcoal from a hearth at LA 54812 yielded a 2-sigma date range of cal 1040-850 B.C., a value that complements the high incidence of San Pedro-style points at the site. Three of four additional dates, all from LA 129563, bridge the Late Archaic-Early Pithouse period transition (i.e., ca. A.D. 200), and one anomalous date is later. No ceramics were recovered from LA 129563, and the late dates could signify continuation of an Archaic lifeway in the region or Mogollon era activities that required no ceramic vessels. Collectively, the radiocarbon assays denote occupation during the Late Holocene (4500-2000 B.P.); no dates are indicative of the early (10,500-7500 B.P.) or middle (7500-4500 B.P.) Holocene.

 Projectile point styles, albeit problematic, provide one measure of the timing of the Archaic presence in the study area. Points from the project sites indicate a much longer Archaic presence in the region than the \( ^{14} \)C dates indicate and include a broad range of Early, Middle, and Late Archaic styles (Figures 3-10). Some points are diagnostic while others are apparently reworked variants, aberrant forms, or problematic fragments. As Hogan (2006:4-4 - 4-10) notes for southeastern New Mexico, use of projectile points as temporal indicators is complicated by the resemblance of some examples to named styles from different regions and the variation in age assessments from region to region for similar styles. The project points resemble named types from Cochise, Ventana, and Early Agricultural period contexts to the west, the Oshara tradition to the north, the Chihuahuan Archaic tradition and Trans-Pecos region contexts to the east, and from cultural sequences farther east and southeast in Texas and Coahuila. Identification of diagnostic styles is based on comparisons of points illustrated by Dick (1965), Haury (1975), Irwin-Williams (1973), MacNeish (1993), Miller (2010), Roth and Huckell (1992), Sayles (1983), Shafer (1986), Stevens and Sliva (2002), Suhm and Jelks (1962), and Turner and Hester (1999).

 A number of the projectile points are diagnostic of Early and Middle Archaic components (see Figures 3, 4, and 5). Two base fragments with ground lateral margins may be the stem portions of Jay points. Several examples with straight stems and straight bases resemble Andice, Bell, and Bulverde points from the Trans-Pecos and Lower Pecos, and Ventana-Amargosa points from the Red Sand Layer at Ventana Cave. Stemmed points with indented bases are also represented and generally indicate Early or Middle Archaic components. Most of these are within the range of variation for Bajada, San Jose, and Pinto points, although at least two specimens with broad expanding stems and deep basal notches are similar to Baker and Uvalde styles from the Lower Pecos and Trans-Pecos regions. Two specimens have stems with shallow, concave sides and bases and resemble the Texas Val Verde style. Other concave base examples with broad stems and reworked blades are reminiscent of Bandy or Conejo points from the Lower Pecos. One point with lateral projections above a broad, straight-base stem resembles

![Figure 3. Lanceolate or convex-base, stemmed projectile points and straight-stem, straight-base projectile points.](image-url)
Leaf-shape points include one broad, concave-base example similar to the Middle Archaic Cortaro style from southern Arizona (see Figure 6). Five other leaf-shaped examples with convex bases look like Lerma points from the Lower Pecos and Coahuilla but may be unnotched preforms. Side-notched and corner-notched dart points with concave bases indicate Middle to Late Archaic components (see Figure 7). Most of these are within the range of variation of the Chiricahua style, but one finely made corner-notched specimen resembles Uvalde points and several are reminiscent of the Late Archaic Frio style. Two points with shallow side notches, broad expanding stems, and straight bases could be variations on the Middle Archaic Bat Cave style or Late Archaic Empire style (see Figure 5). One probable Late Archaic point with broad, shallow side-notches, an expanding stem, and slightly concave base approximates the Trans-Pecos Paisano style.
Figure 6. Leaf-shaped projectile points and possible point preforms.

Figure 7. Concave base, corner- and side-notched projectile points.

and the Oshara Armijo style variants (see Figure 5). Projectile points with contracting or tapering stems that are potentially indicative of the Middle Archaic include examples similar to Augustine points from Bat Cave or Almagre and Wells points from Texas (see Figure 8). One tapering stem example looks like Middle Archaic Texas Langtry or Early Agricultural period Cienega Stemmed points.Late Archaic components are indicated by a number of small to large side-notched and corner-notched points that are comparable to the San Pedro style (see Figures 9 and 10), although there is a significant range of variation and other styles (e.g., Ellis, Ensor, and Figueroa points from Texas) may be represented. Some examples appear to be San Pedro points with reworked bases, but one may be a Palmillas point. Collectively, the projectile points from the AT&T project exemplify Archaic occupation of the study area during the Early, Middle, and Late Holocene. The different styles are potentially indicative of interaction between, or movement of, Archaic groups across a broad expanse from southern Arizona to the Lower Pecos region of Texas.

THE SITES

Seventeen of the AT&T project sites with Archaic components are open camps, one is a camp/roasting locale, and two are indeterminate artifact scatters (see Table 1). All of the sites are indicative of mobile hunting-gathering groups, but the size, location, and assemblages signify variable functions. Four extensive sites with relatively large
Figure 8. Contracting or tapering stem projectile points.

Figure 9. Side- and corner-notched projectile points with straight to slightly convex bases.
artifact assemblages (LA 54812, LA 129554, LA 132142, and LA 144921) and four sites with components characterized by moderate to sparse material remains (LA 129532, LA 129538, LA 129548, and LA 129563) provide the most thorough view of Archaic settlement in the study area.

One small camp on the southern Mesilla Bolson is within LA 129532, a large multicomponent site in the La Mesa dune field. A 30 m² excavated block contained two remnant hearths, 179 lithic artifacts, and three intrusive faunal elements in a matrix of patchy, charcoal-stained sand. A Late Archaic occupation is indicated by a ¹⁴C date from one of the hearths. Integrity of the site is poor; deflation had collapsed the cultural deposit and truncated the features. The assemblage, dominated by tertiary and secondary flakes, has 11 ground stone artifacts, one scraper plane, and three utilized flakes. The relatively small assemblage and high proportion of milling equipment suggests a short-term seed procurement and processing locale, possibly a women’s camp. The scraper plane could have been used to process fiber, and the utilized flakes indicate expedient tool use.

Another small camp on the southern Mesilla Bolson is within LA 129538, a large multicomponent site in a coppice dune field. Although the AT&T ROW extends 1.9 km across the site, only 15 artifacts were recovered from the surface. Five nondiagnostic pieces of debitage were recovered from subsurface contexts, but only two flakes were from the 19 m² excavation block that
contained three hearths with Late Archaic radiocarbon age ranges. The spacing and vertical placement of the hearths suggests at least two use episodes, and the paucity of artifacts indicates a limited range of activities. The hearth-centered activity area is within an extensive, diffuse scatter of burned caliche and may be a special-use locale where short-term resource collection and processing did not require routine use or maintenance of stone implements.

A small camp and roasting locale, LA 129548, is farther west on the open plain north of the Malpais volcanic field. The site is evident as a sparse surface scatter of lithic artifacts and two scatters of burned rock and caliche. Excavation exposed a 2.5 x 1.5 m roasting pit. The 46 cm deep pit had been excavated to the caliche substrate and was filled with charcoal-enriched sediment. Saltbush and mesquite were used as fuel, and a sample of saltbush charcoal places the use during the Late Archaic period. A possible single use is indicated by the absence of charcoal-stained sediment around the feature. A milling stone fragment and sparse scatter of debitage are on the surface beyond the ROW, but only four flakes are from the feature and surrounding excavations. No faunal remains were recovered. The distinctive feature and paucity of artifacts suggests that the site is a special-use, roasting locale where food resources were baked but few other tasks were performed.

One other small camp, LA 129563, is located along the Continental Divide on the broad open plain west of the Victorio Mountains. A 91 m² block and 12 scattered 1 m² units were excavated at the site. Block excavation exposed a 10 to 21 cm thick, moderately dense cultural deposit with 10 hearths and two larger shallow depressions with charcoal-stained fill. Radiocarbon assays on wood charcoal from seven features indicates use of the site from the Late Archaic into the Early Pithouse period. One date from another feature is later in the Early Pithouse period. Debitage dominates the 325 lithic artifacts from the block excavation, which also contained three cores, one chopper, one chopper/pecking stone, four expedient flake tools, and one handstone. One biface, one handstone, and one utilized flake are from the surface. Thirty of the 39 small mammal bone fragments from the block excavation are burned. A repeatedly occupied camp is indicated by the multiple hearths, artifact and faunal assemblages, and range of radiocarbon dates. The relatively tight cluster of hearths, limited variety of flaked stone tools, and paucity of milling equipment suggests that the site was not a base camp but possibly a favored locale where resources specific to the open plain setting were exploited.

Four sites with Archaic components are larger manifestations of repeatedly occupied camps. One, LA 132142, is a 225 x 195 m Early to Middle Archaic camp dated by projectile point styles. It is located north of the West Potrillo Mountains on a broad, sandy plain that borders White Flat, an area of extensive playas and low sand-capped rises. The camp is evident as an extensive yet shallow (15-20 cm) cultural deposit with abundant debitage and a small, flaked tool assemblage. Although vertically stratified deposits are absent, the horizontal integrity of the deposit appears intact. A total of 332 m² was excavated in several block areas. No features are present, but small pockets of charcoal-enriched sediment in three rodent burrows are possibly indicative of nearby hearths.

The 1,381 lithic artifacts from LA 132142 are dominated by debitage, primarily tertiary flakes. The 33 flaked stone tools represent only seven artifact classes. Broken projectile points and bifaces are common, but the low-diversity assemblage also contains cores, scrapers, and expedient flake tools. The scrapers are probably exhausted, hafted, woodworking tools. One piece of ground stone was noted during the survey but none were recovered during excavation. Collectively, the assemblage is indicative of a repeatedly occupied short-term camp, probably a men’s hunting camp, where weaponry retooling is conspicuous and seed milling is rare.

LA 129554 is a large Archaic site with later Mogollon and historic components. The site is on the pediment at the northern end of the Little Florida Mountains and overlooks the Mimbres River and open desert floor to the north and Florida Lake, a large playa, to the northwest.
It is manifested as an extensive lithic scatter with a few sherds. The 70.5 m² excavation exposed a 0.13 to 1.4 m deep cultural deposit with abundant lithic artifacts and faunal remains but compromised by bioturbation; discrete occupation surfaces, cultural strata, or other distinct subdivisions are not evident. Charcoal is rare and only one feature, a post-Archaic hearth, was present. Excavated projectile points indicate Middle and possibly Early Archaic occupations, and a San Pedro-style point noted during survey indicates a Late Archaic occupation.

A dense cultural deposit is present at LA 129554. The artifact assemblage contains 23,153 pieces of debitage, 339 flaked stone tools, 55 ground stone artifacts, and 12 mineral specimens. The quantity of flaked stone is presumably related, in part, to the local availability of fine-grained igneous and cryptocrystalline materials. The diverse assemblage includes milling equipment and a variety of cores and core, flake, and bifacial tools. Projectile points and bifaces are common, as are utilized flakes, retouched flakes, and scrapers, many of which represent a continuum of lightly to heavily used woodworking tools. Faunal specimens number 3,803. Indeterminate small mammal bone fragments dominate the assemblage, but lagomorph remains are common and carnivore and artiodactyl bones are also present. A burned wolf scapula is a unique occurrence at the site. Unlike LA 132142, where the assemblage is less varied, the size and diversity of the artifact and faunal assemblages at LA 129554 are indicative of a repeatedly occupied base camp where a variety of different tasks were performed.

Another large site, LA 54812, with Early, Middle, and Late Archaic and Mogollon components is located on a broad plain west of LA 129554 and immediately west of Florida Lake. The site is evident as a large sherd and lithic scatter, but most of the ceramic period remains are at the northern end (Hart et al. 1987), and only four sherds were recovered from the AT&T ROW. Excavation encompassed roughly 200 m² and ranged from 0.10 to 1.25 m deep but the cultural deposit averaged 0.50 m thick. As at LA 129554, cultural remains are common but the deposit is largely homogeneous, and discrete occupation surfaces, cultural strata, or other subdivisions are not evident. Charcoal is rare and caliche nodules in the culture-bearing stratum indicate a bioturbated deposit. Although 23,631 artifacts were recovered, just one feature, a hearth, was discovered. Projectile points indicate Early, Middle, and Late Archaic components, and the one radiocarbon date from the hearth is Late Archaic.

The cultural deposit at LA 54812 is a dense accumulation of lithic artifacts and faunal remains. The lithic assemblage is dominated by debitage but includes a diverse set of 382 flaked stone tools, 189 ground stone artifacts, and 5 mineral specimens. Projectile points, bifaces, and small, probably hafted, scrapers are conspicuous elements of a curated tool kit. The scrapers are mainly small woodworking tools, although a variety of shapes and sizes is evident. Cores are relatively common and choppers and scraper planes are also present. Expedient retouched flake tools and utilized flakes are also relatively common and some are early-stage scrapers. Numerous ground stone fragments, manos, and metates indicate a reliance on hard seed resources, and a fragmentary pipe from the site is a singular discovery.

The quantity and diversity of artifacts at LA 54812 are comparable to the assemblage at LA 129554 and are indicative of a repeatedly used base camp where a variety of activities were performed. Retooling is a conspicuous activity. Bioturbation of the deposit precludes separating the lithic assemblage by temporal component.

Site LA 144921 is a multicomponent Archaic and Early Pithouse period camp on the broad alluvial plain north of Red Mountain and Jones Spring Draw, a prominent wash. The site is not evident on the surface and the full extent is unknown. Roughly 193 m² were excavated in staggered blocks along a 140 m segment of the AT&T ROW. Occasional artifacts occur in the upper sediment, but the cultural deposit originates about 0.4 to 0.5 m below the surface and extends approximately 0.7 to 2 m below the surface to sandstone bedrock. A distinct playa stratum effectively seals the cultural deposit. The
distribution of features and cultural material indicates at least two cultural-temporal components; an Early Pithouse period component dated by ceramics and radiocarbon assays overlies a Middle Archaic component dated by projectile point style. Vertical distribution of cultural features allows differentiation of the components, but different occupations cannot be distinguished within the components. Stratigraphic profiles, vertical distribution of artifacts and faunal remains, particularly diagnostic projectile points and sherds, and the variable distribution of bone fluoride samples indicate mixing of the cultural deposit by bioturbation and depositional processes. The Archaic horizon is indicated by a zone of burned rock roughly 0.7 to 1 m below the surface and 0.4 to 0.6 m below a series of Early Pithouse period hearths. Artifacts and faunal remains do not occur in discrete concentrations coincident with the cultural features but are distributed throughout the deposit. As a consequence, most of cultural remains could not be separated by component.

SUMMARY

Twenty sites in southwestern New Mexico with potential evidence of Archaic period occupation were investigated during the AT&T fiber optic project. Projectile point styles and radiocarbon dates indicate that the sites were occupied during the Early, Middle, and Late Archaic periods. Eleven sites have diagnostic Archaic projectile points on the surface but lack other demonstrably Archaic remains. Severe bioturbation at one site precluded separation of Archaic and Mogollon components. The eight other sites contribute most of the current data; four contain substantial Archaic period assemblages and four have sparse to moderate data sets. Ten radiocarbon dates from five of the sites are Late Archaic, but in most cases, the associated data are meager or compromised by geomorphic processes.

Excavations at the AT&T project sites support the characterization of Archaic period populations as mobile, broad-spectrum, hunter-gatherers. Differences in the setting and size of the sites and the quantity and diversity of the artifacts reflect the varied and complex adaptations that exemplify the Archaic occupation of the study area. Three project sites (LA 129554, LA 54812, and LA 144921) have developed cultural deposits with large and diverse artifact and faunal assemblages. These are repeatedly occupied base camps where a variety of activities occurred. The assemblage at LA 132142, though substantial, is smaller and less diverse and potentially indicates repeated use of the site as a retooling locale, possibly a staging area for male hunting parties. The paucity of milling equipment at LA 132142 may be related to the logistical aspect of the occupation, or the site may have been occupied prior to the common use of milled seed resources. Proximity to well-watered settings characterizes the location of these four sites, and three of the four have ready access to good quality tool stone. In contrast, four sites with less substantial assemblages (LA 129532, LA 129538, LA 129548, and LA 129563) represent more limited occupation at diverse locales largely removed from watered settings and lithic resources. The variable artifact, faunal, and feature
assemblages at the smaller sites indicate a diverse set of site types including possibly women’s seed gathering camps and special-use roasting and cooking camps.

The artifact assemblages and faunal remains at the AT&T project sites indicate a subsistence economy reliant on small game and undomesticated seed resources. Small mammals, notably rabbits and hares, are common in the faunal assemblages and were apparent mainstays of the Archaic diet. Although rare in the assemblages, large mammals and carnivores, fish, amphibians, and birds represent occasional dietary contributions. Macrobotanical remains from flotation samples are predominantly wood charcoal from fuel use; no charred seeds or other subsistence resources were recovered. Manos and metates, however, are relatively common and reflect the exploitation of hard seeds, presumably from grasses and annuals. Mortars and pestles are conspicuously rare or absent, and unless processed with wooden implements, mesquite pods may not have contributed significantly to the subsistence economy. Although not recovered, desert succulents, greens, roots and other less visible subsistence resources were presumably important elements of the aboriginal diet.

Projectile points from the project sites demonstrate the presence of Archaic populations from the Early to Late Holocene and underscore the scale of mobility and interaction during the Archaic period. The diversity of point styles suggests that Archaic occupants of southwestern New Mexico interacted with other groups from a broad expanse of the southern Southwest and western Texas or that mobile hunter-gatherers representative of regional populations from southern Arizona to Trans-Pecos Texas ranged across southwestern New Mexico. Both scenarios are likely and probably varied in scale and intensity through time.

By the Late Archaic, maize farmers occupied the region. Data from Cerro Juanaquena in northern Chihuahua and from sites in the Burro Mountains demonstrate the presence of farming communities in the area from ca. 1250 to 200 B.C. (Hard and Roney 1998, 2005; Roney and Hard 2002; Turnbow 2000). Site LA 129554 was initially thought to be an Early Agricultural period residential locale. Despite an intensive effort and the recovery of thousands of artifacts, only one feature was encountered at the site and no evidence for maize agriculture was discovered at LA 129554 or at any of the other project sites. The observation by Roney and Hard (2002:134) that “early agriculture in the Southwest was not a unitary phenomenon that proceeded along broadly similar lines at a very gradual pace across the entire region” is underscored by the lack of evidence for maize agriculture at the AT&T project sites. This is particularly evident at LA 54812 and LA 129554, sites with abundant cultural debris in settings conducive to farming, and at LA 129563, the aceramic site occupied into the Early Pithouse period. Late Archaic project sites may be complementary components of a single settlement–subsistence system that included semisedentary farming sites and seasonal hunting-gathering camps. The sites may also indicate the coexistence of groups with different subsistence economies, one agricultural and one based on hunting and gathering. If so, the sites may represent the co-occurrence of intrusive farmers and indigenous hunter-gatherers in the region during the Late Archaic. Differences between the open hamlets in the Big Burro Mountains (Turnbow 2000), defensible settlements like Cerro Juanaquena (Hard and Roney 1998), and the AT&T project sites may denote periods of conflict vs. periods of relative peace.

Investigations along the AT&T ROW have contributed data relevant to the Archaic occupation of southwestern New Mexico. The database is deficient, however, and considerable research remains before the timing, character, and complexity of the Archaic adaptation to the region is more fully understood.

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THE LARGO-GALLINA HOUSEHOLD:
A VIEW FROM THE L/102 (LA 11633) SITE

INTRODUCTION

In her study of prehistoric households at Turkey Creek Pueblo in Arizona, Lowell (1991:1) suggested that archaeologists in the Pueblo Southwest "have made important contributions to the burgeoning social science literature on household organization and function in the Pueblo Southwest." However, Largo-Gallina households have been ignored. Therefore, my household research study may be the first.

Site L/102 (Figure 1) consisted of six structures, A-F, and two refuse areas. Located about 13 km (8 mi) west of Lindrith in Rio Arriba County, it is on property administered by the Bureau of Land Management.

In 1972 and 1973, Drs. Albert Mohr and Laetetia Sample of the University of Toronto, Erindale College, conducted summer field schools at the site. Because of its deteriorated condition, Structure A was not excavated. The ceramic, lithic, faunal, archaeobotanical, and human skeletal assemblages as well as the associated records

Figure 1. L/102 site plan (Sample and Mohr 1975:9, Figure 1).
relating to those excavations are found in the Mohr-
Sample Collection housed at the Museum of Indian Arts
and Culture/Laboratory of Anthropology in Santa Fe,
New Mexico.

To understand the Largo-Gallina household at Site
L/102, I attempted to answer three questions: 1) what
activities can be inferred from the architectural features
and material culture? 2) what constituted a Largo-Gallina
household based on those activities? and 3) what social,
economic and political interactions took place between
household members and individual households as a result
of those activities?

I used three approaches to answer these questions. The
first involved the evaluation of the architectural attributes
and features. The second entailed the association of
certain artifacts within a spatial context. The third
involved the scientific analyses of certain types of material
culture. These included the characterization of 89
ceramic sherds and 18 clay tiles by Instrumental Neutron
Activation Analysis (INAA), the archaeobotanical analysis
of various soil samples, wood, seeds and other materials,
and the identification of organic residues adhering to an
unusual globular vessel with a lateral spout.

The following sections will briefly highlight certain
architectural and material cultural attributes that were
instrumental in answering my research questions.

**STRUCTURAL ANALYSES**

**Structure B**

Structure B (Figure 2), located at the western end of the
site, was a square structure with relatively equal sized
rooms that were damaged as a result of looting and fire.
Structure B was the only structure that had no discernible
hearth or fire pit. Reliable tree ring dating placed
construction between A.D. 1197 and 1244.

The abundance of corn found within the structure led
Mohr and Sample (1972) to infer that the structure was
used for storage. Based on their archaeobotanical analysis,
Toll and McBride (2007) contended that it also was used
as a processing center for corn. I further contend that it
also was a processing center for various floral as well as
faunal materials and a production center for tools,
ornaments, and possibly hides. This was based on the
identification of 16 plant remains and the recovery of
cottontail rabbit remains, cores, partial white bone beads,
several bone awls, and a pendant.

**Structure C**

Structure C (Figure 3) was a rectangular structure with 12
rooms that also had been burnt and vandalized. Some
unique features included an eastern side entrance that
may have led to a living area and an unusual floor vent
system. Reliable tree-ring dates placed construction
around A.D. 1239.

During a first apparent period of occupation, Room 2
had a firepit that was associated with a Gallina style U-
shaped deflector, and the firepit in Room 11 was
associated with a ventilator opening to the outside.
During the second apparent occupation, the firepit in
Room 2 was renovated and one was added in Room 7. Mohr and Sample (1972) speculated that rooms with firepits, Rooms 2 and 11 and the later renovated Room 7, were used for residential purposes. Door openings between Rooms 4 and 7 as well as 10 and 11 further implied that these rooms were related.

Although I agree with those inferences, I also believe that some type of association occurred between Rooms 2 and 3 because of the similarity of artifacts. These included identifiable rims,cottontail rabbit remains, pecking stones, a large number of manos,metates, axes, hand abraders, and scrapers. Other significant findings included a possible female effigy figure found in Room 3, a red-painted slab found in Room 5-A, and punctated,corrugated, and basket-impressed sherds found in Rooms 2, 9 and 11, respectively. Squash was recovered from Rooms 2, 10, and 11 along with remains of various woods in Rooms 2, 7, and 11.

**Structure D**

Structure D (Figure 4) was located at the eastern end of the site and consisted of six rooms. It suffered only superficial disturbance from vandalism. The only evidence of burning was found in Room 5 and the central ventilator opening. Reliable tree-ring dates placed construction around A.D. 1243.

Sample and Mohr (1975) suggested that Room 1 was used for habitation based upon its features. The largest room of the structure, it contained a firepit, a U-shaped deflector, a mealing bin, and...
heavy wing walls with interior bins. A ventilator opening situated between Rooms 2 and 3 extended south from Room 1 below the deflector. I further contend that Rooms 1 and 2 may be related because of the presence of similar items of material culture.

Conical bottom vessels and vessel bases were recovered from both Rooms 1 and 2 along with cottontail rabbit and red-hawk remains. Other items recovered from Room 1 included, but were not limited to, numerous manos, pecking stones, hand abraders, a drill, an obsidian blade, and remains of mountain mahogany. An anvil, a soapstone foot effigy, and a core were found in Room 2, an elbow pipe in Room 4, and a turquoise bead in Room 6.

The skeletal remains of a 1- to 2-year-old child were recovered from Room 1. I contend that the globular vessel with the lateral spout (Figure 5), found outside the wall of Structure D, may have some connection to the birth of that child. This is based upon the identification of prickly pear cactus in Structures B and F and the fact that the vessel tested positive against rat, Cactaceae, and human antisera as a result of protein residue analysis (Parr 2006). Ethnobotanical information (Moerman 1998) indicates that Ramah Navajo midwives roasted the stems of prickly pear cactus to remove the placenta during childbirth. This vessel may have come in contact with human fluids during childbirth, causing it to test positive against human antisera.

Figure 5. Globular vessel with lateral spout. Courtesy of Museum of Indian Arts and Culture/Laboratory of Anthropology. Photo by Anthony Thibodeau.

Figure 6. Overview of Structure E. Courtesy of Museum of Indian Arts and Culture/Laboratory of Anthropology.
Structure E

Rooms 1-4 of Structure E (Figure 6), located between Structures B and C, resembled basic Pueblo I roomblocks aligned in a linear pattern. Firepits were found in Rooms 2 and 4 along with a mealing bin in Room 4. Rooms 5, 6, and 7 were later added. Room 5 contained typical Gallina floor features, such as a firepit, a U-shaped deflector, wing walls with bins, interior postholes, and a ventilator opening to Room 4.

Structure E has the largest percentage of ceramics classified as Gallina Plain Utility, the predominant ceramic type at the site. Manos were recovered from seven of the nine rooms and pecking stones were recovered from six of the nine rooms. Other items of note included a drill in Room 5 and a notched axe in Room 6B. Faunal remains were limited, but hawk remains were found in Rooms 1 and 6B.

Structure F

Located below Structure E and partially excavated, Structure F (Figure 7) appeared to be a pit house without a bench (Sample and Mohr 1975) and might be construed as a kiva. However, pit houses continued in simultaneous use with surface structures in the Gallina area. Typical Gallina features found included a firepit, deflector, and the end of a wing wall. A line of juniper post stubs found at the west side of the western refuse area revealed possible evidence of a stockade associated with F (Figure 8). Notable material culture recovered from Structure F included faunal remains, predominantly cottontail rabbit, 35 manos, pecking stones, obsidian flakes and blades, a ceramic duck foot, and prickly pear cactus.
INFERRED ACTIVITIES

Storage is implied based upon the presence of a separate structure as well as interior bins, such as those found in Structures D and E (Figure 9). Features such as fire pits in houses (Figure 10) suggest cooking (Crown 2000:258) and other activities (Saile 1977:159), such as habitation.

The recovery of corn and squash remains implies food production. Squash remains, and particularly corn remains found in conjunction with mealing bins, manos and metates, may indicate food processing. The recovery of corn and squash as well as faunal materials, such as cottontail rabbit, also point to food consumption.

Cottontail rabbit remains, such as those recovered from L/102, tend to dominate faunal assemblages at prehistoric Southwestern sites (Spielmann and Angstadt-Leo 1996) and imply hunting activities. Certain archeobotanical remains point to gathering activities.

Ritual activities are implied by effigy figures; the red slab similar to painted “altar slabs” found at Pecos (Kidder 2003:196); woods, such as mountain mahogany, possibly used to make prayer sticks (Moerman 1998); and avian faunal remains, such as hawk, whose feathers fletched arrows used for Puebloan male initiation rites (Potter 2004).

The lithic assemblage contained fabricators such as pecking stones, reduction stage tools such as blanks, general finished type tools such as utilized flakes, and finished tool types such as scrapers, knives, axes, and other tools. At Pecos Kidder (2003) suggested that objects identified as bone awls with sharp points that

Figure 9. Bin area in Structure D, Room 1. Courtesy of Indian Arts and Culture/Laboratory of Anthropology.
were also recovered at L/102 were used to puncture hides. Pendants and beads may indicate ornament production, but also may be an indication of exchange. Several axes found throughout the site may indicate wood processing. Lastly, reproduction was evident by the child burial in Structure D.

DEFINING THE HOUSEHOLD AT L/102

In their study of the household and community in the Mesoamerican past Ashmore and Wilk (1988:6) defined a household as “the group of people that shares in the maximum definable number of activities, including one or more of the following: production, consumption, pooling of resources, reproduction, co-residence, and shared ownership.” I also indicated that certain rooms with connecting doorways were possibly related to each other and that other rooms with similar items were possibly related to each other. Based on their definition and my analyses of the architectural and material cultural attributes, I defined the L/102 household as:

A structure consisting of one or more rooms, in which one of those rooms may function as the main area of various activities, that is shared by a group of people who co-reside and cooperate with each other to ensure subsistence through production, distribution, reproduction, and transmission of esoteric knowledge.
SOCIAL, ECONOMIC, AND POLITICAL INTERACTIONS

Social Interactions

Southwestern archaeologists have inferred that there was little social differentiation in the past, but Plog (1995) contended that egalitarian and hierarchical relationships probably have existed together in most areas during most periods and after groups became dependent upon agriculture. I argue that a version of an extended family (Murdock 1949:1-2) may have resided at L/102 consisting of two or more nuclear families connected by a parent-child relationship. Skeletal remains of six individuals recovered from the site consist of two young children, two females and two males. Based on the age spread, which ranged from less than one year to more than fifty years old, I suggest that at least two or more generations lived at L/102.

I further argue that the social organization at L/102 was both egalitarian and stratified based on McGuire and Saitta’s (1996) analysis of Prehispanic social organization. In this type of scenario, referred to as a communal society, the means of production was held in common by all social groups. This included all resources needed for sustainability, such as property, flora and fauna, tools, and technical knowledge. Yet the domination of one social group over another may have resulted in unequal distribution of, or limited access to, certain resources.

The storage of corn in Structure B might have been a communal effort overseen by an individual who controlled access, deposition of materials and distribution of surplus materials. Stratification also might have existed in relation to a form of power associated with the transmission of esoteric or ritual knowledge, possibly related to corn fertility.

Economic Interactions

Subsistence or domestic economy was organized on the household level and involved the production and distribution of materials and their resources. Political economy on the other hand involved the production, distribution and exchange of goods among interconnected families (D’Altroy and Hastorf 2001; Johnson and Earle 1987).

Scheduling is one of the most important variations that households must deal with when coping with production (Wilk and Netting 1984:7). As a result seasonality affected household production and certain activities, such as wood cutting, cultivation of corn and pottery production (Fish 2000; Hagstrum 2001; Windes and McKenna 2001). Furthermore, the division of labor between men and women was sometimes overlapping, such that both gender groups assisted the other, or complementary, so that one gender group performed certain activities with little or no participation from the other (Lamphere 2000:388-389). As women usually processed corn (Crown 2000; Hegmon et al. 2000; Mobley-Tanaka 1997), they most likely had to adjust their schedules to find someone to take care of children.

Szuter (2000:201) noted that hunting often is associated with men and gathering with women. Yet these activities were not sex-specific. Hunting of small game, such as jackrabbits, was a communal effort that “demanded greater cooperation between the two sexes and people of all ages,” including children.

Distribution involved pooling or sharing within the household unit as well as exchange among houses or between other units. In her simulated model of Hopi corn production, Hegmon (1996) applied three different strategies relating to sharing and distribution. Under one of these scenarios, restrictive sharing, households shared, but did not pool everything together. They met their needs first and then shared any remaining resources with other households. Restrictive sharing also might engage social networks with the goal of maintaining a degree of balance to ensure continuity or to reduce the risk of resource stress. I argue that this type of strategy might have been employed at L/102. However, when changes occur that might disrupt this balance, a breakdown in that network can result (Hegmon 1996; Rautman 1996). The burning of Structure B with its large amount of corn may have been related to such a breakdown.
Limited exchange may have occurred at L/102, suggested by the recovery of bone beads, soapstone effigies, and a turquoise bead. INAA results indicated that only 9% of the sample might be indicative of nonlocal production (Speakman and Glascock 2006), but I argue that pottery production was extremely limited. This is based on substantial time commitments that would have been put into food production and processing, hunting and gathering, and tool making. Therefore, perhaps corn and other resources were exchanged for pottery.

Political Interactions

Hegmon and Plog (1996:32) remarked that “probably the most hotly debated issue among archaeologists studying the prehistoric Southwest is the political organization of late prehistoric societies.” Food production and preparation are related to, and have impacts on, political systems (Danforth 1999:2; Hendon 1996). In particular, women’s ability to produce food and drink may become critical when it comes to meeting roles in society. Furthermore, the allocation of time to perform activities affects other tasks as well as the balance of power in some instances.

Power also has been related to craft production as it related to prestige goods. In his comparison of goods between societies of different political centralization, Peregrine (1991) noted that prestige goods that required little labor and no advanced production methods were associated with societies of lower political centralization. The recovery of only a small amount of shell beads and small simple personal items, such as pendants, may indicate that the society at L/102 was one of low political centralization.

Political authority and power have also been linked with ritual and the acquisition of esoteric knowledge. Potter and Perry (2000) demonstrated that ritual practice was a means of social power in Puebloan society. They further implied that certain individuals who controlled ritual had access to the knowledge, paraphernalia, and locations where the rituals were conducted. Therefore, if the Largo-Gallina household retained ceremonial functions related to crop fertility, as implied by Green (1964), this transmission of ritual knowledge may have occurred within rooms of certain structures, such as Room D-1.

CONCLUSION

Although this study merely touches the surface, it is hoped that this research will act as a basis for the further study of Largo-Gallina households. I also hope that it will encourage researchers to examine collections housed at various repositories.

It does not appear that the residents of L/102 produced elaborate goods, built any monumental structures, or traded extensively with their neighbors, but they adapted to their environment and proved to be excellent agriculturalists through corn production. In a small community, such as that at L/102, they needed to cooperate with each other on the household level and with other households at the site. This required, among other things, scheduling to complete certain activities, assisting with childcare, sharing resources, and working with each other to perform necessary tasks to ensure their survival. Even though the fate of the residents of L/102 or the Largo-Gallina as a whole is uncertain, their voices deserve to be heard to develop a greater understanding about human existence in the prehistoric American Southwest.

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ENTERING AND EXITING
CHACO CANYON AT TALUS UNIT NO. 1

Investigations at Talus Unit No. 1 (LA 2470, 29SJ1930, Bc 257) were carried out during four summer field schools jointly sponsored by the University of New Mexico, School of American Research, and Museum of New Mexico (Walter 1933; Woods 1934, 1935, 1938). Work ceased in 1937 before a complete outline of the site was revealed. It was not until formal National Park Service (NPS) stabilization projects in 1958-1959 that the first comprehensive map of the site was produced (Shiner 1959). The core-and-veneer masonry structure has approximately 30 ground-floor rooms, a number of second-story rooms, plus six small kivas and a court kiva (Kiva J) (Figure 1). The structure is of intermediate size and, unfortunately, not included in later NPS architectural studies because it did not fit well into either of two size categories: great houses (Lekson 1984a:5) or small house sites (Truell 1986:145-146, 315). This oversight was remedied by Lekson (1984b, 1985), who provided an outline of the site’s history and suggested an initial construction date for Rooms 7 and 8 around A.D. 1030. By 1984 a number of interpretations of the site had been offered.

Interpretations of Talus Unit No. 1 vary with knowledge and theoretical perspectives of the archaeologist(s).

Figure 1. Plan view of Talus Unit No. 1, indicating room numbers assigned during stabilization by NPS (Shiner 1959). Note three steps and balustrade that separate Rooms 7 and 8. (Taken from Lekson 1985:Figure 2, Chaco Culture NHP Museum Collection Map No. C55278.)
Although the 1933-37 field school supervisors and students were aware of a stairway carved into the cliff wall behind the site (Walter 1933:4), their research goal was to determine the relationship of this site to Chetro Ketl and other small sites in the area. Talus Unit No. 1 was thought to be a habitation site within the local community (Lekson 1985; Walter 1933; Woods 1934). Ferdon (1953) later suggested the three steps and low platform in Rooms 7 and 8 (Figure 1) may represent Mesoamerican influence on architecture in Chaco Canyon. In 1970-71 Vivian and Buettner (as reported in Vivian 1983a, 1983b) identified a spur road that linked Talus Unit No. 1 to the Pueblo Alto-Chetro Ketl road network on the mesa to the north (Figure 2). Hayes (1981:57) also suggested the area behind Talus Unit No. 1 functioned as a possible landing platform that “may have served as a staging area for ceremonial processions on the road above” (Hayes n.d.:10). Lekson (1984b, 1985) defined two sections at the site. The East Block is a small great house. The East Block, in particular Rooms 7 and 8 and the area behind them which Shiner (1959) interpreted as Kiva H and Lekson as Area H (Figure 3), represents initial road-related construction at this site. Although we agree with Vivian, Hayes, and Lekson that the area behind Rooms 7 and 8 is a landing platform, our recent review of student notes and photographs from the 1934 and 1935 field seasons led us to re-examine the extant evidence and suggest its role with regard to an inner canyon road network probably changed through time.

Figure 2. The central Chaco Canyon road network. Talus Unit No. 1 is in the lower center right at the bottom of the cliff near the northwest corner of Chetro Ketl. (Taken from Windes 1987:Figure 5.2; 1991:Figure 11.4; Chaco Culture NHP Map No. C65958.)
Figure 3. Lekson's reconstruction of architectural features in Area H behind Room 8. His eastern complex consists of two piers and retaining wall connecting the northeast corner of Room 8 to the cliff wall. The western complex, which contains two “bins,” had been heavily stabilized and partially rebuilt by the time Lekson examined the evidence. Note the beam sockets in the cliff wall that may have been part of a proposed wooden staircase. (Taken from Lekson 1985:Figures 3 and 4.)
FIELD SCHOOL DATA

Some confusion results when we attempt to relate the field school feature designations with those shown in Figure 1. Figures 4 and 5, and all other documents from the field schools, use different terms. Woods (1934) designated the area behind the rooms at the east end of Talus Unit No. 1 as a “plazita” (Figure 5). What Lekson (1985) refers to as Area H includes Woods’ Rooms 1934-1 and 1934-2. Rooms 1934-3a and 1934-3b (now Rooms 7 and 8) are directly south of Area H. Woods also assigned room numbers 1934-4 and 1934-11 (not shown in Figure 5 but present on a later map in Woods [1935]) to space west of this. Woods’ Rooms 1934-5 and 1934-6 (now rooms 9 and 11) link the East and West Blocks of the site. In this section we use the field school terminology to describe the architectural features.

The Plazita

Walter (1933) did not provide details on excavations in areas surrounding rooms in the East Block. Keur (1933) and catalog cards (Chaco Culture NHP Museum Collection, Archive No. C85671; VA 1871) indicate a trench containing drift was excavated along the north side until a masonry wall was encountered. This wall is the east wall of Room 1934-1 to which Woods assigned

Figure 4. Woods’ plan view and cross-section of architectural features in Area H. Note the reversal of feature identification of “Bin A” and “Bin B” on the plan view. Woods indicates both the rock ledge and a D-shaped rock along the north wall of the cliff. (Taken from Woods 1934:Plan II.)

Figure 5. Plan view of Talus Unit No. 1 after the 1934 field season. (Taken from Woods 1934:Plan I.)
Figure 6. D-shaped rock and broken disc located on shelf along cliff wall in Area H. (Woods 1934:Plate II, Figure 3; also Chaco Culture NHP C101407; Museum of Indian Arts and Culture/Laboratory of Anthropology 81449.)

Hawley’s (1934) Type 4 masonry style (dated A.D. 1100 to 1116). Thus, the wall was built fairly late in the Chaco Canyon construction sequence.

Rooms 1934-1 and 1934-2

Now known as Area H, the space beneath the rock-cut stairway and behind the room block contains several features. Masonry walls extending toward the cliff face led Woods to subdivide this space into two rooms (Figures 4 and 5). The south wall of Room 1934-2 is

the north wall of Room 1934-3a (Type 2 masonry, A.D. 1030 to 1070). The west wall of these two rooms is the east wall of Room 1934-4 (Type 4 masonry) and will be discussed below.

Room 1934-1 includes two unusual features which Woods labeled “Bin A” and “Bin B” for lack of better description. “Bin A” had a hard-packed floor below which she did not excavate. “Bin B” had a semi-circular north-west wall and a series of five stone stairs that descend toward the southwest (Woods 1934:14). To the east of Bin A and north of Bin B is a D-shaped feature which neither Woods nor Lekson discussed (Figures 4 and 6). R. Gwinn Vivian (personal communication, July 2010) suggests it is part of the native rock near the cliff face.

Found in the “deep fill of Room 1934-1 near the plazita wall,” was a broken stone disc, similar to the seating posts found in the great kiva at Chetro Ketl (Woods 1934:27-28). In Figure 6 this stone disc rests on a rock ledge which is about the same height as the tops of the Room 1934-1 and Room 1934-2 walls. This broken disc lends support to the presence of Shiner’s proposed kiva, but there is no other evidence for a kiva in this area, and there is no great kiva at this site. This broken slab might have been used to provide a stable, fairly flat ladder rest for descent from above. In August 2009 this broken disc was on the ground and nearly covered with sand. On the exposed flat surface there were two very shallow indentations which may mark ladder rests. But if so used, it was only for a very short time. A second broken disc of similar size appears in a photograph taken at the south side of the west end of the site, close to a north-south wall that juts out in front of Kiva F (Werito 1971:224). No other information was provided about the disc, and we have no explanation for the presence of these two broken discs.

Room 1934-2 is irregular in shape and includes two roughly squared blocks built of crude masonry that sit one on top of the other, but at different angles (Figures 4 and 5). Woods (1934:15) described a row of “small vigas” lying on top of the north face of the lower square block or “pier.” Larger poles were set into the west side
of this block. No mention was made of sockets in any walls to anchor their opposite ends.

Except for the south wall and the two bins with Type 2 masonry, Woods (1934:16) assigned Hawley’s Type 4 masonry to the walls in Room 1934-2. She concluded, therefore, that the bins represent an earlier structure that was tied to the Type 2 walls in Room 1934-3a. During excavation she ceased operations when the base of the walls was located; no definite indication of floor levels had been found. The fill was described as “debris” (Woods 1934:27). A series of photographs (Woods 1934:Plate III) focus on this area but do not clearly illustrate all of these features.

**Rooms 1934-3a and 1934-3b**

These large rectangular rooms, constructed of Hawley’s Type 2 masonry (Woods 1934:14-17, Plan I, Plan II, Plate IV), include the three steps and low platform that Ferdon (1955) interpreted as Mesoamerican influence and which generated considerable discussion (Lekson 1985; Vivian 1983a). Woods (1934:17) also described a lintel in the east wall of Room 1934-3a, but stated she did not have any evidence for a closed doorway below it. However, Hawley (1934:Protocol 1) provided a tree-ring date of A.D. 1032 from lintels in a blocked doorway in the west wall Room 1933-3 that Lekson (1985:57) used to suggest that Room 1934-3a was part of the earliest construction at the site. In the north wall of Room 1934-3a, Woods (1934:17) mentions only the presence of a niche. In contrast Figure 7, which includes the carved stairway in the cliff directly behind this room, shows a large hole in the western half of this north wall. Other photographs taken in 1934 do not show this large gap but do indicate the wall is mostly filled with masonry, leaving what looks like a partially closed doorway or window in the upper half of the wall (Woods 1934:Plate IV, Figure 1). Perhaps the photograph shown in Figure 7 was taken at a later date when erosion knocked out part of the wall. We cannot resolve this discrepancy, but we

**Figure 7.** Photograph of Talus Unit No. 1 taken either at the end of the 1934 season or just prior to the 1935 season. The north wall of Room 8 is seen in the right center just below the staircase in the cliff. The north walls of Rooms 9 and 11 are directly west; Kiwa C, in the West Block or the great house, is further west. (Woods 1934:Plate XV, Figure 1; also Chaco Culture NHP C101437 and Palace of the Governors Photo Archive No. 81264.)
must ask if the hole in the north wall results from
deterioration of a prior doorway. If so, then passage from
Area H into Room 1934-3a would have been possible.

Rooms 1934-4 and 1934-11

The east wall of Room 1934-4 has a low doorway located
in the angle between the cliff and the north end of the
wall (Figure 8). The door base is on a platform extending
west from the wall. This platform is wider nearest the
cliff and narrows at its south end, just a few inches
beyond a set of upright poles. Plastered with hard white
adobe, this platform is not flat; it slopes toward the south
where Woods (1934:18) indicated it met the level of the
main floor in Room 1934-4.

Room 1934-4 was described as having been initially
floored with the same clay or adobe plaster that covered
the platform along its east wall. The floor was badly
broken when it was later filled with large stone rubble.
This intentional fill extended westward into Room 1934-
11 (not shown in Figure 5 but seen in Woods
[1935:Chart 1]) and continued across the space behind
Room 1934-12 which she was "intending to leave ... as
it now stands" (Woods 1935). The upper level of this
fill was highest along the mesa wall. Its slope toward the
south and west suggested possible use as a ramp.

Later division between Room 1934-4 and 1934-11 was
a crude masonry cross-wall sitting above the large stone
fill. It is shown only on a 1935 map (Woods 1935:Chart
1). This unfaced wall masonry also appears along the
exterior west wall of Room 1934-6. It marks a late
division of the structure into Lekson's West Block, or
great house, and the road-related East Block.

Rooms 1934-5 and 1934-6

The two connecting rooms fronting Rooms 1934-4 and
1934-11 were not well described (Woods 1934, 1935).
Room 1934-5 was excavated only to the general ground
level of the surrounding site mound. Once the low north
wall was located, it was exposed to a depth of 0.9 to 1.2
m. The south wall at the front edge of the mound had
been destroyed above ground level but was traceable
(Woods 1934:19). Room 1934-6 was excavated to the
same level. Its north and south walls were of similar
depth and condition.

Figure 8. West wall of Room 1934-4. Two poles were vertically placed in the masonry.
One pole is visible in the crack closest to the trowel. Two postholes were uncovered on
the platform in front of and just to the right of the whiskbroom and the trowel. (Woods
1934:Plate V, Figure 1; also Chaco Culture NHP C101413 and Palace of the Governors
Photo Archive No. 81262.)
Lekson (1985:54) suggested that the south wall of these rooms was constructed around A.D. 1065 to 1070 as part of the long back wall of the West Block or great house (Figure 1). The north walls of these two rooms, however, were not constructed at the same time. Woods (1935:3) reported a jog in the northwest corner of Room 1934-5 so that the north wall of Room 1934-6 was not in perfect alignment but abuts it (Figure 5; also Woods 1935: sketch following page 2). The Room 1934-6 north wall was single-faced (Woods 1935:2-3); the back of it had been “built up” against the stone fill in Room 1934-4. A short section of double-faced wall appeared above the single-faced wall; it ran into the west end of Room 5. No doorways were noted in the north walls of either of these rooms, and the south wall remains were too deteriorated to determine whether doors were present.

**DISCUSSION**

Because Talus Unit No. 1 was backfilled between 1998 and 2001, there are some areas that Lekson (1984, 1985) was able to examine prior to his evaluation of the site but that are no longer completely visible. But he, too, was under constraints that result from numerous stabilization events, the first reported by Shiner (1959). Lekson’s map of the Area H (Figure 3) can be contrasted with the one provided by Woods (Figure 4). His eastern complex consists of two piers and retaining wall (Woods’ Room 1934-2). His western complex, already heavily stabilized and partially rebuilt, includes Woods’ (1934) two “bins” and retaining wall that formed Room 1934-1 and Shiner’s “Kiva H ventilator.”

**The Landing Platform**

It is difficult to outline with certainty the initial construction and remodeling phases for this feature. It is possible that the first landing platform was the natural ledge in the cliff wall where the broken disc was photographed (Figure 6), but later construction episodes and how they relate to the two front rooms are not clear.

Lekson suggested that once the western complex or landing platform was reached, one could have proceeded to ground level by two possible sets of stairs. Lekson proposed the earliest set was constructed of beams anchored in sockets pecked into the cliff wall and probably seated in masonry at the northeast corner of Room 1934-3a/Room 8. The later stairs are the masonry ones found in Woods’ “Bin B.” Both sets descend from a massive pier at the base of the landing that abuts the northeast wall enclosing the stone stairs in Figure 3. Because the site had been partially rebuilt during stabilization, Lekson suggested that his interpretation be taken with a grain of salt.

The Type 2 masonry of the north wall of Room 1934-3a/Room 8 and the wall on the north side of the stone steps in “Bin B” (Figure 4) suggest this descent was partially enclosed. Descent from the ledge down to the level of the floor in Room 1934-3a/Room 8 would require fill or planks to connect the upper stair level to the ledge—a distance of 1.2 m, too far to step over. Woods does not describe any floor level between the top of the stairway and the ledge.

With construction of the Type 4 wall along the west side of the landing platform (Bins A and B) and the two Type 4 retaining walls that were used to define Rooms 1934-1 and 1934-2, as well as the rectangular pier in the southeast corner of Room 1934-2, the area was remodeled probably after A.D. 1100. This would affect how people moved around the exterior of Rooms 1934-3a and 1934-3b (Rooms 7 and 8, respectively).

**Passage from the Landing Platform to the Front of Talus Unit No. 1**

Three construction episodes affected traffic flowing east from the stairway and its landing platform(s). Circa A.D. 1032, people using the landing platform would have been able to walk around the east side of Rooms 1934-3a and 1934-3b (Rooms 7 and 8) and enter Room 1934-3a through a doorway (which was later blocked) in its east wall. Alternatively, they could have entered Room 1933-3 (Room 2) of the East Block which Lekson (1984) described as having a raised-sill doorway (Figure 1). This and the other three easternmost rooms were not yet
thought to function for habitation (Lekson 1985). Later, circa A.D. 1076, these two units were connected by the addition of three east-west walls that created Rooms 1933-3 and 1933-4 (Rooms 1 and 2) (Lekson 1985:49). Movement would have then been restricted; no doorway is visible in any of the photographs of the north wall of Room 1933-3 (Room 2), and none was noted by the excavators (Walter 1933). The addition of the two block piers and the late wall on the east side of the landing platform suggest that passage toward the east side was reconfigured and probably closed after A.D. 1100.

If the hole in the north wall of Room 1934-3a (Room 8) (Figure 7) represents a prior doorway, passage to the front of the East Block through this, and Room 1934-3b (Room 7), was possible. Their unusual size, as well as the stairs and platform, would have accommodated rituals or ceremonies by people either ascending or descending the cliff.

Lekson’s interpretation allows people to approach or exit the landing platform from the west side of Rooms 1934-3a and 1934-3b (Rooms 7 and 8). It is not possible to assign dates to his two stairways. Construction of the south wall of two connecting rooms which linked the East and West Blocks circa A.D. 1076 (Rooms 1934-5 and 1934-6, Rooms 9 and 11 respectively) would have kept people in front of the room blocks separated from those using the stairway and platform. Without evidence for doorways in these two rooms, it is possible that the space next to the cliff may have then functioned as a waiting or staging area. The construction of a wall west of the two “bins” ca. A.D. 1100 to 1116 indicates that this passage was remodeled, but entry through a narrow doorway next to the cliff would permit one individual at a time to enter or exit the space on the west side. This arrangement did not last indefinitely. Probably later in the A.D. 1100s, the space was filled with large stones and was interpreted as a platform that somehow may be related to the late construction of another large pier on the upper story of the great house (Lekson 1985). As with passage along the east side, there seems to have been considerable remodeling and restrictions through time.

In summary, data support the interpretation of the area behind the East Block of Talus Unit No. 1 as a platform or landing for a ladder linked to the rock-cut stairs in the cliff wall. There is sufficient evidence to suggest that there was more than one way to proceed from the back of the site into the south plaza area. Participants in events initially would have been able to enter and leave the landing platform from both the east and west sides of Rooms 1934-3a and 1934-3b (Rooms 7 and 8). Within a few decades, however, restrictions would have limited access to the area. Such restrictions suggest increased formalization in the use of the platform and the stairs to the mesa above and considerable change in control of movement of people using these features. Whether a doorway existed in the north wall of Room 1934-3a (Room 8) is uncertain. If open, the two-room feature that Ferdon attributed to Mesoamerican influence can be interpreted as part of the central canyon road system.

We conclude that Alden Hayes was correct in assuming that Talus Unit No. 1 could have played a role in road-related ceremonial functions, even though some of the details of the ceremonial pathways at the bottom of the stairway were reconfigured and became more restricted over a period of 50 to 70 years. Decommissioning of the landing platform is possible, even while the West Block that represents a small great house and the reconfigured East Block continued to be used through time.

This interpretation is still open to questioning. Exactly how many remodeling sequences were there and when did they occur? How might they have affected the function of the spaces on either side of Room 1934-3a (Room 8)? How does the platform and its surrounding features relate to the later western room block that was constructed in a typical great house pattern even though it was much smaller in size than most of its contemporaries in the canyon? And, what was Talus Unit No. 1’s role in the Chetro Ketl-Pueblo Alto road network? It is hoped that continued research will help answer these questions.
ACKNOWLEDGMENTS

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INTRODUCTION

Archaeological research at Early Navajo sites has been conducted for almost 90 years, but has been concentrated on the pueblitos of Dinétah (Towner 2003). Research outside the Largo-Gobernador Dinétah heartland has also been conducted for the past seven decades, but on a much smaller scale (Hester 1962; Keur 1941; Towner 1994). The Rio Puerco area is mentioned more frequently in historical documents, primarily because of its proximity to the Spanish colony (Brugge 1985), but has been subjected to much less archaeological and dendroarchaeological research. Both areas have played important roles in anthropological and historical discussions of Navajo ethnogenesis, migration, and intergroup interaction. This paper expands Early Navajo archaeology and dendrochronology south of the traditional Largo-Gobernador Dinétah heartland by examining sites on La Ventana Mesa in the Rio Puerco drainage. This project affords an opportunity to explore questions concerning the occupational timing, settlement patterns, site structure, artifact assemblages, intergroup interaction, and human-environment interaction in an area that has received comparatively little research over the years.

SETTING

La Ventana Mesa is located in north-central New Mexico near the historic village of Cuba (Figure 1). Linford (2000:228) lists the mesa as 'Ishhtah Dzil (Flying Mountain). La Ventana Mesa itself lies near the headwaters of the Rio Puerco of the East; to the east are the Nacimiento Mountains and the Jemez volcanic field; to the southwest are Mt. Taylor, San Mateo Mesa, and Cabezon Peak, also known as Tsé Naajiił, a sacred Navajo place; to the west is the San Juan Basin and the famous Anasazi sites of the Chaco culture; finally, to the north lies the ancestral Navajo heartland of Dinétah. The mesa ranges in elevation from 2100 m in the north to 2225 m in the south; it slopes gradually to the west and very abruptly to the east in a series of benches. The eastern benches step down to the Rio Puerco and the western slope is cut by arroyos that drain into Arroyo Piedra Lumbre.

The area is in the pinyon-juniper forest of the Colorado Plateau where vegetation is dominated by pinyon (Pinus monophylla), and Rocky Mountain (Juniperus scopulorum), Utah (Juniperus osteosperma), and One-seed (Juniperus monosperma) juniper trees. Modern climate of La Ventana Mesa, as inferred from the weather station at Cuba, consists of a summer-dominant precipitation regime. Precipitation occurs in all months of the year, but is highest in July, August, and September when monsoonal moisture generates convective thunderstorms. Winter precipitation, usually snow, is consistent, but lower. Temperature varies seasonally with average July/August highs in the mid-80s and December/January lows near 10° F. Climate records exist only for the past 50-100 years in much of the Southwest, and the La Ventana Mesa area is no exception. A 1273-year precipitation reconstruction is available from nearby areas (Towner and Salzer 2003) and indicates mean annual precipitation of 8.7 in, with both annual and longer variability.
BACKGROUND AND PREVIOUS RESEARCH

The Early Navajo

The Navajo entry into, and occupation of, the Southwest have been discussed by anthropologists and archaeologists for more than a century (Wilcox 1981). The routes and timing of the Athapaskan migration have long been debated (Towner 2003; Wilcox 1981), but the earliest archaeological evidence of Navajos in the Southwest is found in the ancestral Navajo homeland of Dinétah in northwestern New Mexico (Figure 1).

The Dinétah phase of Navajo history is the earliest identified Navajo manifestation, and is dated from approximately A.D. 1500 (possibly earlier) to A.D. 1690 (Brown 1996). Dinétah phase sites are concentrated in the Largo-Gobernador area, but may include sites farther north near the Colorado-New Mexico border. Dinétah phase Navajos constructed forked-pole hogans, practiced corn-bean-squash agriculture, made grayware ceramics, and lived in nuclear or extended-family groups; it is uncertain whether or not the Navajo possessed many domestic animals at this time.

The subsequent Gobernador phase (A.D. 1690-1765) was a time of tremendous change in Navajo culture. For decades, these changes have been attributed to a massive influx of Puebloan refugees following the Spaniards’ 1692 reconquest of New Mexico (Brugge 1963; Hester 1962; Keur 1944; Kidder 1920). More recently, Hogan (1991) and Towner (2003) have argued that Puebloan influence on Navajo culture during the Gobernador phase has been overstated. Traditionally, the end of the Gobernador phase has been associated with the depopulation of Dinétah, and a migration of Navajo people to the south and west (Hester 1962). Although the 1748 drought may

Figure 1. The location of La Ventana Mesa in northwestern New Mexico.
have induced some Navajos to migrate (Reeve 1959), increased intensity and severity of Ute and Comanche raiding in the Dinéháh forced the final depopulation of the area (Towner 2008a).

After the Gobernador phase, Navajo culture history is divided into eastern and western sections that supposedly reflect different destinations of Dinéháh migrants. In the east, Hester’s (1962) chronology is continued and for the first time Big Bead Mesa (LA 15231), the type site for the Cabezon Phase, plays a prominent role, but no other sites have been excavated for comparison. Hester (1962:65) suggested that the Cabezon phase (A.D. 1770-1863) was typified by an increasing reliance on pastoralism, a concurrent increase in weaving, the adoption of western style dress, and the decline of native skills such as stone tool, ceramic, and basketry production. Although Cabezon materials area present in the Chacra Mesa area (Vivian 1960), the Rio Puerco area contained the largest concentration of Navajos at that time (Brugge 1985).

Previous Research on La Ventana Mesa

The immediate La Ventana Mesa area has been the subject of two intensive cultural resource surveys by the Office of Contract Archaeology (OCA) (Elyea 1994, 2003). These surveys documented more than 50 sites, mostly affiliated with Anasazi and Gallina groups. The sites discussed herein include Early Navajo hogan and sweatlodge sites investigated as part of an intensive dendroarchaeological project (Towner 2008b).

RESEARCH DESIGN AND PROJECT GOALS

The overarching goal of this project was to elucidate various aspects of the Early Navajo period occupations and place them in their cultural and environmental contexts. Research goals involved individual samples and sites, and regional implications of the data. Specifically, I wanted to:

- Provide chronometric data concerning the founding, occupation, and abandonment of the sites.
- Delineate Early Navajo site structure on La Ventana Mesa. Site structure and layout can illuminate aspects of Early Navajo social organization and subsistence strategies during a time of tremendous change in the northern Southwest.
- Identify Early Navajo settlement patterns on the mesa because La Ventana Mesa is comparable in area and survey coverage to several recent block surveys in Dinéháh (Towner and Heckman 2006).
- Examine the dendrochronological potential of different sample types associated with the sites, i.e., architectural and arboreal archaeological samples (CMTs [cultural modified trees]) (Towner et al. 1998).

RESULTS

Twelve Early Navajo sites were identified during the surveys (Elyea 1994; 2003), eight of which were dendrochronologically sampled. The four sites not sampled included three artifact scatters (LA 102874, LA 102881, LA 134793) and an eroded cache (LA 59045); one sampled site (LA 138464) failed to yield any dates. Although data from those sites are included in the tables and discussion, they are not discussed individually.

LA 134784

LA 134784 is an Early Navajo habitation location on a bench just below the La Ventana Mesa escarpment. It contains a forked-pole hogan, a midden, and an ashy area that may be another hogan. Burned mammal bone, flakes, and sherds (268 Dinétah Gray, 3 Gobernador Polychrome) compose the artifact assemblage (Elyea 2003:47).

Seven samples, all from CMTs, were collected from the site; none of the extremely weathered hogan timbers were suitable for sampling. Six samples are juniper, none of which dated. The single pinyon sample yielded a noncutting date of 1785w.
LA 134789

LA 134789 is a large (6.8 ha) multi-component site near the middle of the mesa. It contains 21 features in 10 proveniences (Elyea 2003). Gallina materials are most common, and include large structures and midden areas. My concern, however, is the single Early Navajo forked-pole hogan feature in Provenience 6. The Navajo component contained 27 Dinetah Scored jar sherds, a single Gobernador Polychrome sherd, and various prehistoric sherds; lithic flakes, a core, a hammerstone, a scraper, a projectile point, an arrow point preform, a piece of ground stone, and a lapstone were all identified during the original survey (Elyea 2003:48).

Four samples were collected from the hogan area, three from architectural elements and one from an axe-cut limb. The three juniper samples failed to date, but the single pinyon sample—from a hogan fork—yielded a 1785vv noncutting date.

Table 1. Tree-ring Data from LA 134794.

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Key: PNN = pinyon pine, MA = metal axe cut, p = pith, vv = eroded, noncutting date, + = possible locally absent ring near end of ring series, ++ = ring count only near the end of ring series, v = probable cutting date
Table 2. Tree-ring Data from LA 134795.

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Key: PNN = pinyon pine, MA = metal axe cut, p = pith, vv = eroded, noncutting date, + = possible locally absent ring near end of ring series, ++ = ring count only near the end of ring series, v = probable cutting date, G = beetle galleries present.

LA 134794

LA 134794 is an Early Navajo habitation site on an east-facing bench near the crest of the mesa (Elyea 2003). It contains two forked-pole hogans, 223 Navajo sherds (219 Dinetah Gray Scored, 3 Gobernador Polychrome, 2 Dinetah brown/red scored), and 21 lithics. Based on the ceramics, Elyea (2003:51) dates the site to either the Early or Late Gobernador Phase. Both hogans contain eroded single-course circular or oval sandstone block foundations.

Twenty-eight samples were collected from the site, three from architectural timbers and 25 from CMTs. Fifteen samples are juniper, including all three architectural timbers, but none dated. Of the 13 pinyon samples, 10 yielded dates including one cutting date of 1781v (Table 1). Seven of the dates cluster between 1780 and 1783; four earlier noncutting dates may belong to the same date cluster. Clearly, most of the activity at the site occurred in the early 1780s. One sample—BBM-70—indicates tree cutting activity in or after 1805—the latest Early Navajo date on La Ventana Mesa.

LA 134795

LA 134795 is an Early Navajo habitation site on the west-sloping portion of the mesa. There are at least three forked-pole hogans and several other features in the vicinity. Sherds and lithics indicate a Gobernador Phase occupation. Elyea (2003) identified 22 Dinetah Gray, 19 Ako Polychrome, and three Ashiwi Polychrome sherds and, on ceramic evidence, dates the site from 1690-1760. All three hogans have sandstone footings composed of blocks arranged in a circle or oval.

Thirteen tree-ring samples were collected from the site, nine from architectural elements and four from CMTs. One of the samples was lost; four are juniper, and nine are pinyon. Seven of the samples, all pinyon, yielded dates that range from 1743vv to 1792G (Table 2). Unfortunately, the architectural samples, hogan forks and leaners, all yielded noncutting dates that range from
1754++wv to 1771+wv. Although they generally date to the second half of the eighteenth century, they do not precisely date the structures. Samples from the CMTs yielded a 1781+wv date and two 1792 cutting dates. The most parsimonious interpretation is that the site was initially occupied in 1792. This may be significant because Mera (1939) and Harlow (1973) suggest an ending date for Ashiwi Polychrome of 1760 and for Ako Polychrome of ca. 1750.

**LA 138461**

LA 138461 is an Early Navajo habitation site that consists of a forked-pole hogan (Feature 1), an ash deposit (Feature 2) that includes several oxidized sandstone slabs (a possible hogan and storage cist), and a sweatlodge discard pile (Feature 3) on an east-facing bench. Elyea (2003:52) identified only eight pieces of Dinetah Gray pottery and two obsidian bifaces.

Five samples were collected from the site, two from the hogan and three from CMTs. The hogan samples, a pinyon and a juniper, were leaners; the hogan forks are not present and were probably recycled into another structure. The pinyon sample yielded a date of 1797++wv from the hogan. The CMT samples include two pinyons and a juniper; one pinyon yielded a date of 1767+B—the earliest near cutting date on the mesa.

Interpreting the two dates from LA 138461 is challenging. Clearly, Feature 1 was in use after 1797. If BBM-60 is a repair beam, a common attribute of leaners, the structure may have been built earlier. BBM-56 indicates wood cutting in the area in 1767 or 1768, but it is very unlikely that Feature 1 was used for 30 years or more; average hogan use-life is approximately eight years. If Feature 2 represents another hogan, perhaps BBM-56 is related to its construction. In either case, it is probable that there were two short-term occupations at LA 138461 separated by 25-30 years—a single generation.

**LA 138463**

LA 138463 is a habitation site located on a south-facing bench above the Río Puerco. There is at least one burned forked-pole hogan present, and maybe more. Elyea (2003:52-53) identified 23 Dinetah Gray sherds, fewer than 10 lithics, and several pieces of burned bone; one Jemez Black-on-white sherd was found between the features.

Ten tree-ring samples, all CMTs, were collected from the site; none of the architectural elements were suitable for sampling. Four samples, all pinyon, yielded noncutting dates, 1769+wv, 1769+wv, 1771+wv, 1790++wv, but none of the six juniper samples dated. All of the dates postdate 1769 and the latest date of 1790+wv (BBM-105) probably best estimates the period of site occupation.

**LA 152235**

LA 152235 is a habitation site on the eastern part of the mesa. It contains two forked-pole hogans, a possible ramada, and a sweatlodge discard pile. Initially recorded by Roney (2002), the small artifact assemblage indicates a Gobernador Phase occupation.

Fourteen tree-ring samples were collected from the site, seven from architectural contexts and seven from CMTs. Eleven samples are juniper and three are pinyon. Unfortunately, only two samples yielded dates, both noncutting; BBM-32 dates 1354+p-1587+wv and BBM-35 dates 1442+p-1743+wv. The later date may approximate the occupation period of the site, but it is considered unlikely. It is, however, one of the only dates from a juniper specimen in the project area.

**DISCUSSION**

The dendroarchaeology of La Ventana Mesa is interesting and informative on several levels. Artifact assemblages at Early Navajo sites are notoriously small and the La Ventana Mesa sites are no exception. The average number of artifacts (Table 3) is 143.8, and the range is 0 (LA 138464) to 318 at a single hogan site (LA 134784). Assemblages are typically dominated by Dinétah Gray ceramics, with fewer lithics, Gobernador Polychrome, and tradeware ceramics—although the lithic counts may be influenced by our inability to ascribe cultural
### Table 3. Comparison of Features and Artifacts at La Ventana Mesa

<table>
<thead>
<tr>
<th>LA #</th>
<th>Site Type</th>
<th>Area m²</th>
<th># of Hg</th>
<th># of SW</th>
<th># of CT</th>
<th># of DG</th>
<th># of GP</th>
<th># of TW</th>
<th># of L</th>
<th># of A</th>
<th># of TRS</th>
<th># of TRD</th>
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<tbody>
<tr>
<td>9045</td>
<td>C</td>
<td>628</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>3</td>
<td>0</td>
<td>10</td>
<td>70</td>
<td>0</td>
<td>0</td>
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<tr>
<td>102874</td>
<td>SC</td>
<td>1316</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>14</td>
<td>0</td>
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<td>29</td>
<td>43</td>
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<td>0</td>
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<tr>
<td>102881</td>
<td>SC</td>
<td>992</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>30</td>
<td>3</td>
<td>0</td>
<td>20</td>
<td>53</td>
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<tr>
<td>134784</td>
<td>H</td>
<td>2475</td>
<td>1+</td>
<td>0</td>
<td>7</td>
<td>268+</td>
<td>0</td>
<td>3</td>
<td>47</td>
<td>318</td>
<td>7</td>
<td>1</td>
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<tr>
<td>134789</td>
<td>H</td>
<td>70336</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>27</td>
<td>1</td>
<td>0</td>
<td>28</td>
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<td>134793</td>
<td>SC</td>
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<td>0</td>
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<td>0</td>
<td>75</td>
<td>2</td>
<td>1</td>
<td>77</td>
<td>155</td>
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<tr>
<td>134794</td>
<td>H</td>
<td>3920</td>
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<td>0</td>
<td>25</td>
<td>216</td>
<td>3</td>
<td>2</td>
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<td>242</td>
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<td>134795</td>
<td>H</td>
<td>863</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>22</td>
<td>0</td>
<td>22</td>
<td>3</td>
<td>47</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>138461</td>
<td>H</td>
<td>2000</td>
<td>1+?</td>
<td>0</td>
<td>3</td>
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<td>0</td>
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<td>750</td>
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</tr>
<tr>
<td>152235</td>
<td>H</td>
<td>900</td>
<td>3+?</td>
<td>1</td>
<td>7</td>
<td>150+</td>
<td>5+</td>
<td>6+</td>
<td>50+</td>
<td>211</td>
<td>14</td>
<td>2</td>
</tr>
<tr>
<td>Tot</td>
<td></td>
<td>11</td>
<td>2</td>
<td>57</td>
<td>894</td>
<td>17</td>
<td>35</td>
<td>269</td>
<td>1212</td>
<td>83</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Ave</td>
<td></td>
<td>1818</td>
<td>1.7</td>
<td>.16</td>
<td>4.7</td>
<td>114.7</td>
<td>0.75</td>
<td>6.6</td>
<td>14.3</td>
<td>143.8</td>
<td>6.9</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Table Key: C = cache, SC = scatter, H = habitation, Hg = hogans, SW = sweatlodge, CT = culturally modified tree, DG = Dinetah Gray, GP = Gobernador Polychrome, TW = trade ware, L = lithics, A = artifacts, TRS = tree-ring samples, TRD = tree-ring dates

affiliation to individual pieces of debitage. The frequency and mean number of tradewares exceed those of Gobernador Polychrome by a 2:1 ratio.

The 12 Early Navajo sites indicate a relatively sparse occupation by single-family groups—and possibly one or two extended families. There are three single hogan sites. LA 134789 is somewhat isolated on the northern portion of the mesa, but the other two single hogan sites (LA 134784, LA 138461) may have formed an extended-family residential cluster or may represent sequential occupations by a single family. The single 1785vv noncutting date from LA 134789 and 1797++vv noncutting date from LA 138461 may be contemporaneous; the 1767+B near cutting date from LA 138461, however, suggests at least two separate occupations. The lack of sweatlodges associated with single-hogan sites and paucity of artifacts suggest that these were short-term occupations.
There are five sites that may contain more than one hogan. LA 152235 is somewhat isolated in the eastern portion of the project area; it also contains one of the two sweatlodges identified on the mesa. If the hogans/structures at LA 152235 are absolutely contemporaneous (only two noncutting tree-ring dates were derived from the site), it probably represents a short-term occupation by an extended family group.

Three of the other four sites with more than one hogan form something of a cluster on the southern portion of the mesa. These sites (LA 134794, LA 134795, LA 138463, LA 138464) contain at least four, and probably more, hogans and the only other sweatlodge on the mesa (LA 138464). The sites yielded 21 tree-ring dates and indicate occupation in the 1780s-1790s, probably by an extended family. It is possible that this cluster was initially formed in 1781-1782 (LA 134794), abandoned, and reoccupied in 1790 (LA 138463) until at least 1805 (LA 134794).

The paucity of Gobernador Polychrome on these late eighteenth century sites supports Brugge's (1963) idea that a taboo against producing painted pottery accompanied the depopulation of Dinétah in the mid-eighteenth century (Towner 2008a). The relatively high proportion of tradewares—higher than several areas in Dinétah (Towner and Heckman 2006) suggests that the short-term occupations on La Ventana Mesa were oriented toward interaction with the Puebloans and the Spanish colony, not toward the Navajo populations to the west.

The eight sampled Early Navajo sites yielded 84 samples and 29 dates—a 34.5% dating success ratio that is equivalent to the long-term Laboratory of Tree Ring Research (LTRR) success rate. Of the 29 dates, however, only four are cutting or near cutting dates. The earliest near cutting date is 1767+B and the latest date is 1805+5. Clearly, the Early Navajo occupation was a mid- to late-eighteenth century phenomenon.

Juniper (n=50) and pinyon (n=34) were the preferred building materials of the Early Navajo. Unfortunately, only one juniper sample dated; in contrast, 28 of the 34 pinyon samples (82%) dated. This discrepancy is related to Early Navajo wood use practices discussed below.

Sample context had little effect on dating Early Navajo samples. Fifteen (15) juniper samples were collected from architectural contexts, but only one dated; 35 samples were collected from CMTs, most as cross-sections, but none dated; in contrast, pinyon samples from architectural contexts (n=10) yielded six dates and pinyon CMT samples (n=24) yielded 21 dates (87.5%). Obviously the pinyon samples have a higher dating success rate, but the discrepancy is more a result of cultural choices than species use. Hogans, as relatively circular single-room structures, require four main support posts (forks) and dozens of side poles (leaners). Other than forks, which determine the height of the structure, poles and logs need not be of any particular size or shape. Therefore, the Early Navajo builders could have chosen small irregular-shaped timbers or branches. The junipers that grow on the mesa are predominantly either Juniperus osteosperma or Juniperus monosperma; the latter tends toward a more bushy growth form which rarely crossdates, even among branches of the same tree. The Navajo selection of these trees directly impacted the dating success rate.

The availability of the southern Dinétah precipitation reconstruction (Towner and Salzer 2003) allows me to examine possible relationships between the Early Navajo occupation and precipitation variability. Figure 2 shows reconstructed precipitation for the area and significant tree-ring dates from the Early Navajo sites. Precipitation during the 1700-1850 period averaged 8.75 in annually, with a standard deviation of 2.19 in; precipitation ranged from a low of 2.81 in in 1748 to a high of 14.40 in in 1771. Within the tree-ring dated period of the Early Navajo occupation (1767-1805), there were six years more than one standard deviation below the mean and two years more than one standard deviation above the mean, but no extended wet or dry periods.

Two of the three years with cutting dates, or date clusters (1767, 1781) were below average, and the other (1792) was above average. Noncutting dates that may delimit
terminal site occupations (1797, 1805) were below average. It is important to note, however, that none of these years was more than one standard deviation above or below the mean; all could be considered “normal” years. These data suggest, therefore, that precipitation was not a determining factor in Early Navajo settlement dynamics on La Ventana Mesa.

CONCLUSIONS

This exploration of dendroarchaeology on La Ventana Mesa has delineated significant portions of the Early Navajo occupation of the area. The late eighteenth century occupation by single-family, and possibly extended-family, groups was clearly less intensive than earlier occupations in the Largo-Gobernador area. Nevertheless, similar site organization, artifact assemblages, and wood-use practices indicate continuity with Dinétah Navajo sites farther north. The precipitation reconstruction indicates significant variability during the occupation, but site construction only during “normal” conditions. Dendroarchaeology is clearly a viable avenue for exploring different occupations, but more research is needed in order to fully understand past land use. In the La Ventana Mesa Navajo case, more detailed ceramic and lithic analyses of surface and subsurface assemblages will be a major contribution to understanding Early Navajo archaeology south of the Largo-Gobernador heartland.

ACKNOWLEDGMENTS

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When the members of Coronado’s Spanish entrada arrived in the Albuquerque Basin in A.D. 1540, they described at least 12 Southern Tiwa pueblos clustered into what the Spanish called the Province of Tiguex (Bolton 1990:184). One of these communities, now known as Pueblo de Santiago (LA 326, also called Bandelier’s Puaray), was excavated in 1934-1935 and largely destroyed by gravel quarrying activity in the late 1960s. Historical and archaeological evidence suggest this settlement was inhabited between A.D. 1400 and the Pueblo Revolt of 1680, and could have been besieged or occupied by Coronado’s army. It is located on a high terrace on the west side of the Rio Grande and opposite the present town of Bernalillo in Sandoval County, New Mexico.

Situated only 250 m to the north, the Price site (LA 728) is a small outlying portion of that community. Although in use throughout much of the nearby pueblo’s occupation, the Price site exhibits characteristics that set it apart. Excavations of the site in 1968 and 1998 have left archaeologists debating its function and role in Southern Tiwa culture (Schaafsma 1968a, 1968b; Turnbow et al. 1998; Vierra 1987). This paper explores some of those controversial issues, the burial population, and whether that population was impacted by Spanish intrusion and colonization.

DEVELOPING PERCEPTIONS OF THE SITE

The Price site was first documented in 1932, perhaps by Gordon Vivian who, from 1934 to 1935, conducted excavations at the nearby Pueblo de Santiago for the Museum of New Mexico, the School of American Research, and the University of New Mexico (Tichy 1939; Vierra 1987; Vivian 1934). Those excavations sought to determine whether it was the location of Coronado’s winter encampments in A.D. 1540 and 1541. H. P. Mera mapped the Price site as a long linear mound 83 paces east-west by 25 paces north-south. Commenting on its relationship with Pueblo de Santiago, Mera (1940:20) states:

There is a strong possibility that this site should be considered as an outlying section of the ruin LA 326. It lies about 250 yards north-west of that ruins and yielded all groups from A to E. Thus, its periods of occupancy coincide with those of LA 326 except for the last, or group F.

Although never explicitly stated, the long, east-west trending mound was probably thought to be a roomblock. The absence of Glaze F, now dated between A.D. 1600 and the 1700s (Morales 1997:639), did suggest that the use of Price site ended prior to that of the main pueblo.

In 1968, the Museum of New Mexico undertook salvage mitigation on the Price site prior to removal of gravel for State Highway 44 realignments. Excavated under the direction of Curtis Schaafsma, the site was described as a “rich deposit of surface refuse which spread out over and between what appeared to be two house mounds” (Schaafsma 1968a:1). Manual excavations of 348.5 m² on the assumed mounds and other refuse-covered areas revealed 15 burials, cultural features, and a rich artifact assemblage (Figure 1). Lacking funding for complete analysis or a comprehensive monograph, Schaafsma summarized the research in a four-page preliminary report.
At the outset of the 1968 excavations, Schaafsma (1968a), like Mera, looked at the low, refuse-covered rises on the site as residential mounds and fully expected to encounter architectural remains as he extended trenches and excavation blocks through the densest area of the site. When no structural features were identified, he interpreted the site as a burial ground covered by an extensive midden. Schaafsma (1968a:4) still felt that the site was a habitation since “it was doubtful that either trash or burials would have been carried the two or three hundred meters across the deep arroyo from the main part of the pueblo to the south.” Judging from the ceramic types recovered, the burials were estimated to date between A.D. 1450 and 1600, while the major refuse deposition occurred around A.D. 1500 or perhaps slightly before.

Shortly following the release of the 1968 technical report on the excavations, Schaafsma (1968b) published a short article on the funerary vessels recovered from the site. In that publication, the period of site use was revised to encompass A.D. 1475 to 1680, around the time Pueblo de Santiago was abandoned. More significantly, the main period of ceramic manufacture was reported as A.D. 1500 to 1650. In sharp contrast to the earlier report, this temporal span placed the main site use during initial Spanish contact and into the early Spanish Colonial period when Spaniards settled adjacent to the Pueblo de Santiago (Snow 1976; Tichy 1939; Toulouse 1976; Vivian 1934).

With a revised temporal span for the site, Schaafsma advanced a very different explanatory model for the presence of the burials at the Price site. Instead of habitation with burials, he proposed that the site was a Spanish contact camposanto affiliated with the Pueblo de Santiago.
Under this theory, the indigenous population of Pueblo de Santiago was coerced into adopting the Spanish Catholic mortuary custom of burying their dead in isolated cemeteries.

In more recent assessments of Pueblo de Santiago and the Price site, Vierra (1987, 1989) re-evaluated the temporal dates of the funerary vessels from the Price site. Coming to the same conclusion that Schaafsma (1968a) originally presented, Vierra viewed the site as primarily a pre-contact occupation.

In 1998, planned development of the Santiago Estates subdivision led TRC to revisit the Price site (Goar and Turnbow 1998). Although impacted by gravel operations, the site contained areas that were relatively undisturbed. The New Mexico Historic Preservation Division (HPD) concluded that the 1968 excavations had mitigated impacts to the site, but given the likelihood of additional human burials, archaeological clearance of any remains was required under State of New Mexico human burial legislation. Directed by this author, the 1998 TRC excavations specifically focused on the recovery of human remains (Turnbow et al. 1998). Research sought information on the characteristics of the burial population, mortuary practices, chronology and function of the site, and any cross-cultural contact with the Spanish.

The 1998 investigations found no indications of the 1968 excavations that could link the two grid systems. Geophysical surveys, manual testing, and extensive backhoe trenching delineated intact cultural deposits. These areas were mechanically stripped and all human remains and cultural features were excavated. Encompassing a total of 2,940 m², the excavations revealed an Early Developmental period pit structure with four intramural features, and a late Classic period midden with five burials, nine features, and a diverse artifact assemblage (Figure 2). Details of the two excavations are presented by Turnbow et al. (1998).

![Figure 2. The Price Site 1998 excavation map of Strip 3 Excavation Block showing the Early Developmental period pit structure (F 35) and Classic period occupations.](image-url)
PRICE SITE DESCRIPTION

Debate has raged for over four decades on how the Price site was used in relation to the nearby Pueblo de Santiago. Understanding the occupational history is crucial to determining whether the site formed, as Schaafsma (1968b) suggested, as a discreet cemetery or camposanto, reflecting direct Catholic influence on the native population, or as an outlying portion of the pre-contact community of Pueblo de Santiago as argued by Schaafsma (1968a), Turnbow et al. (1998), and Vierra (1987, 1989).

The surface artifact distribution of the site encompasses 9,408 m², measuring a maximum of 140 m east-west and 83 m north-south. However, intact cultural deposits from both the 1968 and 1998 excavations were around 50 to 70 m in maximum length. These deposits were characterized by charcoal, ash, burned daub or adobe, burials, features, a pit structure, and a substantial artifact assemblage.

Although three radiocarbon determinations were produced from the site, ceramics remain the best means of dating the components. Reed’s (1998) analysis of 2251 ceramic artifacts from the 1998 excavations revealed Early Developmental (A.D. 600-900) and Classic (A.D. 1325-1600) assemblages (Table 1). The Early Developmental ceramics included a reconstructible Obelisk Util-

Table 1. Price Site (LA 728) Ceramic Wares and Types Analyzed by Reed (1998).

<table>
<thead>
<tr>
<th>Ceramic Ware and Type</th>
<th>1998</th>
<th>%</th>
<th>1968</th>
<th>%</th>
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<td><strong>Early Developmental Component</strong></td>
<td></td>
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<td>Lino Gray</td>
<td>8</td>
<td>61.5</td>
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<td>Obelisk Utility</td>
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<td>30.1</td>
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<td><strong>Gray Ware</strong></td>
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<td>Indeterminate Rio Grande ware</td>
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<td><strong>Total</strong></td>
<td>101</td>
<td>100</td>
<td>83</td>
<td>100</td>
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</table>
Excavations at the Price site revealed Classic period middens ranging from 20 to 35 m across and from 10 to 22 cm in thickness. These substantial deposits and overall artifact densities suggest prolonged and/or intense utilization of the site. Cultural materials consist of domestic materials and food refuse typically found on habitations. In addition to ceramics and flaked stone, the assemblage contained manos, metates, axes, arrow shaft straighteners, turquoise, a figurine of unspecified material, pipe fragments, minerals, and ochre. Faunal remains included shell, eggshell, and bone tools; floral remains included charcoal, charred corncobs, "prayer food" from the funerary vessels, wood, yucca fiber, seeds, and pollen.

Despite a dense, varied assemblage, the Price site excavations yielded no roomblocks, adobe walls, or room features similar to those described at Pueblo Santiago (Vierra 1987:78). After the 1968 fieldwork, gravel operations reportedly exposed architectural remains to the east of the main excavation block. Those discoveries were never examined by archaeologists, and could have been either surface rooms or perhaps even the pit structure discovered in 1998 (located in the gravel operation area). Excavations did identify more ephemeral structures that could be ramadas or jácales. They were characterized by non-local, compact reddish clay loam surfaces associated with rock-lined postholes, fragments of adobe, and denser concentrations of artifacts. One found in 1998 measured approximately 8 m in length but had no hearth. The 1968 field notes mentioned what may have been a similar find.

Other Classic period cultural features include 13 pits or depressions. Most were small, shallow features of unknown function. As a group, these features contained few artifacts. One produced the major portion of a glaze ware bowl. Two others had thermally-altered rock and in one case, eggshell. Another was filled with refuse. Larger pits were filled with refuse and although not adobe-lined, could have originally been used for storage. The 1968 excavations also revealed a linear pit filled with stratified refuse and a depressed area of rich deposits containing sherds, corncobs, and charcoal.
CHARACTERISTICS OF THE BURIAL POPULATION

The Price site yielded 20 human burials containing 21 individuals (Table 2, Figures 1 and 2). All were primary inhumations of single individuals except for one female who had a near-term fetus. Most graves were formally prepared, oval pits with straight sides and flat to slightly concave bottoms. The pits were dug just large enough to accommodate a semi- to tightly-flexed adult or subadult, or a child in the extended position. The population is assumed to date to the Classic period. Although five had no diagnostic artifacts, four were in or near the Classic middens. One adult (Burial 19), however, buried only a few meters from the Early Developmental period pit structure, had no preserved funerary objects and could have been related to that earlier component.

Detailed osteological analysis of the skeletal remains from the 1998 excavations was undertaken by Ogilvie (1998) who also carefully inspected the bone for metal cut marks and other evidence of warfare with the Spanish. The 15 burials excavated by Schaafsma (1968a, 1968b) have been examined only for age and sex as part of the Native American Graves Protection and Repatriation Act inventory performed by the Museum of New Mexico. Ogilvie did examine the crania recovered from the 1968 excavation.

Generally, the site’s human remains were not well preserved. Stature estimations based upon fibula length suggest the young adult male was 162 cm or 5 ft 4 in tall, and an adult woman of 30 to 39 years old was 143 cm or 4 ft 8 in tall. Pathologies include lesions suggestive of treponemal infection, periodontal disease which is not uncommon among Southwestern skeletal populations, and dental enamel hypoplasia, which may indicate malnutrition, infections, fevers, or childhood diseases. Absent was any evidence of cradleboarding, a common Ancestral Puebloan practice. One individual had a broken toe that had healed during his life, but Ogilvie found no evidence of violence-related trauma within the population.

Body orientations and position of the body, legs, and arms vary among this small population (Table 3). Body position could be identified for 19 of the 20 burials. Most were on their right side (n=13), with left side (n=2), chest (n=2), and back (n=2) far less common. One of the latter was a young child. Legs were predominantly in the flexed position (n=8), with tightly flexed (n=6) and semi-flexed (n=4) also present. In general, for the flexed burials, the femurs were drawn up from a 90 to 45 degree angle to the trunk. In many cases, the lower legs were tightly folded up under the femur, with the feet under the buttocks. Two tightly flexed burials were somewhat unusual in that one was placed face down in a very small pit and the other face up in a narrow, irregularly oval pit. Both, however, contained vessels or large vessel fragments.

Arm positions could not be determined for eight burials due either to lack of information or disturbance. The remaining individuals exhibited arms crossed or together around the abdomen (n=7), raised toward the head (n=3), folded over the chest (n=1), or extended along the sides (n=1). Of those with arms crossed or together around the abdomen, two have their hands around the knees, and the others are closer to the trunk. Additionally, three of this group exhibit likely postmortem twisting of the chest and arms, leaving the upper arm slumped outward with the elbow pointed away from the body. The three with arms raised toward the head included two with the hands at the chin and the other facing down with its arms raised above the head.

The position of the head could not be determined for two individuals. The remaining were either facing north (n=7) or down (n=7), or, more rarely, facing up (n=3) or facing south (n=1). Those facing down include only two that may have been purposefully placed down. The other five examples may have slumped from their original positions.

Body orientation could not be determined for one individual. The majority of the others are oriented to the east (n=13), or in a general eastward direction such as southeast (n=1), or northeast (n=2). Three, however, were oriented in a westward position, including west (n=2), and southwest (n=1). This group included two of the five children estimated at 0 to 3 years old.
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<td></td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>10.6%</td>
<td>8.5%</td>
<td>40.4%</td>
<td>2.1%</td>
<td>7.4%</td>
<td>20.2%</td>
<td>7.4%</td>
<td>3.2%</td>
<td></td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Fifteen of the 20 burials contained nonperishable grave accoutrements of some form. All 15 either had complete bowls, vessel fragments, or both. Five had complete glazeware bowls, although one was apparently ritually killed. Half of this vessel was placed north of the head of Burial 7 and the other half at the feet. This burial also contained another bowl fragment and a handful of black seeds above the head. Other burial objects included a flaked stone scraper, teeth, a piece of ochre, and, in some of the ceramics, white meal interpreted as food offerings (Schaafsma 1968a).

Funerary objects were typically placed north of the body in the vicinity of the head or the chest. Only two objects, a ceramic sherd and a piece of ochre, were located to the south of the head. Two infants were laid on large sherds. Two adult burials had ceramics at the feet, including a fragment of the “killed” bowl discussed above. Large sherds were also over the heads of two adult females, including one pregnant at the time of death.

Spatial patterning of the burials is interesting but difficult to fully evaluate since the two provenience grids could not be linked. Available data indicate that the inhumations were placed in or near the midden deposits. For the 1968 data, burials from Area I and Area II were different in several ways. Those in Area I were buried in a midden area, and all 11 contained some form of non-perishable funerary objects. The burials were also oriented east, or, less commonly, northeast or southeast. In contrast, the four burials in Area II, located to the east of Area I, were apparently not in midden or, at least, not in dense midden areas. None of these inhumations contained non-perishable funerary objects, and two were oriented to the southwest or west. It is possible that the Area II interments represent Developmental or earlier Classic period burials or, conversely, were from a population not closely related to those buried in Area I. However, ceramics from Area II were Classic in age.

Comparisons of Mortuary Patterns

Rituals pertaining to death and burial integrate a culture's belief system through a set of symbolic actions. In turn, these rites are manifested, in part, in the mortuary patterns found in the archaeological record. In order to determine whether the Price site cultural unit was representative of Southern Tiwa mortuary customs, comparisons were made with other known Classic period burial populations that have been interpreted as Tewa-Tano or Keresan groups, or as historically recognized members of the Tiguex, Jemez, and Tompiro Humanas Provinces (Table 3). Besides Price, Tiguex Province sites used in the study are Kuaua Pueblo (Luhrs and Ely 1939) and Pueblo de Santiago (Tichy 1939:162; Vierra 1987:81; field notes at the Laboratory of Anthropology). Others to the east include Tano and Keresan components at Paa-ko (Lambert 1954:177), and to the north, the Tewa or Tano sites of Alfred Herrera; Pindi (Palkovich 1980:66; Stubbs and Stallings 1953:23), and Arroyo Hondo (Mackey 1980:178; Palkovich 1980:2). Two sites of Towa speaking populations are Pecos (Kidder 1958:285) in the Pecos River drainage and Unshagi (Reiter 1938), located in the Province of Hemes (Jemez). To the south of the Tiguex Province are the pueblos of Gran Quivira (Hayes et al. 1981; Schroeder 1979:240-241), a Tompiro speaking population of the Province of Humanas; and Pottery Mound (Schorsch 1962).

Research conducted for this study found two mortuary variables, body orientation and position, to have meaningful correlations. In an earlier study of the skeletal and mortuary remains of the Arroyo Hondo site, Palkovich (1980) compared her results to a small group of mostly Tewa-Tano pueblos in the Middle Rio Grande region. Comparisons were made of burial location, body position and orientation, grave accoutrements, and
demographic data. Although Palkovich's (1980:75) findings did not “reveal any single set of mortuary practices consistent throughout the region,” she did conclude that Arroyo Hondo seems generally similar to other sites in its “lack of a standard body position or orientation.”

In contrast to her analysis, body orientation presents the most striking mortuary pattern observed in this study. As shown in Table 3, the Southern Tiwa sites of Price, Santiago, and Kuaua have a strong preference for body orientation to the east, ranging from 68.4% to 74.1%. In contrast, most of the examined pueblos in the Tompiro, Tewa, and Keresan areas showed east body orientation from 29.4% at Pindi to 48.6% at Gran Quivira.

Unshagi, a Towan settlement, had a preference in body orientation to the west (56.4%). The next highest is the Tewa settlement of Alfred Herrera with 27.3%. Interestingly, burial orientation at Pecos, another Towan pueblo, was described by Kidder (1958:288) as having “no preference for one direction or the other.”

Body position also reflects significant differences between the Southern Tiwa and other Puebloan populations examined in this study (see Turnbow et al. 1998:Table 10.3). It should be noted that Alfred Herrera, Unshagi, and Pueblo de Santiago did not have quantified data for this variable, but Kidder supplied this information for Pecos. Of the burials for which body position could be identified, those from Kuaua and Price show a strong preference for placement on the right side (54.3% at Kuaua and 68.4% at Price). The percentage of burials on the right side at other sites ranges from 18.9% to 32.9%. Once again, the Towan show the most significant difference from the Southern Tiwa. At Pecos, both the Glaze IV and Glaze V burials are predominantly face down (74.3 and 74.1%, respectively), but only 5.4% from Kuaua were recorded as face down. The Towan population at Unshagi also had a high frequency of face-down burials (Luhrs and Ely 1939; Reiter 1938). These statistics may in fact reflect postmortem changes rather than intentional burial customs.

Thus, based on the sample examined in this study, the Southern Tiwa burials reflect a strong mortuary pattern not seen at the other Classic period sites in the region. Why the Southern Tiwa interred so many of their dead towards the east and on the right side (facing north) is an important question. Perhaps, as Ellis (1968:65) concludes for pueblos in general, the burial is oriented to the direction the spirit must journey to the underworld. Or it may point to a shrine or other sacred place. Equally important, why was a small percentage of the population within these communities not buried in the same fashion? Clearly, the 68.4% to 74.1% of the Southern Tiwa population buried with an eastward orientation marks a significant symbolic act.

CURRENT INTERPRETATIONS OF THE PRICE SITE

Accumulating evidence strongly supports the conclusion that the Price site was residential. It seems highly unlikely that the site served as a refuse disposal area for the main pueblo since debris had to be carried approximately 250 m across a deep arroyo and up a ridge from Pueblo de Santiago (Schaafsma 1968a). The proposal that the site was a Spanish Catholic style cemetery or camposanto is also rejected. Direct Catholic influence on the population of Pueblo de Santiago probably did not occur until after the establishment of missions at Kuaua, Isleta, Sandia, and San Pedro del Cuchillo pueblos between 1610 and 1612 (Oppenheimer 1962:11). There are no indications that the Price site continued in use during the A.D. 1600s and none of the burials reflect Catholic mortuary customs. The burial population at the Price site suggests household units. There was no evidence of violence and no unusual diseases for the time. Their interments followed the general pattern of the other Southern Tiwa populations with a strong trend toward burial orientation to the east and body position on the right side.

Clearly, the site's cultural deposits developed over a long period. Classic period use may have begun in the A.D. 1300s before the establishment of Pueblo de Santiago but
occupation became more intense during the mid A.D. 1400s to mid 1500s, when Pueblo de Santiago was likely at its peak. In the absence of Glaze F ceramics and Spanish Colonial artifacts, the Price site probably ceased to be used before 1600 even as Pueblo de Santiago continued on to about A.D. 1680. Indeed, the Price site may well have been abandoned in A.D. 1540 as the result of Coronado’s presence in the Albuquerque Basin. Reeling from conflicts with Coronado’s expedition and perhaps exposure to European diseases, the weakened populations of the Tiguex Province probably chose to retreat to the relative safety of a larger pueblo.

By the A.D. 1400s, the Southern Tiwa in the Albuquerque Basin were aggregated into larger, more formal pueblos. Pueblo de Santiago was laid out in a roughly square plan with roomblocks surrounding the central plaza. Kuaua Pueblo also appears to have developed through planned construction stages. Small outlying residential sites like Price lead to questions about why they were established just outside the much larger Southern Tiwa pueblos. In the case of Price, was it in use while construction was underway at Santiago, did it represent a faction or fission group from Santiago or another Southern Tiwa village, or, simply, new community development that failed to grow? Or perhaps as Ogilvie implied, were some of the people at Price not Southern Tiwa and therefore not fully integrated into the social fabric of the main pueblo?

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In 1976 I described the excavations of several latrines at Fort Selden, a late-nineteenth century military post near Las Cruces, New Mexico. A rewrite fifteen years later (Wilson and Caperton 1994) made the findings more widely available and included many more details about the Quart Export Beer bottles recovered by the dozens from the latrine vaults. The purpose of this paper is to clarify misconceptions that have arisen about the markings on these and other beer bottles of the same age.

A standardized Quart Export Beer bottle form came into use sometime in the 1870s. Capacities actually ranged from 19 to 22 oz. These bottles, hand-blown in molds with brown or aqua-colored glass, typically had letters, numerals and other simple designs in various combinations embossed on their bases (Figure 1). The plain sides once bore paper labels, fragments of which occasionally survive on excavated specimens. During the 1960s, a bottle collector named May Jones (1966, 1968) made a heroic effort to identify the bottle manufacturers represented by the initials on the bases, a task continued and extended by Dr. Julian Toulouse (1971), a retired chief engineer for Owens-Illinois Glass Company.

Historical archaeologists have made use of these putative identifications in attempting to date the bottles from their own excavations and their context (Brose and Rupp 1967; Gerow 2004; Hannaford and Taylor 1999; Herskovitz 1978; Staski 1995; Wilson 1981). But unfortunately, these identifications have often been little more than guesswork, as the basic research to document identifying marks by bottle manufacturers has been lacking. Studies such as Noyes (1962) are all too rare. The result has been attributions that are unreliable at best.

Surveys of the American glass industry in the 1880 and 1890 U.S. Census volumes were largely statistical and technological, and rarely even mentioned company names. We learn from these that the glass industry had four main branches. Plate glass factories made rough, ribbed or polished plate for window glass, mirrors, skylights, partitions, and something called rolled cathedral plate. Window-glass producers manufactured cylindrical or sheet window-glass. Flint-glass workers

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**Figure 1.** Profile of Quart Export Beer bottle and representative bottom markings for Fort Selden bottles. The LBC° 18 base is from the profiled bottle. Drawings by Alice Wesche.
blew and pressed forms including lamp-chimneys, tumblers, goblets, and prescription and pharmaceutical wares from flint (clear) glass. Green-glass blowers created green, black, amber, aqua, etc., bottles, fruit jars, carboys, demi-johns and other hollow (i.e., blown) glassware as well as green druggists' ware and telegraph insulators (Weeks 1883:1029, 1895:311, 317).

Each factory manufactured a single class of glass products, although a company might have several factories or branches that produced separate product lines. The Wisconsin Glass Company of Milwaukee was a rarity in that its August 15, 1884 advertisement added window glass, without other comment (The Western Brewer, 15 August 1884:1336). Most green-glass producers were too thinly capitalized to expand into other classes, but companies could and did halt production and convert their factory to another class of glass-making. For example, market conditions led the Mississippi Glass Company of St. Louis, Missouri to shift from uniquely supplying beer bottles (which it did through February 1885) to making plate glass (from June 1885). It continued its bottle department into 1886 at least, but by August 1887 that business manufactured plate glass exclusively (St. Louis Post Dispatch [SLPD] 24 June 1885:5; 7 December 1885:4; 26 August 1887:2; 5 September 1887:4; The Western Brewer 15 February 1885:227).

A company name by itself gave no indication of the type of its product. Businesses like the Missouri Glass Company of St. Louis that began making window-glass in 1851 ceased after two years, changed to flint glass in 1856 under new owners, and operated sporadically until 1865, when operations ceased entirely (Weeks 1883:97). By 1885 another Missouri Glass Company had initiated business at St. Louis as a wholesaler of glass and ceramic wares to dry-goods merchants (SLPD 11 August 1885:5). Examples of their monthly catalogs for April 1887, July 1889, and August and October 1898 are in the Amador Collection of trade catalogs at the New Mexico State University Library, Las Cruces. This Missouri Glass Company never made a bottle, for beer or anything else.

Noticeably lacking is any one source or collection of sources that would allow the correlation of initials on beer bottle bases with the names of real or prospective bottle manufacturers. The time period is limited to the 1880s, after which the pasteurization of beer in bottles and refrigerated railroad cars made possible the wide-scale distribution of bottled beer. By the 1890s, manufacturing techniques had improved and the inclusion of initials on beer bottle bases had largely ceased. As for Fort Selden, with the ending of the Indian wars, this post was abandoned early in 1891.

In a few cases, the bottle markings are sufficiently unique or have enough characters to assure a positive identification. Examples would include WIS G Co MIL (Wisconsin Glass Company, Milwaukee), D.O.C. (D.O. Cunningham, Jane Street Glass Works, Pittsburg) and S. B. & G. Co. (Streator Bottle & Glass Company, Streator, Illinois). Likewise, I G Co L probably represents Ihmsen Glass Company, Ltd. of Pittsburg, which is worth stressing because the importation of empty bottles by the millions continued through the 1880s (Wilson and Caperton 1994:72-73). In this case “Limited” was employed by an American company as part of its business name, rather than indicating that these bottles had been imported from England.

But what of initials like L G Co. and M G Co.? Known manufacturers of beer bottles in the 1880s included Lindell Glass Company of St. Louis in 1884-1885 and the Lythgoe Glass Company of Bowling Green, Ohio in 1887-1888; Massillon Glass Company/Glass Works of Massillon, Ohio in 1881, 1883, and 1886-1890; the Minneapolis Bottle Manufacturing Company in 1886, and the Mississippi Glass Company of St. Louis from 1883 into early 1885 (Table 1). Is there any way to identify which company made a given bottle from the marks alone? With our present information, the answer is usually no.

Neither is proximity to brewing centers a guide, as glass factories burned down or workers went on strike, which meant that a brewer simply changed suppliers. Bottle workers were highly unionized in the 1880s, and glass
blowers took a two-month vacation each summer during July and August (SLPD 1 July 1885:7; 28 June 1886:2; 31 August 1886:2; 30 June 1887:2). Breweries, of course, kept going, and beer had a short shelf life; so if bottles should be in short supply, another manufacturer (or dealer) stood ready to step in and meet any shortages. By 1885, recyclers in several major cities also advertised to supply bottles. The extreme range of manufacturers in the bottle base sample from the Fischer Brewery bottle dumps in Santa Fe strongly suggests that this brewer used recycled bottles (Hannaford and Taylor 1999:130-132).

Another complication is the misattribution of initials, such as claiming that L.G. Co. (a very frequent embossing) represented “Louisville Glass Works,” when the actual name of the Louisville firm was Kentucky Glass Works Company. This company produced beer bottles and similar forms in 1883-84 and might have identified its wares with a K G W logo, or simply a K (The Western Brewer 15 January 1883:33; 15 March 1884:497; Hannaford & Taylor 1999:130; Gerow 2004:181).

There is also the problem of B G Co marked bottles; this logo being met with frequently in archaeological situations. One study alleged that these initials represented a “Belleville Glass Company” of Belleville, Illinois, which lies next to East St. Louis (Hannaford and Taylor 1999:130). A brief note in 1886 suggested an imminent buyout of this company: “The financial liabilities of the Belleville Glassworks Company are likely to be met at an early date, and business resumed” (SLPD 12 May 1886:2). Later, several items under “Belleville” in the 12 May and 16 August 1887 and 24 February 1888 SLPD mentioned the Anheuser-Busch Glass Works in the West End, and the 16 August note said that work would start up again on September 1 (1887). Anheuser-Busch allegedly purchased the Belleville Glass Company, which operated under that name from February 1882 through June of 1886, and continued to run the plant as a subsidiary, the Adolphus Busch Glass Manufacturing Company (A.B.G. Co.). Anheuser-Busch also acquired the Streator Bottle and Glass Company at some point (Wilson and Caperton 1994:74-75).

An Anheuser-Busch trade circular from 1888 (see excerpts in Wilson and Caperton 1994) is ambiguous as to whether and for how long that company made its own beer bottles and what plants produced them, but the output of their bottling department reached an immense 25,000,000 bottles in 1888 (Wilson and Caperton 1994:68). No advertisements for an Anheuser-Busch or a Belleville glass works are known, nor are there any ads for the maker of bottles marked A B G Co. All of this indicates that Anheuser-Busch, already a powerhouse in the brewing field, made many, if not most, of its own bottles in the 1880s and had no need to advertise this vertical integration, to use a more current term.

Resolving the question of accurately identifying the initials, or other markings on the bases of beer bottles comes down to having accurate background information. As mentioned above, two published sources are unreliable and often misleading. How does one straighten out the record?

Perhaps with a little background first on the bottling of lager beer. As discussed above, the pasteurization of bottled lager beer in the early 1870s was followed by development of the first practical railroad refrigerator car in 1879. This made possible the wide-scale marketing of bottled beer from Eastern and Middle Western breweries. In New Mexico, The Mesilla News began advertising Dick Bros.’ Celebrated Lager Beer from Cincinnati in June 1880. The first local advertisement for the Anheuser-Busch Brewing Association appeared in a Las Cruces newspaper in March 1881, although the railroad did not arrive there until near the end of April (Newman’s Semi-Weekly, 26 March 1881). Up at Fort Selden, beer was legal at times on the post, delivered directly by a refrigerator car at the railroad siding just a short walk from the sutler’s store (Wilson and Caperton 1994:57, 64,66).

A cursory study of Fort Selden beer bottles and the published literature from other sites, combined with the findings from a search of local newspapers, suggested that us-
ing contemporary sources to identify breweries and bott­
le manufacturers in the St. Louis area might be a place
to start. An interlibrary loan brought a microfilm of a
principal St. Louis newspaper, the daily Post-Dispatch,
with a run from 1 January 1885 through 3 March 1888.

This yielded some 126 short news items about glass fac­
tories, reporting plant closings and reopenings, fires, in­
juries, strikes and other items related to daily operations.
The only descriptive feature article related to a plate
glass company in Crystal City, Missouri (SLPD 15 Janu­
ary 1888:13). Company names were mentioned, the
most prominent being the St. Louis Glass Works. The
names Lindell and Mississippi Glass-works, both known
from other sources to have been green-glass factories, con­
tinued through this newspaper run, although the Missis­
sippi plant suffered a major fire in November 1887 and,
as seen earlier, had shifted to making plate glass by that
summer (SLPD 26 August 1887:2, 5 November 1887:8).
Rarely was it said which branch of the glass industry a
company engaged in. The newspaper named some pre­
viously unknown glass houses, although we do not know
which were actual business names or if any of them made
bottles. All in all, this examination of the newspaper run
amounted to wasted effort.

A second approach aimed to directly identify the manu­
facturers of beer bottles. This involved examining the
only known complete run of The Western Brewer, a prin­
cipal journal serving the brewing industry, for the years
1883-1890 inclusive. This was done in July 1982 at the
U.S. Brewers Association offices in Washington D.C.,
with the gracious cooperation of the Association. A val­
ued associate, Col. Herbert M. Hart (USMC, Ret.), and
two of his daughters volunteered to commute from their
home in Arlington, Virginia to scan the voluminous
pages of each monthly issue and make a copy of every ad­
vertisement by makers of beer bottles, wholesalers, and
dealers in second-hand bottles. Every business with a
connection to the brewing industry advertised, and the
thousands of pages revealed even more previously unre­
ported bottle-makers, mostly in the U.S. but also in Eng­
land and one in Dresden, Germany.

This was much more productive (Table 1). However, it
was a surprise to learn how few of the companies stayed

| Table 1. Advertising Dates by Beer Bottle Manufacturers in The Western Brewer, 1883-1890, with Sample Dates Between 1878-1882. |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| BEER BOTTLE MANUFACTURERS                     | 1878 | 1879 | 1880 | 1881 | 1882 | 1883 | 1884 | 1885 | 1886 | 1887 | 1888 | 1889 | 1890 |
| Pittsburgh, Pa.                               |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Massillon Glass Co.                           | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Massillon, Oh.                                |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Massillon Glass Works                         | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Massillon, Oh.                                |     |     |      |      |      |      |      |      |      |      |      |      |      |
| The Minneapolis Bottle Manufacturing Co.      | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Minneapolis, Minn.                            |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Mississippi Glass Co.                         | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| St. Louis, Mo.                                |     |     |      |      |      |      |      |      |      |      |      |      |      |
| The North Baltimore Bottle Glass Co.          | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| North Baltimore, Oh.                          |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Ottawa Bottle Co. / Ottawa Glass Co.         | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Ottawa, Ill.                                  |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Ottawa Bottle Works                           | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Ottawa, Ill.                                  |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Rochester Glass Works / Kelly, Reed & Co.     | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Rochester, N.Y.                               |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Siemens Glass Manufactories                   | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Dresden, etc., Germany                        |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Streator Bottle & Glass Co.                   | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Streator, Ill.                                |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Whitney Bros.                                 | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Whitney Glass Works                           | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Glassboro, Salem, Camden, N.J.                |     |     |      |      |      |      |      |      |      |      |      |      |      |
| Wisconsin Glass Company                       | D   | J   | D    | J    | D    | J    | D    |     |     |     |     |     |     |     |
| Milwaukee, Wisc.                              |     |     |      |      |      |      |      |      |      |      |      |      |      |

|
in business through the whole period. The industry was obviously a dynamic one, or perhaps volatile and undercapitalized, with companies appearing and then failing or changing their product line after one to three years. The absence of any ads by glass companies that may have been subsidiaries of a large brewer such as Anheuser-Busch was not unexpected. No company illustrated the markings on its bottle bases.

The advertisements (Figure 2) did occasionally portray bottle profiles, but all of these seemed to be standard woodcuts. It is highly probable that, in a fiercely competitive business environment, all of the major green-glass bottle-makers placed ads in The Western Brewer, as failure to do so amounted to giving your competitors an advantage. The annual page totals for this journal ranged upward from 2266 plus pages in 1883 to 2832 plus pages in 1890, a fair indication that anything and everything related (and occasionally not) to the brewing of beer and ales found its way into The Western Brewer.

The question as to who made all of the beer bottles can largely be answered by analysis of the advertisements. A chart showing the names of these companies and the inferred range of their times in business is given here (Table 1). This leaves us with the problem of identifying specific bottles with their manufacturers, although the probability of accurate correlations is now greatly increased by our ability to eliminate companies that did not manufacture anything (like the Missouri Glass Company) or that made other types of glass products.

One cloud over the use of marked beer bottles as dating fossils is their known reuse or recycling (Busch 1987). Anheuser-Busch was into this as early as 1879, probably to the extent of millions of bottles. Fifteen wholesalers and dealers in second-hand bottles advertised in The Western Brewer between 1881 and 1890, most of them located in Chicago and New York but, interestingly
enough, none in St. Louis. All but three of these dealers advertised for less than a year, implying that the business was marginally profitable or unstable (Wilson and Caperton 1994:68, 72). Beer bottles need to be considered with the same care as prehistoric potsherds in attempting to date the contexts where either are found.

We are left with at least one major unresolved question: who was the manufacturer of the beer bottles marked F.H.G.W. on their base (Table 3)? The final two letters probably represent "Glass Works"; what the first two stand for is still anyone's guess. These were the single most common marked beer bottles at the Fischer Brewery bottle dumps in Santa Fe and at Fort Selden, and numbers of them have been found at Forts Bowie and Union in Arizona and New Mexico, and at Fort Michilimackinac on the upper peninsula of Michigan (Brose and Rupp 1967; Hannaford and Taylor 1999:130; Herskovitz 1978; Wilson 1981; Wilson and Caperton 1994:56-57). As explained in an earlier publication (Wilson and Caperton 1994:74), the attribution of these to an English firm, Frederick Hampson Glass Works, or to a Francis Hitchins Glass Works of Lockport, N.Y., is easily discounted. No company with these initials advertised in The Western Brewer, nor did the St. Louis Post-Dispatch mention such a glass works. The probability is that bottles marked F.H.G.W. were made during the 1880s by a presently unidentified Anheuser-Busch subsidiary, at a plant in the St. Louis area.

Most of what has been learned from the analysis of the Fort Selden beer bottles is summarized in Figure 1 and in Tables 1-3. The date spans in Table 1 do not necessarily represent the entire period of production for these companies. Earlier ads from some scattered issues of The Western Brewer between 1878 and 1882 are also plotted in Figure 1; the journal itself appeared between 1876 and May 1920.

Only one company, Streator Bottle & Glass Company of Streator, Illinois advertised turn-mold finished beer bottles. The three bottles with bases marked S.B & G. Co. were not turn-mold finished, which suggests that they were either made between 1881 (the putative

<table>
<thead>
<tr>
<th>Bottom Mark</th>
<th>Color</th>
<th>Lip</th>
<th>Capacity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>F.H.G.W 2</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 7</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>21 1/2 oz.</td>
</tr>
<tr>
<td>F.H.G.W 8</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>20, 21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 13</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 16</td>
<td>2</td>
<td>-</td>
<td>1</td>
<td>22 oz.</td>
</tr>
<tr>
<td>F.H.G.W 17</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 18</td>
<td>4</td>
<td>-</td>
<td>2</td>
<td>21-22 oz.</td>
</tr>
<tr>
<td>F.H.G.W 22</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>21 1/2 oz.</td>
</tr>
<tr>
<td>F.H.G.W 30</td>
<td>1</td>
<td>1</td>
<td>?</td>
<td>21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 33</td>
<td>-</td>
<td>4</td>
<td>?</td>
<td>20 oz.(1) &amp; ca.20-21 oz.</td>
</tr>
<tr>
<td>F.H.G.W 34</td>
<td>-</td>
<td>3</td>
<td>3</td>
<td>21, 22, 23 oz.</td>
</tr>
</tbody>
</table>

Table 2. Beer bottles with F.H.G.W. Bottom Markings from Feature 108, Enlisted Men's Latrine.
Table 3. Beer bottles from Feature 108, Enlisted Men's Latrine, Plus Two from an Officer's Latrine (Feature 113).

<table>
<thead>
<tr>
<th>Bottom Marks</th>
<th>Color</th>
<th>Lip</th>
<th>Capacity</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Plain)</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>4*</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1*</td>
</tr>
<tr>
<td>A</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1*</td>
</tr>
<tr>
<td>H</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A.B.G. Co</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>A.B.G. Co 8</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>A.B.G. Co 9</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>B.G. Co</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1*</td>
</tr>
<tr>
<td>B.G Co 3</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>B G Co X</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>B &amp; G Co N</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>C &amp; CO LIM. 8</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>C &amp; CO LIM. 11</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>D.O.C. 14</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>D.O.C. 18</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>F.H.G.W.*</td>
<td>17</td>
<td>11</td>
<td>?</td>
<td>15</td>
</tr>
<tr>
<td>L=G Co A</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>?</td>
</tr>
<tr>
<td>5 I G Co L</td>
<td>-</td>
<td>1</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>L G Co *</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1*</td>
</tr>
<tr>
<td>L G Co 18</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1*</td>
</tr>
<tr>
<td>L G Co 24</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>M G Co A 5</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>S•B &amp; G Co 1</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>WIS G CO MIL L</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>
beginning date of the company) and 1886, or that turn-mold finishing was an extra-cost provision. The eight turn-mold beer bottles in the Fort Selden collection all had plain bases (Table 2).

Anyone who follows this line of research will have seen that Table 1 substantially expands upon, and sometimes alters, the company histories outlined by Toulouse (1971). For example, published information about the Hancock Flint Bottle Company, Lythgoe Glass Company, Massillon Glass Works, and Mississippi Glass Company is erroneous and incomplete (Toulouse 1971:213, 245, 348, 358-59). Such bottle-makers as the Lindell Glass Company, Ottawa Glass Company/Bottle Works, DeSteiger Glass Company, Findlay Bottle Company, Binghampton Glass Works, and Camden Glass Works were not mentioned at all. Some of the unfamiliar names in the SLPD, such as the St. Louis Glass-works, denoted flint- or plate-glass makers, or amounted to alternative terms for known companies.

It is hoped that the research findings reported here will sharpen future analyses of the beer bottles recovered from late-nineteenth century sites, allowing more secure identifications to aid in studies of commerce involved with beer and its containers, and lending greater accuracy to the use of marked bottles for dating the contexts where they are found.

ACKNOWLEDGMENTS

I am greatly indebted to Col. Herbert M. Hart, a valued friend and colleague for more than forty years, and his daughters for their diligent search through the thousands of pages of The Western Brewer. Without their volunteered effort, the present article and a substantial part of the Wilson and Caperton (1994) monograph would not have been possible. The late Mrs. Alice Wesche drafted the illustrations in Figure 1, and the original plate was deposited with the New Mexico State Monuments office in 1976 and used in our 1994 publication. Tables 1-3 originally appeared in Volume 32 (2-4) of The Artifact, the journal of the El Paso Archaeological Society.

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Weeks, Joseph D.


Wilson, John P., and Thomas J. Caperton

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INTRODUCTION

Kiowa tradition places the earliest homeland of the tribe in present-day western Montana. As early as the 1740s members of the tribe traveled southward to the Spanish Province of New Mexico in search of horses and trade. In their travels they encountered aboriginal tribes, most of whom resented the intrusion. Whereas the Kiowas found the Pueblo tribes to be amenable trading partners, they were prevented from free access to the province by the Ute and Jicarilla Apache tribes. Consequently, the Kiowas fought them, in addition to the Navajos, who also attempted to block their access to the region.

The Kiowas moved their villages progressively southward during the eighteenth century, and were identified by the Spanish as being south of the Arkansas River by 1780-1790. Along with their allies, the Comanches, the Kiowas developed a possessive attitude toward the Southern Plains buffalo range and fought the Utes, Jicarilla Apaches, Navajos, and Mescalero Apaches in an effort to keep them from the hunting grounds.

THE PUEBLOS

Linguistic evidence exists that the Kiowa language is closely related to the Tanoan languages spoken in some of the pueblos of New Mexico (Harrington 1910:119-123). This possibly indicates an earlier association between these people and might place the Kiowas at one point in their history much to the south of their legendary homeland. It has been suggested that the Kiowas had a southern origin but “temporarily moved north, and then south again, while their legends retained only the last of these migrations” (Kroeber 1939:80). Nevertheless, once the Kiowas settled on the southern Plains, they engaged in trade with the Rio Grande Pueblo peoples, either in their villages or on the open plains where the Kiowas roamed.

The Puebloans traded agricultural products such as flour, corn, and beans (Monahan 1965:77-79) for which the Kiowas bartered buffalo robes, dried meat, horses, and mules in return (Ward 1864:193). Mexican lower classes also joined in the trade, sometimes allied with the pueblos and sometimes on ventures of their own. These Mexican and Pueblo traders were commonly called “Comancheros” because of the great amount of trade they carried on with the Comanches as well as the Kiowas, Cheyennes, and Arapahos.

Some groups from New Mexico went east onto the Plains to specifically hunt buffalo, but also carried trade items along because it was dangerous to hunt on Kiowa range without being capable of carrying on commerce (Monahan 1965:70-71). Many Pueblo tribes took part in the Southern Plains trade, which was going strong by 1815. In August of that year, for example, 23 Taos Indians met a group of Kiowas that were camped near their pueblo (Lucero 1815). Trade continued into the 1870s and was reported by many white travelers who journeyed through Kiowa territory. While exploring a proposed railroad route along the 35th parallel, Lt. Amiel W. Whipple met a group of New Mexico traders in September of 1853. There were several Mexicans with Puebloans from Santo Domingo in the party, and they packed supplies of flour and bread to trade with the Kiowas and Comanches for robes and horses. All were
mounted on mules and either wore serapes or headdresses and beads. Six of their party were scattered over the prairie in search of trading partners but were thus far unsuccessful in finding any because all of the Plains tribes were away hunting in the north (U.S. Senate 1854:34).

By the 1860s, New Mexican traders offered the Kiowas desirable American goods such as cloth, sugar, coffee, trinkets, guns, and ammunition in addition to traditional items. On the other hand, the Kiowas had a new trade item, cattle, which they stole from settlements on the Texas frontier (Monahan 1965:229-30). The Comancheros developed well defined trails that originated on the upper tributaries of the Red and Brazos rivers (Kenner 1969:181) along which they drove cattle traded from the Kiowas and Comanches to New Mexico. Once home in their villages, they either sold the cattle to local buyers or kept them for their own consumption. Later, while confined on a reservation in Indian Territory, the Kiowas and Comanches used a trail up the Canadian River “where they drove cattle, horses, and mules stolen from Texas, to New Mexico, and traded them for guns, ammunition, blankets, etc.” (Tatum 1970:50).

Responding to complaints from Texas cattlemen, the United States Army worked hard to break up the trade in stolen animals but met with little success. Occasionally their efforts were successful, such as in 1871 when an Army patrol apprehended 21 Isleta Indians who were driving a large herd of stolen cattle acquired from the Plains tribes (Arny 1871:388).

Kiowa business ethics in dealing with the Pueblo and Mexican traders reflected the manner in which they regarded them. Although trade was beneficial to the Kiowas, they felt themselves superior to the Comancheros and were notorious for sometimes killing their trading partners (Kenner 1969:258).

Often the Kiowas and Comanches exchanged livestock for Comanchero goods but then retook the animals before the traders reached their homes (Carroll 1941:71). Because the Kiowas were hunters and warriors, they viewed the agricultural Puebloans as “inferior beings” for they believed that any labor spent outside of making war, love, or hunting was wasted. Pueblo people were less warlike than the Plains tribes and the Kiowas, and their allies took every opportunity to bully them (Calhoun 1849:62). But while Kiowas occasionally committed hostile acts toward the traders, they never went so far as to alienate the Puebloans and Mexicans from the trade.

The Puebloans considered the Kiowas more treacherous than the Comanches. In the early 1860s, some Kiowas attacked a group of 40 San Juan Indians who finally repulsed them after the Kiowas had stolen their horses. On another occasion, a party of Cochiti traders enroute to barter with the Comanches was stopped by the Kiowas who asked to trade. During the night, the Kiowas surrounded the Cochiti camp and accused the Cochitis of harboring a group of Texans who had previously killed some Kiowas. The Kiowas demanded goods as reparation for those killed. The Cochitis refused, and when the situation looked as if it would degenerate into a fight, a group of Comanches rode in to break up the affair, causing the Kiowas to ride away (Lange and Riley 1966:162). In May of 1872, the Kiowas attacked a hunting party of 18 San Juan Indians and a few Mexicans who were camped on Currumpaw Creek in northeastern New Mexico. The fight lasted all day and ended only when the Kiowas withdrew at nightfall, taking along their dead and wounded (Taylor 1971:317).
THE MESCALERO APACHES

Before the Kiowas and Comanches moved to the Southern Plains, the Pueblos had traded with the Mescalero Apaches. The Mescaleros roamed the Southern Plains at will until the Kiowas and Comanches began to pressure them from the north. The Kiowas and Comanches desired the Mescalero hunting grounds and therefore joined in a war to push the Mescaleros farther south. They were successful, and moved the Mescaleros south and west where they were drawn into a war with the Spanish and later Mexican populations (Mayhall 1971:16).

However, in 1847, the Comanches, who were in closest proximity to the Mescaleros, made an alliance with them (U.S. House 1847:6-7) and began raiding with them into Mexico and Texas. Soon the Kiowas also made peace with the Mescaleros. Nevertheless, the Kiowas remained suspicious of the Mescaleros and never exhibited the same unity with them that they did with the Comanches or Cheyennes. They made a point of displaying their superiority which the Apaches, as one Kiowa Mexican captive put it, were “too prudent to resent ... and endeavored to take everything in perfect good humor” (Methvin 1899:38-9).

The Mescaleros surrendered to Army forces led by Colonel Kit Carson in the fall of 1862 and were placed on a reservation at Bosque Redondo on the Pecos River. On arrival they expressed fear at being attacked by the Kiowas and Comanches. Therefore, James H. Carleton, commander of the Department of New Mexico, suggested that the Mescaleros camp near the garrison at Fort Sumner so that they might feel more secure (U.S. Senate 1865:102).

Over the winter of 1863-1864, a large number of Navajos surrendered to Kit Carson at Canyon de Chelly and were also located on the Bosque Redondo reservation with the Mescaleros. Up to that time the two tribes had been enemies and unrest between them arose immediately. The Mescalero agent, Lorenzo Labadie, reported that he had been instructed by his charges that they desired “more to live with the Comanches, Kiowas, etc., than with the Navajo,” and that “a deadly hatred” existed between the two tribes (Labadie 1864:205).

The Mescaleros were not granted their request and instead were offered the opportunity to accompany Carson on an expedition to chastise the Kiowas and Comanches for their raids. They were told that they could obtain good horses from the Kiowas since all the Navajo ponies were in poor condition (U.S. Senate 1865:202). The Mescaleros declined the offer because they did not wish to incur the wrath of the Plains tribes. The Mescaleros became so dissatisfied with the Navajos that they left the Bosque Redondo reservation in November of 1865 and hid in the mountains south of Fort Stanton, where they continued to raid the surrounding countryside (Norton 1867:192).

Ironically, in 1870, an Apache chief visited the Kiowa and Comanche agent, Lawrie Tatum, and requested the right to move his people from New Mexico to live with the Kiowas and Comanches on their reservation in Indian Territory. Nevertheless, before arrangements could be made, the Mescaleros decided to remain in their New Mexico homeland (Tatum 1970:108).

THE UTES AND JICARILLA APACHES

At first contact the Utes, who lived in the mountains around the sources of the Arkansas and Canadian rivers, prevented the Kiowas from accessing the trade, horses, and buffalo herds of northeastern New Mexico (Monahan 1965:58-9). Therefore, when the Kiowas moved to the plains south of the Arkansas, they embarked on a long and violent war with the Utes and their allies, the Jicarilla Apaches. This war lasted until the Kiowas had been confined to their reservation for several years.

The Spanish of New Mexico first recognized that the Kiowas were fighting the Utes in 1805 (Alencaster 1805). Later, in 1809, a group of 600 Utes and Jicarillas tried to enter the plains near the Arkansas River, but were defeated by a combined force of Kiowas and Comanches (Manrique 1810). From that time forward, the Kiowas and
Comanches successfully kept the Ute and Jicarilla villages close to the mountains and away from the buffalo plains. After the Kiowas established authority on the southern Plains, they continued to war against the Utes and Jicarillas. They not only raided them but endeavored to kill or capture as many of them as possible. A typical raid occurred in October of 1851 when a large party of Kiowas and Arapahos attacked a Ute village located 30 mi from Taos. They stole 50 horses and captured two women and four children. Later the same month, the Kiowas and Arapahos attacked the same band and stole their remaining stock. Ute agent John Greiner implored New Mexico Governor James S. Calhoun to provide military aid to protect his charges (Abel 1915:438), but none came. Consequently, a year later the Utes and Jicarillas allied with the Navajos in a joint expedition to strike back at the Kiowas, Comanches, and Arapahos (Abel 1941:215). They gathered a large group of warriors and successfully attacked a Kiowa and Arapaho village. The raid was one of the few instances where they gained retribution against the Plains tribes.

The Kiowas realized their superiority over the Utes and Jicarillas and raided them at will, sometimes sending multiple expeditions against them during the same year. In 1856, Governor David Meriwether of New Mexico reported that the Kiowas had made several expeditions against the Utes during the year and killed a number of them (Meriwether 1856:184). Occasionally, the Kiowas sent large war parties, but at other times only a few warriors participated. A Kiowa war chief, Satanta, led a small group in the fall of 1858 that located a single Ute tipi on the upper Canadian and killed one Ute and wounded several others (Mooney 1898:306).

Ute and Jicarilla populations declined in the 1860s because of the warfare with the Kiowas and their allies (U.S. Senate 1865:487-88). Whereas Ute and Jicarilla raiders were hesitant to venture onto the plains to their enemies, the Plains tribes moved freely in Ute and Jicarilla territory, whether raiding, hunting, or trading. This caused the Utes and Jicarillas to maintain a defensive posture in their territory in order to protect their homes, horses, women, and children. Consequently, they lost not only warriors but also women and children who were either killed or carried off as captives.

Because of the Ute and Jicarilla hatred for the Kiowas and Comanches, they were easily recruited to join Colonel Carson’s expedition against the Kiowas and Comanches in the fall of 1864. The Utes and Jicarillas were given rations, ammunition, and blankets in return for joining the expedition. In addition, they were granted the right to any plunder and horses they might obtain from their enemies (U.S. War Department 1893:243-45). The mountain tribes saw Carson’s expedition as an opportunity to take revenge on their enemies and also acquire valuable war spoils.

Seventy-two Utes and Jicarillas joined Carson. At the end of each evening on the march toward the Kiowa and Comanche villages, the Utes and Jicarillas performed war dances in order to fortify themselves for the upcoming battle. When the enemy was sighted on the Canadian River in the eastern Texas Panhandle, Carson attacked and routed the foremost village, which was composed of Kiowas. He broke off the engagement, however, when he recognized that warriors from villages downstream had joined the battle. He quickly destroyed the Kiowa village, seizing a large number of buffalo robes. The Utes and Jicarillas rounded up a large number of Kiowa ponies and the column headed back to New Mexico. Although the Utes and Jicarillas were pleased with their spoils, they took no scalps and had to purchase the only one taken in the battle from a Mexican soldier in order to perform a scalp dance (Pettis 1908:7-35).

The most memorable fight for the Kiowas with the Utes occurred in the summer of 1868. In this battle the Kiowas lost two of their three Sun Dance medicines. The battle precipitated a flurry of revenge raids by the Kiowas that lasted until the two tribes stopped fighting in 1873. Several months before the battle, a Kiowa war party encountered some Navajos on the Canadian River. A fight followed, and one Navajo and one Kiowa were killed. The Kiowa man’s father, saddened by the loss of his son, sought revenge and organized a war party. The party, including some Comanches, departed after the summer Sun Dance and carried two Sun Dance
figures, called *taime*, as spiritual aids to ensure success on the raid.

From the outset the war party was beset with ill fortune. For the *taime* medicine to be powerful, it was not to come into contact with such things as bears, skunks, rabbits, or looking glasses. At the beginning of the trip the Kiowas became alarmed when a skunk crossed their path. Later they found that the Comanches had brought along looking glasses which added to the Kiowa feeling of impending disaster. To seal their fate, the Kiowas discovered that the Comanches had killed a bear and were eating it in their camp. At this time several Kiowa warriors left the party feeling that the power of the *taime* had been broken. Nevertheless, the leader continued the march, although he feared grave consequences.

At the Salt Beds of the Canadian, the war party met a force of Ute warriors, and a fight commenced. Because the Kiowas felt that they had lost the power of their medicine, they did not fight with their normal confidence, and the Utes quickly put them to flight, killing seven. Two of the slain Kiowa carried the *taime*, which the Utes reaped as the harvest of the battle. Back in their own country the Utes gave the medicine to Lucien Maxwell at his Cimarron ranch and told him if the Kiowas came for it to give it to them for a specified number of ponies. The Kiowas never reclaimed the medicine but instead asked Army officials in Kansas to help them recover it. They promised to pay the Utes any number of ponies they demanded and declared they would make peace with them. There is no record of an attempt by the Army to recover the medicine. However, as late as 1893 a group of Kiowas visited the Utes in New Mexico hoping to locate it only to find that it had been given to Maxwell and probably lost (Mooney 1898:322-25).

The bad luck of the defeated Kiowas continued, for on their return a number of them camped with the Cheyennes on the Washita River and were attacked by Lt. Colonel George A. Custer in November of 1868 (Hyde 1968:315). On hearing the news of the defeat of their warriors by the Utes, the rest of the Kiowas sent out two revenge parties, one led by Kicking Bird (Leckie 1963:91) and the other by Stumbling Bear. Stumbling Bear recovered the bodies of the slain Kiowa warriors and buried them. His party continued westward hoping to kill some Utes so that “the Kiowas’ hearts would feel better” (Nye 1969:148-50). There is no evidence as to how successful Stumbling Bear and Kicking Bird were, but the following summer a war party under Big Bow returned from a raid with a war bonnet taken from a Ute they had killed (Mooney 1898:326).

The war between the two tribes continued even as the Kiowas were confined to their reservation in Indian Territory after 1867. Agent Lawrie Tatum reported the last known Kiowa raid on the Utes when Black Eagle led a war party against them after the Sun Dance of 1870 (Tatum 1970:38). However, it was not until January of 1873 that the Kiowa chief, Kicking Bird, made a request of Agent Tatum for some white men to accompany the Kiowas so that they might meet the Utes in council and make peace (Battey 1968:106). It is unclear if the two tribes formalized the peace or if war simply ended when the military power of the Kiowas was crushed by the United States Army in the Red River War of 1874.

**THE NAVAJOS**

The Kiowas were also hostile toward the Navajo Indians, although they experienced only minimal contact with them before the Navajos were located on the Bosque Redondo reservation in 1864. In the 1850s, the Navajos commonly crossed the mountains from their homes in northwestern New Mexico to hunt buffalo and steal horses on the southern Plains. The Kiowas and Comanches represented the intrusion and periodically sent raiding parties into the Navajo country in an effort to stop them. According to Kiowa tradition, one of the tribe’s first raids against the Navajos came in 1852 and was led by the war chief, Big Bow (Nye 1969:84). In 1856, while the Kiowas were camped at Bent’s Fort with the Cheyennes and Arapahos, Big Bow with Stumbling Bear again led Kiowa warriors against the Navajos (Mooney 1898:301).

The two tribes continued to raid each other sporadically until the Navajos were moved to the Bosque Redondo. In the beginning, the Navajos did not receive adequate
food supplies from the United States government and were forced to turn to the southern buffalo plains for subsistence (Unrau 1963:8). The Kiowas determined to prevent them by increasing raids against them. Interestingly, the commander of Fort Bascom, New Mexico was ordered in the fall of 1864 to tell any Kiowas and Comanches who came to the post that they were not to visit the Navajos or make a treaty with them until the injuries done to whites had been atoned for (U.S. Senate 1865:198). The army was not aware of the actual situation, but was not left in the dark for long. In the summer of 1866, the Navajos, after sustaining an attack by a band of Comanches in which the Navajos lost 100 horses and four warriors, complained to their agent that they were dissatisfied with their reservation. They explained that they wanted to return to their homeland and were convinced that they could never live in peace located on land that belonged to the Comanches and Kiowas. Agent Theodore H. Dodd assured them that the reservation was theirs and that the Plains Indians would be punished (Dodd 1866). However, the United States Army was unable to prevent the raids, and the Kiowas and Comanches continued to show the Navajos that they were not welcome in their country.

The Navajos fought back when they could—such as the party of Navajos who stole a herd of horses from the Kiowas during the summer Sun Dance of 1867. On discovering their loss the Kiowas and some Cheyennes organized an expedition to the Navajo reservation and captured a large herd of horses in return, including the stolen animals (Mooney 1898:320). Another war party of 300 Kiowas and Comanches went against the Navajos later that summer (Labadie 1867:214) in order to revenge a Comanche warrior whom the Navajos had previously killed. A relative of the slain man took the war pipe to both the Comanches and Kiowas and recruited a large number of warriors. Although great care was given to make sure that the expedition was well armed and equipped before it departed, it was repulsed by a larger force of Navajos (Nye 1969:143-47).

The Navajos persisted in their efforts to return to their native country so as to be rid of Kiowa and Comanche raids (Dodd 1868:164) and were allowed to return to their present reservation in 1868. This effectively ended their war with the Kiowas and Comanches who subsequently concentrated their war efforts in New Mexico solely against the Utes.

Except for the Pueblo Indians living along the Rio Grande, the Kiowas continuously fought the tribes of New Mexico up into the 1870s. The Kiowas and their Comanche allies were bound economically to the Pueblos in trading alliances that precluded war between them, whereas the Utes, Jicarillas, and Mescaleros represented threats to the normal execution of this commerce. The Mescaleros on the Llano Estacado tried valiantly to keep the grounds where they traded with the Pueblo Indians and Mexicans. Nonetheless, the Kiowas and Comanches proved to be superior in fighting these people and effectively kept them backed against the northeastern and southeastern mountains of New Mexico.

In the 1840s the Kiowas and Comanches made peace with the Mescaleros but continued to war with the Utes and Jicarillas, whom they hated with great passion. On the other hand the Utes, Jicarillas, and their friends, the Navajos, not only raided the Kiowas, but also their Comanche, Cheyenne, and Arapaho allies in an effort to steal horses and take scalps. It was far more advantageous for the Utes and Jicarillas to go directly to Kiowa and Comanche camps in search of horses than to attempt to cross the Southern Plains to steal horses from Texan and northern Mexican settlements and bring them back across alien territory.

**ENDNOTES**

1. This paper is a revision of a chapter from my M.A. thesis (Zimmer 1976).
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