NewsMAC

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A History of New Mexico Archaeology

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INTRODUCTION

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Statistical Research Inc.

It was the summer of 1975, and like many new graduates I had asked the question: "what in the hell do I do now?" Or, maybe it was more appropriately stated as, "what in the hell do I do with a degree in Anthropology?" So, I asked around and was accepted for fieldwork at Salmon Ruins, New Mexico where they provided food and a roof over my head. It was one of the most exciting times of my life when I loaded up my car with all my possessions and headed out to New Mexico from northern California. I was obviously ready for my first trip to the Southwest having read all the Don Juan books by Carlos Casteñada. Yet, I was just one of many young new archaeologists that were excited about beginning their careers. A variety of projects were already underway at Salmon Ruins, Pueblo Alto and Black Mesa, and CRM was gaining momentum with all the proposed coal mining in the San Juan Basin. The New Mexico Archaeological Council (NMAC) was a natural outgrowth of the CRM work, providing a forum for discussing the challenges involved with this work. Everyone knows that no two archaeologists can agree on much of anything. Yet, NMAC members included federal and state archaeologists, plus managers of the new CRM institutions and the field personnel. At one point NMAC almost broke into two parts: managers vs. field personnel. Luckily everyone understood that a single unified voice was much stronger than several splintered groups. However, we also came to understand that there were many differing viewpoints given an individual's job responsibilities. Yet, everyone could agree that we needed to stand together in support of the protection and preservation of New Mexico's cultural heritage. As pointed out by Pat Beckett, there were 75 paid members of NMAC when it officially became an organization in 1978. Today we have over 150 paid members. As usual there is a membership form at the end of each issue of NewsMac just in case you need to pay your 2014 dues. Anyway, this issue is dedicated to those early years of CRM and archaeological research in New Mexico.

To restate the goals of NMAC:

· Promoting archaeological research within New Mexico, and disseminating knowledge arising from that research.

· Promoting awareness of New Mexico's cultural resources among public agencies, corporations, and members of the public.

· Encouraging the legal protection of cultural resources.

· Encouraging high standards for professional archaeology.

THE FOUNDING OF THE NEW MEXICO ARCHAEOLOGICAL COUNCIL

Patrick Beckett
COAS, retired?

One has to begin by looking back to the time shortly before NMAC was founded and the archaeological climate of the time. Although there were archaeological salvage projects before the so called Moss-Bennett bill was passed in 1974 (Public Law 93-291), they were few and far between. In the state of New Mexico the Museum of New Mexico dominated these activities where outside money was involved. One of the first large projects of this kind was salvage operations in the Southwest 1950-53 for the El Paso Natural Gas Company projects, which resulted in being published as "Pipeline Archeology" by the Laboratory of Anthropology and the Museum of Northern Arizona in 1956. This was followed by a number of highway salvage projects done by the Laboratory of Anthropology titled "Highway Salvage Archaeology volumes 1-4, for the years 1954-63.edited by Fred Wendorf and then Stewart Peckham. The Navajo Reservoir District in Northwestern New Mexico was also one of major projects conducted by the Museum of New Mexico published in 1966. There were a number of New Mexico state universities involved in archaeological field schools during the period leading up 1974.

If you wanted to be a archaeologist during this time it was desirable to have a Ph.D. so you would be employable in a college or university setting and would be able to pursue your research through grants or university funding. Without the Ph.D. there were a few museum slots open but these jobs were scarce.

In 1973 when it became apparent that Congress was probably going to pass the Moss-Bennett bill archaeologists became very excited over their future prospects. This new law would put the power of the federal government behind efforts to salvage archeological, historical or scientific artifacts that could be lost because of earth-moving projects. It allowed any federal agency involved in a construction project to use up to one per cent of the appropriated money for salvaging such items. It also authorized appropriation of $6 million over five years to salvage artifacts on property owned by private organizations or private citizens and another $13 million to finance recovery of artifacts from any federally aided building project.

Almost immediately federal archaeologists realized that the profession was not ready for the large influx of upcoming projects. In 1974 they put together two meetings one for the East Coast and one for the West Coast in Denver, Colorado. The meeting in Denver was attended by several hundred archaeologists mostly from educational institutions. The only ones in New Mexico not at that time affiliated with universities, museums or federal agencies that I remember (I'm sure there were a few others) were Mark Wimberly and Peter Eidenbach who were carrying around copies of their newly published book "Human Systems Research Technical Manual: 1973 Survey of the Tularosa Basin" and myself from COAS Publishing & Research. I had ridden up to Denver with Stan Bussey from New Mexico State University.

The Denver meeting was probably one of the most exciting meetings I have ever attended. We were told that never has so much money been dedicated to archaeology and how ill prepared we were as a profession to deal with the huge scope of projects that were going to fall our way. One of comments that I remember quite clearly was that they did not want fancy reports with nice covers etc. this would be a waste of money. After the first day of sessions most went to bars to discuss what all of this meant for their institutions and organizations. Bill Mayor-Oakes from Texas Tech and I were sitting at a table with Cal Cummings (NPS) and others when the conversation turned to starting a new organization called "American Society for Conservation Archaeology (ASCA)" No money or checks were asked for that night, but we put our I.O.U.'s on bar napkins which were exchanged for cash or checks the following day. Thus was the founding of ASCA in Denver.

Stan Bussey and I were dead tired when we left the meeting at the end of the second day. We debated whether to sleep in Denver or go part way back to Las Cruces that evening. We decided to drive south, our conversation was so exciting that we remained awake for the entire trip back to Las Cruces. During the trip back we discussed how to start a new contract archaeological program at New Mexico State University (NMSU). We decided on the name: Cultural Resources Management Division (CRMD) which was to be under the Department of Sociology and Anthropology at NMSU. Stan Bussey then hired Karl Laumbach, Toni Laumbach and me.

Evidently a lot institutions had similar discussions because within a few weeks or months, the University of New Mexico had founded the Office of Contract Archaeology (OCA) and Eastern New Mexico University started the Agency for Conservation Archaeology (ACA). OCA at the University of New Mexico landed a large project almost right away and needed additional help so CRMD was asked to provide the additional manpower, this had to be one of the first cooperating agreements between universities doing contract archaeology in New Mexico.

It soon became evident to the author and other contract administrators that we were going to be overwhelmed by work.

In the 1970's I was the editor for the Archaeological Society of New Mexico which was the main source of archaeological news within the State of New Mexico. The Newsletters and later the quarterly journal AWANYU published by COAS Publishing & Research contained news from all the local archaeological societies and state institutions doing archaeology. It was soon evident to the author and other contract administrators that we were going to be overwhelmed with work. My daily and weekly contacts with a number of archaeologist's on their current projects made it clear that there was a need for a statewide organization for those doing contract work and agencies overseeing the projects. After consulting with Cynthia-Irwin Williams, Frank Broilo and Cal Cummings, I was asked to try and set a meeting up of one person from a number of agencies and institutions doing work in New Mexico as I was generally in contact with all of them, almost on a weekly basis.

The first meeting was in 1974. There was one person from each institution present at my invitation, however, several did not attend. We met in a classroom in the UNM Anthropology

building, arraigned by Jim Judge. Those present were: Stan Bussey (NMSU), Cynthia Irwin-Williams (ENMU), Bill Mayor-Oakes (Texas Tech), Rex Gerald (UTEP), Mark Grady (SMU), Frank Broilo (UNM), George West (NPS), Mark Wimberly (HSR) and Pat Beckett (COAS). I seem to remember Stewart Peckham (MNM) there also but he was not in my notes for the day.

It was at this meeting the Bill Myer-Oakes from Texas Tech suggested the group be called NMAC.

Everyone in NMAC seems to be having a problem about where the first meeting was held. We also met a number of times at OCA's building and once at the Student Union Bldg. at UNM, even at the Laboratory of Anthropology, (MNM), CRMD (NMSU), Public Service Company and ACA (ENMU) during that early formation period between 1974 - December 9, 1977 when we elected officers, and became a formal organization.

Unfortunately there were no minutes kept at these early meetings as there was no formal organization or officers. The Chair for each meeting was the person from the host institution. The meetings ranged from what contracts were you involved in, how are you gearing up for future work, should we bid only on contracts in our portion of the state, where are we meeting next, and when. At the first meeting Bill Mayor-Oakes suggested the name New Mexico Archaeological Council (NMAC) for a working name. After several years it became evident that we should formalize NMAC, we had to adapt by-laws and a number of other items. It took almost four years of meetings to accomplish this. During this period many of NMAC's current members were very active in various sub-committees and meetings to develop NMAC.

The first official NMAC meeting was held on December 9th, 1977. At that meeting Frank Broilo was elected Chairman, Stanley Bussey was elected Vice-Chairman and Patrick Beckett was elected Sec./Trea. It was at this time that dues were collected and minutes kept of the meetings (Chairman and Vice-Chairman were shortly changed to President and Vice-President in order to meet State of New Mexico and IRS Incorporation rules). This Executive Committee then appoints Dede Snow, Stewart Peckham and Bill Mayer-Oakes to be the NMAC nominating committee for the following year.

Cost of 1978 NMAC membership was $7.50 for individuals and $25.00 for institutions.

The paid up members for 1978, in order of their payment to NMAC were: #1 David Snow, #2 Dede Snow, #3 Patrick Beckett, #4 William Allan, #5 John Broster, #6 Randy Broster, #7 Stewart Peckham, #8 Walter Wait, #9 T. J. Ferguson, #10 Cassandra Richard, #11 Earl Neller, #12 Gretchen Oberouf, #13 Stephanie Klauser, #14 Rosemary Telley, # 15 Marsha Jackson, #16 Frances Levine, #17, Catherine Aves, # 18 Dave Kaiser, #19 James Lancaster, #20 Greg Burtchard, #21 Cynthia Irwin-Williams, #22 John Montgomery, #23 San Juan County Museum, #24 Alston Thoms, #25 Steven Koczan, #26 Barbara Mills, #27 Glenn Condon, #28 NMSU San Juan Branch, #29 Joseph Tainter, #30 Thomas O'Laughlin, #31 William Doleman, #32 David Stuart, #33 William Killam, #34 James Enloe, #35 Rex Gerald, #36 Zuni Archaeological Enterprise, #37 David Kirkpatrick, #38 Museum of Northern Arizona, #39 Bill Mayor-Oakes, # 40 Sally T. Greiser, #41 Office of Contract Archaeology, UNM, #42 J. Loring Haskell, #43

Cultural Resources Management Division, NMSU, #44 School of American Research, #45 Thomas Merlan, #46 Mark Wimberly, #47 Rosalind Hunter-Anderson, #48 Public Service Company of New Mexico, # 49 Helene Warren, #50 Stephen LeBlanc, #51 Mark Harlan, #52 Stephen Hallisy, #53 William Reynolds, #54 Donna Roxey, #57 Dee Green, #58 Larry Nordby, #59 Linda Cordell, #60 Daniel Reiley, # 61 Terje Birkedal, #62 Regge Wiseman, #63 Toni Sudar-Murphy, #64 Karl Laumbach, #65 Frank Broilo, # 66 Steven Hoagland, #67 Richard Loose, #68 Paul Grigg, #69 Richard Goddard, #70 National Park Service, Santa Fe, # 71 Bureau of Indian Affairs, #72 Kay Sutherland, #73 Nancy Hewett,#74 Laboratory of Anthropology, MNM, #75 Navajo Nation. The numbered receipt book still exists, in possession of the author.

It should be noted that there was a large number of archaeologists who attended both the early and later meetings and were not paid members of NMAC in its founding years. These individuals also played an important role in NMAC's founding and in the direction the organization was heading, many of these individuals later became members in those early years.

We had 75 paid up members and institutions at the start of the second official meeting in February 1978, 40 of these individuals were present and each cast three (3) votes for the Publication Committee; five (5) for the Research Committee; and five (5) votes for the Ethics Committee. The results were:

PUBLICATION COMMITTEE		RESEARCH COMMITTEE		ETHICS COMMITTEE	
Burchard	12	**Broilo**	**27**	Allen	14
Harlan	17	Green	16	**Beckett**	**30**
Levine	**30**	Hunter-Anderson	17	Broster	5
Morrison	12	Kilam	10	Burchard	13
Peckham	**27**	**Loose**	**20**	Enloe	11
Stuart	**22**	**Merlan**	**36**	**Ferguson**	**21**
	120	David Snow	15	Goddard	5
		Dedie Snow	10	**Green**	**16**
		Stuart	**31**	Sally Grieser	8
		Tainter	**18**	Killam	9
			200	LeBlanc	12
				Dedie Snow	14
				Stuart	12
				West	**18**
				Wimberly	12
					199

Winning Names in bold: One person only voted for four positions on the ethics committee. 40 NMAC Members voted. There was a tie for the fifth position between Dede Snow and Allen on the ethics committee, which was decided by a coin toss at the following meeting. Those minutes do not show who won the coin toss.

I wrote up the Incorporation papers and filed the IRS reports for 1977 and 1978 calendar years. I also was audited by the IRS that year as the NMAC Post Office Box was the same as COAS Publishing & Research. It took a year explaining why two organizations had the same P. O. Box No.

On July 10, 1978 we were finally recognized and issued by the State of New Mexico Corporation Commission our Certificate of Incorporation.

Our IRS Employer Identification Number: 85-0267759 and acceptance as a non-profit organization was issued January 28, 1980.

NMAC President Frank Broilo died of a heart attack in February of 1979 and Vice-President Stan Bussey left New Mexico for Oklahoma in May 1979. Joe Tainter took over as President of NMAC and I think Francis Levine took over as Vice-President when Bussey left. I filled out the remainder of my term as Secretary/Treasurer.

I realized how many people were remembering bits and pieces of the NMAC founding and as I was the only one alive from that first meeting and was the one responsible for putting it together, that with my demise no one would be able to put it all together. With this writing I want to remember all of those at that first meeting and thank all of those individuals that I collected money from in 1978 for NMAC and have been friends for these many years. To all of you past and present members of NMAC you have done an excellent job keeping the organization alive and well.

NMAC PRESIDENT RETROSPECTIVE: 1982-1983

Carol Condie
Quivira Research

Though I was later elected legitimately, I first became NMAC president through a fluke. Rich Loose had been elected president in 1982 and I was vice president, but after a few months PNM told Rich he could either work for them or be president of NMAC, so I was elevated to the presidency.

The most important event that occurred during my tenure was the lawsuit against the Forest Service. Ted Davis, who was an emergency room physician, owned a cabin in Jemez Springs and had witnessed the destruction of sites on Forest Service land until he felt driven to attempt a remedy—which was to form a group he named "Save the Jemez" and begin accumulating evidence via FOIA requests. In the meantime, Landon Smith, then the USFS Santa Fe Forest Archeologist, had been watching in equal horror. He suggested that Ted talk to me about filing a lawsuit. I was amazed, when I presented the idea to the NMAC membership, at how happily and cheerfully everyone voted to engage in what could (and did) become a long drawn-out lawsuit.

By early August of 1984, when we formally filed the suit in District Court, we had been joined by Jemez Pueblo, the All Indian Pueblo Council, and the Sierra Club (who contributed a wonderful attorney to work with us). The State of New Mexico (Tony Anaya was governor then) filed a similar suit a few days later. Essentially, we were asking the Forest Service to obey federal law, but an article by Louise Woo (*The Albuquerque Tribune*, Thursday, August 2, 1984, p. A-4) said it succinctly:

> The groups involved in the lawsuit contend that the Forest Service has failed to prosecute pot hunters and vandals, denied the state historic preservation officer and other archaeological organizations the chance to comment on potentially destructive timber harvests, willfully destroyed sites with soil tilling and harvest preparations and ignored laws requiring sites to be surveyed and protected. [In addition, they were also using "para-archeologists," Forest Service employees who were supposedly trained to identify and record sites, but who often had vested interests in seeing that no sites were located.]
>
> Ted Davis, president of the Save the Jemez organization, said his group has obtained more than 2,000 pages of Forest Service documents and photographs showing irreparable damage to sites.

The suit took a long time and required enormous amounts of work but we ultimately prevailed and entered into a settlement (in which Mark Harlan was instrumental) with the Forest Service. The settlement applied to the entire Southwest Region, not just the Santa Fe Forest. There was an amusing note at the end when someone from Washington, D.C. called me the day after the settlement was announced. He asked if the settlement had made the Albuquerque papers and I told him there was a little article on the second page of the *Albuquerque Journal*. He said "It's on the front page of the *Washington Post*!"

The 1980s were also the time of predictive models, the employment of which was going to ensure that no one ever had to go to the field again (although I've never been able to fathom why anyone who hated fieldwork would opt to become an archeologist in the first place).

Fred Plog was a major proponent of predictive models, so I invited him to speak at a NMAC meeting. By the time the meeting rolled around, tempers had intensified on both sides of the question. When I saw the unprecedented arrival of most of the UNM archeology faculty I figured they were there to witness what promised to be a blood bath. So, before Fred arrived, I started to make a little speech, remarking on the quaint old custom of respecting the right of someone who had an opposing viewpoint to present his or her thoughts without interruptions and challenges from the floor, but just at the point at which the tension in the room seemed to rise a little, Gretchen Obenauf burst out "Are you telling us to be good?" Everybody laughed, Fred ultimately arrived and delivered a low-key watered-down non-confrontational presentation on predictive modeling, and those who had hoped for a public slaughter went away disappointed.

Chaco roads formed another source of entertainment during the 1970s and 1980s. Although the Navajos had known they were prehistoric for eons and several Anglo scholars and surveyors had also reported roads in the late 1800s-early 1900s, identifying and recording Chaco roads was for a time a game anyone could—and did—play. The Chaco Center (NPS) and BLM both launched road studies. Numerous maps of roads throughout the San Juan Basin were produced, including the famous "spaghetti" map, which showed roads running in all directions and in a multitude of configurations, many of them squiggly. What constituted a genuine Chacoan road became less and less clear until Rich Loose (who has rarely been given adequate credit) solved the problem. He was still working for PNM and they were so flush at the time that they could allow a helicopter and pilot to be used in the interests of archeology. I haven't asked Rich, but I suspect that observing the characteristics of roads known to be prehistoric is what tipped him off. The fact that all known roads were straight and, if they changed direction, they made abrupt right-angle turns, is significant. Perhaps equally important, when a road encountered high ground the track led over it—even if it meant chiseling steps into the stone face of a cliff. I think this told him that the ancient road engineers had only the simplest of surveying technology to rely on—essentially two sticks and a piece of string. This knowledge, in turn, told him that all Chaco roads **had** to be straight. Even though I don't know that these assumptions are true, what I do know for certain is that he realized that, instead of relying on never-ending on-the-ground survey with no clear diagnostics to guide fieldwork, the way to reveal the straight prehistoric roads in a flash would be to take a helicopter up precisely at dawn when the sun angle would be at its lowest. The road configurations would pop out of the imagery. All of the roads that contained curves and squiggles could be ignored and road aficionados could do on-the-ground studies of only the straight roads. He did and it worked!

If I were to make a general comment that reflects the tenor of the profession then, I would have to say that contract archeology was fun in those days. Since no one had had any training in how to be a contractor, we had to learn how to do accurate cost estimates, conduct field and lab work efficiently, get reports out rapidly, preferably come in at, or under, our cost estimates, and adhere to state and federal legal standards. In this we were helped markedly by the workshops on Sec. 106 and other important pieces of knowledge organized and presented by Tom Merlan, Lynne Sebastian, Dave Cushman, and others. I doubt that anyone felt at the time that we were inventing the wheel, but we knew we were faced with doing things that hadn't been done before and that we needed to learn fast. We formed a relatively small group, we were all friends most of the time, and we had wonderful arguments—most, though not all, of which were suspended as soon as the meeting or workshop was over.

ARCHAEOLOGY AT THE MUSEUM OF NEW MEXICO

Timothy Maxwell
OAS, Museum of New Mexico, retired

EDWARD L. HEWETT'S DREAM

On February 19, 2009, the Museum of New Mexico celebrated its 100th anniversary. Established three years before New Mexico became the forth-seventh state, the Museum's early history and the trajectory for its later development can largely be attributed to one man—Edgar L. Hewett. An assertive and energetic individual known as El Toro, Hewett was a renowned archaeologist at the time and is still an esteemed figure today. In addition to his considerable involvement in directing the new museum and founding other institutions, Hewett always kept an abiding and active interest in archaeology. He worked tirelessly to promote Southwest archaeology to the same level of public interest as that of the classical archaeology of Europe and the Near East. At the same time, Hewett's powerful personality led to professional conflicts and set the stage for eventual challenges to his influence.

As president of the New Mexico Normal School (now Highlands University) until 1903, Hewett was dedicated to archaeological research and the protection of sites. His work at Mesa Verde, funded by the Archaeological Institute of America, helped prove the importance of the site and the need to preserve the nation's archaeological resources. As a result of his efforts, the 1906 Preservation of American Antiquities Act was passed, and Mesa Verde became a national park. In 1907 and 1910, Hewett excavated Puye cliff dwellings and then traveled through the Casas Grandes region to northern Mexico to gain a broader perspective on the prehistory of the Southwest. He returned to Santa Fe to establish the new headquarters of the School of American Archaeology (known later as the School of American Research, and now the School of Advanced Research) for the Archaeological Institute of America. The new school occupied the Palace of the Governor, on the Santa Fe Plaza, and operated the Museum of New Mexico, established by the territorial legislature in 1909. Hewett's excavations at Puye became the basis for the first exhibit at the Palace of the Governors.

Hewett's students would later make a who's who list of American archaeologists. He sent his first students, Sylvanus Morley, A.V. Kidder and John Gould Fletcher, to study the Mesa Verde region. Morley later studies the Mayas. Kidder excavated Pecos Pueblo and developed an early overview of Southwest prehistory. Two of the former faculty at the Normal School, Kenneth Chapman and Jesse Nusbaum, also joined Hewett's staff. Hewett soon expanded the school's research into Guatemala, and shortly afterward, more students including J.P.

Harrington, Neil Judd and Earl Morris, were accepted. Hewett later helped further their careers, and the science of archaeology, by finding jobs for them in the federal government, museums and universities.

Maintaining a leadership role in New Mexico archaeology, anthropology, and history, the Museum of New Mexico began publishing *El Palacio* in 1913. The journal printed seminal articles and scholarly research that are still cited. As the school and the Museum of New Mexico grew, Hewett became less dependent on the Archaeological Institute of America, and in 1917, the School of American Research, a new private corporation, was formed. Hewett also encouraged visiting and local artists to use studio space in the Palace of the Governors. Their interaction with the steady stream of archaeologists and historian flowing through the Palace helped consolidate the image of a Santa Fe architectural style that defines the downtown area today.

As director of three organizations, Hewett was busier than ever but returned to the Casas Grandes region in 1922 for preliminary planning of an archaeological project. Hewett never found time for the project, and it was not until 1995 that the museum, through the Office of Archaeological Studies, initiated a Casas Grandes project.

A CHALLENGE TO HEWETT: THE LABORATORY OF ANTHROPOLOGY

In 1924, a tour of the Southwest by John D. Rockefeller Jr. led to the establishment of a new institution, also concerned with Southwest archaeology. One of Hewett's original staffers, Kenneth Chapman, noted for his studies in Southwestern pottery, guided Rockefeller around Santa Fe, stirring Rockefeller's interest in Southwestern indigenous culture. Three year later, Rockefeller funded the establishment of the Laboratory of Anthropology, Inc., a private independent institution with strong ties to academia and no connection to the Museum of New Mexico or the School of American Research. The new research center opened its doors in 1931. Hewett's former protégé, Jesse Nusbaum, became its director. Kenneth Chapman, perhaps also wishing to escape Hewett's dominance, moved himself and his staff to the new institution. Despite auspicious beginnings and the great hope for a regional research facility, the Great Depression affected dependable funding for the Laboratory of Anthropology. All funding would eventually falter, leading to its incorporation into the Museum of New Mexico. However, the establishment of the Lab was a direct challenge to Hewett's influence, and the loss of some of his talented staff was undoubtedly a blow.

The Laboratory of Anthropology worked actively in the four branches of anthropology: archaeology, ethnology, linguistics and physical anthropology. A series of summer field sessions were led by eminent anthropologists such as A.L. Kroeber, Leslie Spier, Ruth Benedict, Leslie A. White, Ralph Linton. A.V. Kidder, Fay-Cooper Cole, Frank H. H. Roberts, William Duncan Strong, Emil Haury, and Edward Sapir. Meanwhile, Dr. Harry P. Mera, formerly a public health official, became curator-in-charge of the archaeological survey program. The goal of the survey was to record all archaeological sites in the Rio Grande drainage and develop reference pottery collections. The site numbering system developed by Mera is still used today. When Mera retired in 1946, 2,400 sites were on record. Today, the number is about 170,000. Another early major effort by the new laboratory was the Dendro-Archaeological Survey, which sought to develop a useful chronology for dating sites. Anna O. Shepard also wrote her major contribution to archaeology, *Ceramics for Archaeologists*, while working at the Lab.

As the Laboratory of Anthropology was being established in 1927 without Hewett's support, Hewett worked with University of New Mexico president James Zimmerman to establish an anthropology department at the university. The department drew hundreds of students, leading Hewett to recruit more faculty. He then started a series of important summer field schools, which trained another generation of Southwestern archaeologists.

The Museum of New Mexico/School of American Research and the Laboratory of Anthropology fueled their professional competition throughout the 1930s. In reaction to the newly established Laboratory, Hewett expanded his archaeological staff. Prompted by the Lab's new emphasis on collecting Indian Art, Hewett also hired Bertha Dutton, an archaeologist, to direct the Museum's new Department of Ethnology. Stanley Stubbs and W. S. Stallings, who had joined the School/Museum staff in the 1920s, went to the Laboratory of

Anthropology in 1933. They excavated the large Santa Fe pueblo ruin known as Pindi and defined the Pueblo III period in the region. Betty Toulouse became a Lab employee in 1934 and later became the curator of collections. Marjorie Lambert (nėe Tichy) arrived at the school in 1937, after working with Hewett during a University of New Mexico field school at Chetro Ketl in Chaco Canyon, and conducted many important excavations in the following years. In 1938 and 1939, H.P. Mera and E.T. Hall surveyed the Gobernador area and excavated sites for the Laboratory of Anthropology. Mera also worked out a chronology for the Pueblo Pottery and published ten important monographs on his findings which are still used today.

POST WORLD WAR II INTEGRATION

In 1947 the Laboratory of Anthropology, unable to find a dependable source of income, became a unit of the Museum of New Mexico. With a postwar boom in economic activity, Lab archaeologists were instrumental in redefining the country's treatment of archaeological sites. In 1950, as oil and gas fields were developed in New Mexico, former Lab directory Jesse Nusbaum then with the US Department of the Interior, cited the 1906 Antiquities Act and convinced oil and gas producers to locate and study archaeological sites affected by their projects. For the next three years, the Laboratory of Anthropology and the Museum of Northern Arizona worked together to record and excavate those endangered sites.

As the oil and gas projects wound down, Fred Wendorf, the pipeline project directory, witnessed the partial destruction of Howiri, a Rio Grande Classic period pueblo on the Rio Ojo Caliente, by Highway Department bulldozers. Wendorf, as director of the Lab, convinced the Museum of New Mexico directory, Boas Long, to involve the Museum in a highway salvage program, and the first excavations took place near Gallup in 1954. The program was formalized with the New Mexico Highway Department in 1956. Also, in 1956, with the help of notable New Mexicans Senator Dennis Chavez and Representative John Dempsey, the US Congress passed the Federal Highway Salvage Act. The law was a result of Wendorf's personal efforts and the relationship between the Museum and the Highway Department in New Mexico.

The Lab staff grew as the highway program expanded, and Wendorf hired Stewart Peckham to assist. In 1955 the Highway Salvage Program became a separate department within the Museum of New Mexico. The first two volumes of resulting research appeared in 1956. Since that time, over 800 reports on highway-related archaeology have appeared. The Museum developed an experimental training program in salvage archaeology in 1960, funded by the National Science Foundation and cosponsored by the Fort Burgwin Research Center.

In 1959 the School of American Research and the Museum of New Mexico became separate entities. The link between the state and private institutions created difficult legal issues that could be resolved only by separating the two organizations. During the 1960s, the Laboratory of Anthropology conducted several large archaeological projects related to dam-construction projects, including Abiquiu, Cochiti, Galisteo and Navajo Reservoirs, as well as large highway projects like the one around Prewitt. At the time, there was no other institution in New Mexico capable of undertaking these large projects. The Navajo Reservoir project alone required ten years of work.

By 1973 over 6,000 sites had been recorded as part of the Highway Salvage Program. Most of these were smaller sites, previously ignored by archaeologists. Prior to the 1950s, the archaeology of New Mexico had mostly been determined from studies of large and widely scattered sites such as Puye, Pecos, Jemez, Zuni and those in the La Plata, Mimbres and Chaco Canyon regions. Study of these smaller sites began to fill in the gaps in archaeological knowledge. The Museum archaeologists of the 1950s and 1960s also began to use multidisciplinary approaches, drawing upon the expertise of geologists, petrographers, botanists, palynologists, and ecologists.

THE GROWTH OF CULTURAL RESOURCE MANAGEMENT

By the mid to late 1970s, much of the Laboratory of Anthropology staff was dedicated to cultural resource management studies. An outgrowth of the pioneering efforts of the Museum of New Mexico, the Lab became a model for the rest of the nation. Much of the Lab staff was continually in the field, studying and excavating sites in advance of development.

In 1979 the highway salvage program expanded beyond highway salvage projects. Under the direction of David H. Snow, it was reorganized as the Research Section of the Laboratory of Anthropology. The change guaranteed that the program had a dynamic role in the active profession of archaeology, that it continued to add to the Lab's research collections, and that publications on projects continued to be produced. In 1984 the Research Section staff had outgrown its location in the Laboratory of Anthropology. Along with the Laboratory's archaeological research collection of almost ten million artifacts, the Research Section moved to new offices in downtown Santa Fe.

The Research Section continued to grow in the late 1980s. In 1989 a number of new programs were added to meet the need for specialized analysis: an archaeomagnetic dating laboratory, ethnohistorical research, and an osteological laboratory. On July 1, 1990, the Office of Archaeological Studies was created from the Research Section, separating the administration of cultural resource management from the Laboratory of Anthropology. David A. Phillips became the first director.

Since 1990, the Office of Archaeological Studies has expanded its educational programs, increased the number of grants it received for research, worked with the public to develop a foundation support group and is even picking up one of Hewett's uncompleted projects-a study of the archaeology in northern Mexico.

THE ORIGIN OF HUMAN SYSTEMS RESARCH

Peter Eidenbach
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HSR started in a bar-room and cafe — Okie Joes was a Route 66 landmark at the corner of Yale and University. Because of its proximity to the west end of the UNM campus it was the favorite hangout for young faculty and graduate students from the anthropology, english, and philosophy departments and the standard venue for discussion groups between classes. One of Pete's drinking buddies, Kathy Watson, had just started dating a new fella, Bill Pegram. Bill's mom had died recently and her will stipulated that some of her estate go toward archaeology. Mark and Pete got to know Bill, and Mark even went salmon fishing with Bill up on the northwest coast. Bill asked about donating his mom's money to archaeology and Pete and Mark suggested founding a non-profit research company along the lines of Stuart Struever's Kampsville operation which Lew Binford had helped set up. Mark's mom, Dama, worked for a Santa Fe lawyer, John Patterson, and we recruited him to help us set up what we labeled Human Systems Research, a name reflecting our studied under Lew. We used Struever's charter and by-laws as a model, incorporated Feb 14, 1972, and applied for 501c-3 status. Mark and Pete designed a logo, three arrows in a circle (representing the components of human systems: matter, energy, and information) surrounding a pictograph of a hunter on cellotex that Mark had drawn for Jerry Brody's show on *The Hunters* at Maxwell Museum the previous year, and saved once the show was dismantled.

Mark and Pete were already analyzing the faunal remains from three years' excavation at Fresnal Shelter (LA 10101) in the Sacramento Mountains in their landlords Gordie and Lou Hall's workshop. Gordie's shop became the focus of an ad-hoc planning group composed of several somewhat disaffected UNM grad students, including Pete, Mark, Frank Broilo, Dick Chapman, Greg Cleveland, (and our cartoonist, Ermie "Mulefoot"

Shearin) with many more occasional visitors like Bob Hitchcock, Dick Taylor, Mike Marshall, John Beardsley, and Buck Cully. That spring we planned the fourth season at Fresnal, this time funded by HSR, with paid (nominal) salaries. We also produced HSR's first publication, the "Training Bulletin" for the Fresnal project, which was printed at the NM State Police Headquarters building in Santa Fe, courtesy of Mark's dad, Hoover, then deputy commander. I vividly remember that all the HQ windows housed more than 100 "seized" marijuana plants, evidence in an active case. The "Training Bulletin," HSR's first publication was distributed to the 1972 Fresnal field crew for the fourth season, funded, this time, by HSR. The Training Bulletin also included an NSF research proposal aimed at the digital rendering and analysis of the stratigraphic detail we had collected over three field seasons, a nearly impossible task, then, which could be easily accomplished today.

During the Fall and Winter of 1972, HSR negotiated a cooperative agreement with the Museum of New Mexico/Lab of Anthropology and the U.S. Army White Sands Missile Range (WSMR) which provided unrestricted research access to the range for HSR, acting as a designated representative of MNM. That winter, the full cadre of HSR friends and family worked to develop the "Technical Manual – 1973 Survey of the Tularosa Basin," a 500+ compendium of everything we knew and could find about the region. White Sands Missile Range published the Technical Manual and HSR paid to have a cover printed and have it perfect-bound. We then began to explore the vast 4000 mi^2 Missile Range.

Because we didn't prioritize the Technical Manual's authorship it began to appear first in other people's "References Cited" under "Anonymous." In reality we had credited some 32 people, organized in a circle around our "Circle Spear" logo, which was also our registered horse brand. (see illustration).

Our timing was fortuitous. That year, 1973, the Advisory Council on Historic Preservation issued 36 CFR 800, implementing Section 106 of the National Historic Preservation Act. Federal agencies began considering ways to comply with the law and its new regulations.

We also began exploring additional funding sources, especially through tax-deductable donations. That summer, Tom "Fortune" Ryan sold his Three Rivers Ranch to Leavell & Co., an El Paso construction firm. We knew Leavell's treasurer, Allan Kahn, through his wife, Jean, who, among other things, had been Mark's babysitter when he was young. Ultimately, Leavell gave HSR a 40-acre tract adjoining the Mescalero Reservation for a research center. With a little help from our friends, we renovated an old 3-room adobe schoolhouse there and moved down to the Tularosa Basin.

HSR's first paid professional project was the survey of the National Park Service Oliver M. Lee Dog Canyon property. This would become Pete's longest research project, summarized in his final report *Dust of the Drag* (2012). We then did an equestrian survey of the dune front on White Sands National Monument. Additional projects followed, funded by the BIA, WSMR, NM State Perks, Lincoln National Forest, U.S. Army Corps of Engineers, and gradually, private energy company clients asked for services. We received a matching funds grant from NMHPD (then the NM SHPO) for a sample survey of the Three Rivers drainage, with publication support from the El Paso Archeological Society.

By the late 1970s, we had realized that our rural (in hindsight) scientific commune needed modern services to operate effectively. We needed reliable electrical power (we had been using 12 volt car batteries charged during travel to and from the field), telephone which worked during rain storms (our first phone line we strung ourselves with old discarded wire which "leaked."). Leavell and Co. was selling the Three Rivers Ranch and they bought out our interest and improvements so we could purchase our first office in Tularosa. Another renovation and we were back in business, just in time to take on the excavations at Frenchy's Cabin and the prehistoric site at the mouth of Dog Canyon, site of a new state park.

Then, in 1979, everything changed. While Ernie and Pete were helping edit our movie of the Dog Canyon project, Mark took a helicopter flight to photograph the Wizard's Roost prehistoric solar observatory site across from Sierra Blanca Peak, which we had discovered during a high altitude equestrian survey for the BIA. While circling close to the site, above 10,000 ft. the helicopter crashed. The crash was never fully explained, but I have

always thought that it simply lost its air. Mark was doing his usual, probably unstrapped, with one foot on an outside strut, taking photos. He was thrown clear into the granite boulder field, crushing his skull. He lived another six months, allegedly in a coma (if you looked at his eyes, you could see his alert anger). Ironically, and tragically, Mark's Pentax popped open so we lost his photos, too. Paso por aqui, Mark.

Pete, Ernie, and Mark's widow Gail soldiered on, and, then, Fred Plog fired Karl Laumbach and Dave Kirkpatrick (doing, according to Pat Beckett, his biggest favor for HSR) and they joined us, and HSR revived successfully.

Human Systems Research: 1972

Human Systems Research: 1972

THE CHACO PROJECT

Tom Windes
Chaco Center
National Park Service, retired

The Chaco Project was one of the last large long-term non-mitigation research projects on the Colorado Plateau (along with the Salmon Project) and was conceived by former UNM 1940s Chaco Field School participant, John Corbett, who had become the chief archaeologist for the NPS in the 1960s. The Project initial staff, including the secretary but except for interim director, Tom Lyons, had all attended the UNM Chaco Field Schools in the 1930s and 1940s. This included field school pals Robert Lister, the Project Director, and Chief Archaeologist, Alden Hayes. As part of the project research, excavations at a greathouse were envisioned after a dormant period of decades. In anticipation of future research, two weeks in 1960 were spent by park archaeologist Gordon Vivian testing rooms in Una Vida next to the new Visitor's Center, which the NPS thought would alleviate tourist impact to Pueblo Bonito. Fifteen rooms were excavated, more than the later Alto project that spent three years in the field. Although the NPS pushed for the Projects' excavations at Una Vida, new remote sensing work on prehistoric roads shifted emphasis to investigations at Pueblo Alto, a node for prehistoric road activity and the gateway for road traffic use to and from the north of Chaco. It also had the additional attraction of being linked by a probable prehistoric road to the Salmon Ruin in Bloomfield, currently undergoing excavations by ENMU and Cynthia Irwin-Williams, near the north end of the Great North Road. Aside from the Salmon excavations, little recent work had been done on the Colorado plateau of large, multi-storied sites since the large projects of the 1920s and 1930s. The staff contacted others who had experienced such work but, logically, much of our earlier planning was with the Salmon Ruin Project staff. We spent considerable discussion over how to invest our limit of three years' field work investigating Pueblo Alto: how to sample the site and how to extract and control the artifactual and architectural information from the collapsed upper stories of the presumed multi-story complex. In the latter, we were most fortunate that the site turned out to be single story without the complexities of intermingled collapsed upper story architecture and features. Initial discussion by senior staff archaeologists evoked a past plan of digging numerous rooms by clearing the back wall and lining dump trucks against it with hordes of laborers shoveling the room contents out, a scene

straight from *Indiana Jones*. The junior archaeologists rebelled and a more rational sampling program was pushed, particularly with the addition of W. James Judge to the staff.

With the availability of aerial photography, we decided that our first priority would be to outline the upper walls to produce an architectural plan of the site and to have it flown for mapping rather than start excavation on the basis of sample grids. This took the summer of 1976 and left an embarrassing messy appearance of piles of masonry stone in every room but provided an overall plan of the rooms and kivas, which could now be sampled on the basis of individual structure redundancy and overall frequency of appearance. This also produced numerous doorways that helped identify room suites, so that much of the labor in the summer of 1977 was devoted to locating all the doorways based on their apparent systematic construction along the center of walls. More messiness, but it produced a detailed layout of the site's suites based on doorway accessibility and the basis for a practical sampling design. However, getting to this stage was costly in time and labor now that we had spent two of our three allocated years mostly clearing walls and doorways. This impacted implementation of the desired research sampling design.

By midsummer of 1976, it was clear that we would not be able to clear all of the walls that season despite efforts of the 13 archaeologists and 39 volunteers and Navajo laborers. To help define the presumed multi-story problems before the season closed, we chose two dissimilar rooms for excavation: one large and one small in the highest and lower parts of the site of rooms that had been wall-cleared (the East Roomblock had yet to be cleared, forcing selection from the West and Central Roomblocks). We also chose these based on their position within the site: one with plaza access and one back from the plaza. We did, however, have some idea of room suite layouts in these two roomblocks, but which was incomplete because of the lack of systematic doorway discoveries. In 1977, the large number of laborers was culled because it was difficult to keep adequate notes and control over the progress of the work. We opted for a paired ratio of one archaeologist to one laborer on site.

Only one of the two room excavations was completed in 1976, forcing reappraisal of the sampling strategy. Digging large, deep rooms took considerable time, so that in 1977 we committed much time to solving the layouts of the site's room suites. In the Central Roomblock, we expanded our initial excavations in Room 139 via doorways to include one of the many large-room suites that we had defined, suite layouts that reflected the classic Pueblo I living room/storage room layout. In the West Wing we completed excavation of the large plaza-facing living room (Room 103), which mysteriously was without doorways into other rooms, and started excavation in another similar room, possibly burned, of which there were five probable living rooms of similar layout in the West Roomblock. The 1977 room excavation choices provided an opportunity to investigate part of about 70 percent of the redundant room suite types at the site. In addition, we tested the interior and eastern outer plazas for potential use features and associated road activities, the trash mound (tested initially in the 1920s by Frank H. H. Roberts, Jr.), an unusual room feature in the interior plaza, and for the presumed great kiva within the interior plaza, which was not present. We wrapped up the room suits in 1978 and tested two exterior road-related roomblocks and a PIII housemound (Rabbit Ruin) next to the prehistoric road running to seep areas in nearby Cly's Canyon. In 1979, a small team continued at Alto mapping the network of roads and associated features. After that, years of analyses and reports were conducted mostly by the archaeologists who did the fieldwork.

We excavated about 15 percent of Pueblo Alto, and challenged the prevailing views that these large greathouses typically held hundreds of resident people (i.e., were analogous to historic Puebloan apartment houses, such as Taos Pueblo), were always multi-story, were always associated with great kivas, and that the middens were filled with on-site inhabitants' domestic refuse. Our work also revealed that contemporary and earlier park greathouses shared some similar room-suite plans, which could be interpreted broadly across the early greathouses.

The Project provided an awesome opportunity to work in one of world's great archaeological treasures. It is important to recognize the contributions of the staff archaeologists and their extraordinary future commitment to the profession. Only one of the staff left the field to pursue other loves and opportunities but still kept her hand

in archaeology. A list of the Alto Project archaeologists and botanists and their post-Alto future positions and educational milestones:

Nancy Akins (MA, J.D. law degree; MNM OAS archaeologist); Cathy Cameron (PhD; CU archaeology professor); Anne Cully (PhD; KU biology professor); Marci Donaldson (MA; NPS archaeologist); Bill Gillespie (MA; USFS archaeologist); W. James Judge (PhD; UNM & Ft. Lewis archaeology professor-ret.); Steve Lekson (PhD; CU archaeology professor/curator); Frances Joan Mathien (PhD; NPS archaeologist-ret., UNM adjunct); Peter McKenna (MA; NPS/BIA archaeologist); Earl Neller (MA; gov' archaeologist for the NPS, BLM, and USFS, and for the State of Hawaii; ret.); Bob Powers (MA; NPS archaeologist & division chief-ret.); John Schelberg (PhD; Corps of Engineer archaeologist-ret.); Molly Struever-Toll (MA, Museum of NM, OAS botanist; elementary school science literacy coach); Wolky Toll (PhD; Museum of NM, OAS archaeologist); Marcia Truell/Newren (MA; glass artist); Chip Wills (PhD; UNM archaeology professor);Tom Windes (MA; NPS archaeologist-ret., UNM adjunct). Thanks to all for this marvelous adventure and the massive work in getting so much of the project's doings and findings into print.

Pueblo Alto Crew: 1977

Life, Archaeology, and the Best of Times:

The Salmon Ruins and Rio Puerco Valley Projects,

Cynthia Irwin-Williams, PhD, Principal Investigator

Larry Baker
San Juan County Museum Association (Salmon Ruins)

The year was 1969 and Cynthia Irwin-Williams was in her final field season of Eastern New Mexico University's Anasazi Origins Project (AOP). Over the past five years, she had developed a cultural continuum for the Arroyo Cuervo region of northwest New Mexico, which she believed was a "regional example of a larger scale cultural development which occurred between about 5500 B.C. and the early centuries of the Christian Era" (Irwin-Williams 1973: 17). Dr. Irwin-Williams, i.e. Cynthia, termed this sequence the Oshara Tradition. This critical research provided not only framework for Archaic hunting and gathering economy, but set the stage for the transition between nomadism and sedentism as the earliest evidence of agriculture and the development of Puebloan lifeways.

With this in perspective, Cynthia began to focus on Puebloan archaeology, which logically seemed to be the next step, particularly in terms of her interest in the Arroyo Cuervo drainage as a tributary to the Rio Puerco. During the winter of 1970, she made plans to initiate a regional survey in the Middle Rio Puerco Valley as an extension of her AOP Project, however, in February of that year, she was approached by the San Juan County Museum Association about excavating a Chacoan outlier, Salmon Ruins. Upon visiting the site to evaluate its potential, she expected to see a 30 to 40 room structure, but after climbing the central section of the huge Salmon rubble mound and issuing a few expletives, which shall not be repeated here, she agreed to take on this monumental undertaking. As a result, Cynthia launched her new extensive survey project along the middle reaches of the Rio Puerco and an excavation project at Salmon Ruins near Bloomfield, New Mexico. Both would develop into major archaeological programs that would be conducted concurrently in terms of field work from 1970 to 1978.

The Rio Puerco Valley Project was established as an aerial survey and testing program to primarily identify the prehistoric pueblo occupation in this remote area of Sandoval County. During the first field season, a Chacoan outlier, Guadalupe Ruin, was identified in the northern portion of the study area. As initially conceived and subsequently funded by the National Geographic Society, "the research was aimed at demonstrating and analyzing the intrusion of population elements from the more advanced and complex centers located in Chaco Canyon into the relatively simpler, dispersed rural Pueblo population indigenous to the area" (Baker 2003:4). By the end of the 1970 and 1971 pilot phase of the program, the incredible site density in the region began to be realized and it became obvious that the area had an incredible potential for the study of prehistoric man-environment relationships. An expanded research design was developed and the long range research goals were redefined as follows:

1) To investigate the large-scale relationship between site location and specific natural and cultural resources;
2) To evaluate the effects of environmental stress on human population size and distribution (clustering and density);
3) To determine the effects of natural lines of communication boundaries and barriers on the clustering of human population;
4) To establish the relation between site size and density;
5) To ascertain the degree to which distance dictates the interaction of human population;

6) To investigate the development and character of interaction networks between sites;
7) To determine the specific relationships existing between the intrusive Chaco units and the indigenous population; and
8) To examine the development of water control devices and their effects on the environment (Irwin-Williams 1977:2).

Over the course of the nine years of field investigations, 1,232 individual sites were defined in the 281 square kilometer Puerco study area and at these sites, 1,428 individual Basketmaker and Pueblo components were identified. Major excavations were conducted at two Chacoan outliers, Guadalupe and Eleanor ruins. A comprehensive structural stabilization program was undertaken at Guadalupe Ruin in 1982 to preserve the exposed masonry, due to the loss of backfill during excavation, resulting from high winds at the mesa promontory on which the structure is positioned.

At the time of Cynthia's untimely death, the work on completing the final Puerco manuscript was in progress. Her loss was a devastating blow to the deadlines for manuscript completion and it took over ten years to finalize the volume. The manuscript, Prehistory of the Middle Rio Puerco Valley (Baker and Durand 2003), finally brought this incredible study to light.

The Salmon Ruins Project operated concurrently with the Rio Puerco Valley Project and many of the same staff and seasonal archaeologists were involved with Cynthia throughout the 1970s. Similarly, the pilot program, using primarily volunteers, was conducted in 1970 and 1971. In 1972, the first of major funding for multiple years was received.

This major undertaking was developed as a collaborative endeavor by Eastern New Mexico University Department of Anthropology with Cynthia as Principal Investigator, the San Juan County Museum Association (non-profit) with notaries such as G. Alton James and Harry Hadlock steering the organization, and San Juan County as the owner of the property on which the site is located. What was later known as the San Juan River Valley Archaeological Project conducted seven field seasons of full scale excavation. In 1973, the San Juan County Archaeological Research Center and Library at Salmon Ruins was constructed as a result of a County bond. Stabilization of the ancient architecture, laboratory processing, artifact analyses, and computerized data entry was concurrent with the excavation.

From 1972 to 1978, approximately 30 percent of the Chacoan pueblo was excavated recovering over 1.5 million artifacts. Salmon Pueblo exhibits classic Chacoan-style architecture that has become the hallmark of Chacoan sites across the San Juan Basin. The structure contains approximately 150 ground floor rooms, 67+ secondary rooms, and a limited third story that is not well understood. Excavation units were defined by individual rooms, i.e. wall enclosed spaces and a series of sample transects established across the pueblo in an attempt to capture the functional variability within the rooms and define the occupational sequence of the site. Many of the original Chacoan rooms were later subdivided and needless to say, stratigraphic dispositional sequences were complex. Laboratory analyses and computer work continued in 1979 and 1980 following the end of field work. A five volume final report prepared for the funding agencies was released in 1980.

The interpretation of this massive volume of work indicated the Salmon Pueblo was initially constructed in A.D. 1088-1090 by colonists emigrating from Chaco Canyon, establishing a major residential complex along the northern bank of the San Juan River. As originally interpreted by Cynthia, there were three distinct occupations, Chacoan, Intermediate, and Secondary, with the latter seen as a Mesa Verde intrusive population. This view was later revised in a reinterpretation of the sites occupational history by Paul Reed. Both interpretive scenarios believe the site was abandoned by its last inhabitants around A.D. 1275 to 1280.

As with the Puerco manuscript, the Salmon Ruins Project was in-progress at the time of Cynthia's death. Due to the volume of data, the task to bring this research to completion was daunting to say the least. In 2001, the Salmon Ruins Museum and Center for Desert Archaeology (now Archaeology Southwest) entered into a

partnership to publish this work. Steered by Paul Reed, a three volume publication was produced in 2006, featuring a host of researchers contributing to Thirty Five Years of Archaeological Research at Salmon Ruins, New Mexico.

The legacy of the Rio Puerco Valley and Salmon Ruins projects lives on today and will into the future. Artifact collections are available for study at Eastern New Mexico University Department of Anthropology and Applied Archaeology and the Salmon Ruins Museum. It has continued and will continue in years to come via the hundreds of students, teachers, and researchers who were trained during the Puerco and Salmon projects and who, in turn, have mentored new generations of archaeologists.

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Rio Puerco Valley Crew: 1976

Salmon Ruins Crew: 1977

The Early Days of the Office of Contract Archeology

Richard Chapman
Office of Contract Archeology, retired

Jan Biella
New Mexico State Historic Preservation Division

The Office of Contract Archeology at the University of New Mexico was born from the Maxwell Museum of Anthropology at UNM in the early 1970s. Like other public university and museum based archeological contract programs of that era (including programs at Eastern New Mexico University and New Mexico State University), OCA/UNM was created to handle the sudden huge volume of contract research stimulated by the coalescence of federal legislation and regulation which operationally began to take effect in the first few years of the 1970s.

These programs built on the earlier salvage archaeological programs mandated by the Highway Salvage Act (1956) and Reservoir Salvage Act (1960)--work on those historically was done by existing universities and museums. In New Mexico, the Laboratory of Anthropology, Museum of New Mexico, undertook all the highway salvage surveys and excavations, and as well as all reservoir and dam salvage programs up through the end of the 1960s. With the passage of NEPA in 1969 Federal Agencies began to routinely require private proponents of projects such as pipelines, coal mines, uranium exploration activities, and the like, to identify, evaluate, and remediate important archeological sites on Federal land or that might be adversely affected by

projects done under Federal license. As a result the "market demand" for professional archeological consulting began to boom in the early 1970s. In addition, agencies such as the BIA began stepping up their compliance responsibilities for roads and other construction projects.

At UNM, the first of these consulting contracts were handled through the Maxwell Museum of Anthropology, under the direction of J.J. Brody. These early contracts, conducted beginning in 1971, were mostly small-scale excavations using UNM Anthropology students as labor. The archeology field schools offered each summer by the UNM Anthropology Department, provided a major source of archeological field technique training for these students, and a number of students had gained experience working for the Laboratory of Anthropology during summers. Additional excavation opportunities were also being made available by the newly revitalized School of American Research under Doug Schwartz's leadership in the late 1960s. Taken together, this meant that at the onset of the contract consulting deluge, the Maxwell had a strong pool of experienced excavators to draw upon for small scale projects.

The volume of requests for archeological services began to accelerate rapidly and it became apparent by late 1972 that the administrative burdens necessitated by proposal development, contract management and publication were overtaxing the Maxwell capabilities. One of the early contracts that was instrumental in tipping the balance toward formation of a separate contract archeology unit within UNM was an assessment and survey of a large mining tract owned by Utah International Inc. being proposed for coal gas extraction—this became known as the CGP project and was the first truly large-scale multiple crew inventory survey performed by the new OCA. In response, Brody and Jim Judge, then a new faculty member of the UNM Anthropology Department (who had been serving in a principal investigator role on Maxwell Museum contracts), negotiated the establishment of a unit within the College of Arts and Sciences dedicated solely toward doing archeological consulting work. This new unit was designed as a quasi-independent spawn of the UNM Department of Anthropology and the Maxwell Museum, but administratively was not a true "department" within A&S, nor was it a "division" of the Maxwell. When pressed for a name for the unit, Jim and others come up with "Office," and so the Office of Contract Archeology at UNM came into being with Jim Judge serving as the first Director. The office was overseen by a "Board of Archaeologists" made up of the teaching archeology faculty in the UNM Anthropology Department, and the Director of the Maxwell Museum. The Board was charged with hiring the OCA Director but was not given any fiscal oversight for the operation of the new unit. Personnel actions and proposal approvals were routed through the Anthropology Department for signature, but in all other matters, OCA operated as an independent unit within UNM—a fact which sometimes became a topic of heated discussion among faculty members during board meetings.

During the 1972-1974 time frame, contract projects continued to be undertaken by the Maxwell Museum, with Jim Judge and Jerry Brody serving as principal investigators, but by 1974 the smaller contracts began to increasingly focus on surveys and were being done variously as Maxwell Museum or OCA projects. Beginning in 1972 with an assessment, fieldwork for the CGP project was initiated in 1973. Jim Judge began the project as director of OCA, but in 1973 shifted over the the new Chaco Research Center at UNM, and by the end of the survey Frank Broilo (originally hired from ENMU by Jim to be a project director) was established as OCA Director. Headed by Chuck Reher as Project Director, field, lab and consulting staff, like the earlier Maxwell Museum projects, largely consisted of either active or recently graduated UNM Anthro students. These included folks many of whom were destined to have long careers in the new field of contract archeology at OCA and elsewhere: Richard Chapman, Jan Biella, Jeanne Schutt, Emily Abbink, Alan Osborn, Bob Hitchcock, Jim Ebert, Lynne Jorde, Tom Fulgham, and Dave Love.

The CGP survey was designed in keeping with the dominant cultural-ecological academic philosophy of the era, with a heavy emphasis upon interdisciplinary studies. Also at that time, concern about efficacy of different sample inventory strategies was paramount in the profession faced with seemingly impossibly large tracts of land that needed to be inventoried. Based upon the recent NPS survey of Chaco Canyon conducted by the new UNM Chaco Research Center, the survey design emphasized a systematic transect approach in ground coverage, which while implemented in stages, ultimately resulted in "complete" coverage of the target area. The first 10% pass was used to project site types and densities for planning purposes, but survey progressed by

systematically increasing transect increments until the entire tract was surveyed. Crew members were spaced 30 to 40 m apart, and discovered sites were mapped and subjected to varying strategies of artifact collection, ranging from the traditional "grab sampling" to more formalized collection by site strata (e.g., proveniences) or total collection. In this respect, the CGP approach was following the conventional survey method of collecting artifacts in the field for subsequent laboratory analysis. Analysis and reporting placed a heavy emphasis upon characterizing the environmental setting of the survey tract with chapters on present and past climate, geology, geomorphology and vegetation; an extensive discussion of using remote sensing to identify and quantify vegetative communities was included. Chapters on ceramics, historical artifacts and lithic artifacts served as exemplars of what could be achieved on contract survey projects for many years after the report was published in 1977 (although correspondence in Frank Broilo's files indicates that draft versions of the final report were being disseminated to colleagues as early as 1974).

The market for contract archeological services continued to accelerate during 1973 and 1974, stimulated by uranium exploration, energy leases, power lines, and pipelines. Frank Broilo was made Acting Director of OCA in mid-1974, and shortly thereafter Dave Stuart (another UNM Anthropology Grad) was hired as a "Research and Projects Coordinator" with a primary responsibility for coordinating and overseeing the "small projects" contracts that were becoming a mainstay of economic well-being for the organization.

The Cochiti Reservoir Project was the second large-scale contract at OCA, and like the CGP project began with an intensive survey of the target project area—the permanent pool of Cochiti Reservoir. Planning for the construction of Cochiti Dam itself had begun in the late 1950s, and preliminary archeological surveys related to identifying sites within the proposed construction footprint of the dam were conducted by the Laboratory of Anthropology, as was a selective problem-oriented survey upstream from the dam conducted by Charles Lange (which emphasized locating and collecting ceramics from Coalition period sites only). A multiyear program of excavation of major prehistoric Pueblo sites thought to be in the footprint of the dam itself was undertaken by the Lab from 1963 through 1968. Prior to 1974, however, no systematic inventory had been conducted to identify and evaluate sites what were going to be inundated when the reservoir began filling, targeted for early 1975.

OCA was awarded a contract by the National Park Service to undertake an assessment of previous research, conduct an inventory survey, and to develop and execute a data recovery plan for the reservoir flood pool with the objective of "clearing" significant sites before the reservoir filled.--the target date for gate closure at the dam was May 1975. The survey contract was let in December 1974, and work began immediately on assembling previous documentation of known sites in the region. Jan Biella, as overall Project Director, developed the assessment document which served as a foundation for identifying specific research questions and approaches for the project. Like the CGP research approach, the Cochiti Reservoir design was developed as a multidisciplinary exercise. Recognizing that the target survey area was actually quite small, being restricted to the 5460.5 ft contour of White Rock Canyon upstream from Cochiti Dam, a much larger study area consisting of nine 1:24000' USGS quads centered upon the reservoir locale was defined to serve as a basis for gathering previously documented archeological, geological, vegetative and climatic data. Following then current precepts of a multidisciplinary research approach, chapters on geology and mineral resources, remote sensing-based ecological stratification of the study area, on-the-ground vegetative survey, faunal resources, stratification of agricultural potential, water supply, and paleoclimatic variability served as a foundation for subsequent analysis.

Survey of the permanent pool was initiated in February 1975, with Jan Biella as Project Director and Richard Chapman as Field Director. The survey design for developed for the Cochiti project differed from the CGP design in several major respects. Given the highly convoluted nature of the White Rock Canyon terrain, it was felt that trying to undertake survey by formal transects or quadrats would be an exercise in futility, so the plan was to essentially take care to walk over all walkable land surfaces and talus slopes during the site discovery phase. Given the extremely tight time frame available for analyzing survey data to develop an excavation plan, we decided to embark on a radical new venture (for the time)-- a "no-collection" survey. This entailed developing recording forms for different artifact categories (ceramics, lithics, historical artifacts), and emphasizing a formal transect based sampling unit documentation strategy on each site to gather comparable

data concerning artifact densities. This was a modification of the HSR "dog-leash" artifact sampling strategy--modified to be conducted as transects oriented up-slope down-slope within specific proveniences at sites, in hopes of accommodating bias in artifact size introduced by artifact movement along slope gradients. Detailed recording forms for ceramics were developed by Helene Warren; John Stein took the lead in developing the historic artifact form drawing on his analytical experience from the CGP project, and Richard Chapman developed the lithic artifact recording forms, again drawing on his experience analyzing the CGP lithics. A major, and then controversial departure in documentation of all artifact classes was a shift to an attribute based format for recording for each artifact, rather than a "type" based format.

It was recognized that the success of a no-artifact collection survey strategy would hinge on the quality of crew training in artifact attribute identification. The first survey crew consisted of Chapman as crew chief, with John Stein and Jim Enloe from OCA, and Karl Laumbach from NMSU serving as crew members. Since Chapman and Stein were primary developers of the lithic artifact and historic artifact recording forms, and Laumbach had extensive ceramic identification experience, it was felt that after several training sessions the no-collection approach could be undertaken without undue anxiety—plus, excavation and analysis of a sample of the discovered sites was going to follow quickly upon completion of survey, allowing for evaluation of the accuracy of artifact "calls" made during survey.

At the outset of the project in late 1974 it was anticipated that work would move rapidly from survey to excavation. By that time OCA was adept at conducting surveys, but was woefully unprepared for excavation of any sort—the excavation equipment inventory at the office consisted of a single tent (used as a supply tent on the CGP project) and two shovels, sent out with the Mr. Nemco Rents vehicle (a blue ¾ ton Ford 4x4 Pickup) normally used by OCA for clearance surveys. In anticipation that large scale excavation would follow quickly upon completion of the first phase of survey fieldwork, a cooperative agreement was reached with NMSU to provide a complete field camp (including tents, kitchen, cook, and cook's helper) as well as field excavation equipment and two excavation crews. Stan Bussey, the director of the Cultural Resources Management Division at NMSU, had been field director on one of the earlier Lab of Anthro Cochiti Dam excavation seasons in the mid-1960s where Richard Chapman and Jim Judge (and incidentally Alan Skinner) had served as Crew Chiefs, so again the existing network of experienced field archeologists was drawn upon to meet the needs of new contract work.

The first phase of survey started on February 5 and concluded on March 5, 1975 and was quickly followed in the same month by the first excavation season, using both OCA and NMSU crews, and targeting a sample of sites of different ages and types found within the permanent pool boundaries. Twenty-seven sites were excavated during the first excavation season. For the first excavation phase a tent camp was established in the Rio Chiquito valley below Dixon's apple orchard, and daily travel to and from sites to be excavated involved traversing a foot path running along the west back of the Rio Grande. There was no land access to the eastern side of the reservoir. Equipment and crews had to be hucked upstream, downstream, and back and forth across the river/lake as the reservoir filled, swallowing up our target sites--logistics were driven by rising water, not rational planning.

The second survey of the flood control pool began on May 5 and concluded on July 24, 1975. The second excavation season began in June 1976 but was abruptly terminated on Thanksgiving day when the lake froze overnight, stranding two in the field camp then located on the east side of the lake and accessible only by boat. Thanks to a rescue convoy of 4x4s led by Jim Enloe following a New Mexico State Police helicopter, the stranded crew members were finally led up out of the canyon along a prehistoric trail and brought to safety. The field camp and excavation equipment had be airlifted out of the canyon, and was not finished until a final brief session in July and August 1977 (the crew for some reason decided to camp on the east side of the lake again, below Dixon's apple orchard). In all, 53 of 327 sites identified during the survey were excavated.

Interdisciplinary analyses followed the surveys and excavation seasons, resulting in a four volume set: beginning with the survey and background environmental data and results of the two surveys, followed by two descriptive excavation volumes (1975 and 1976-1977 seasons) and a synthetic volume that summarized our

research, that concluded by the end of 1979. Cochiti provided us with an opportunity to pursue research interests,—especially cultural evolutionary and cultural ecological studies—really operationalizing our academic training fresh out of graduate school. Analyses included experimental lithic studies, replications, use-wear, custom computer programming and analysis (main-frames and punch-cards—state of the art at the time), exploration of statistical mapping and spatial analyses of artifact distributions on sites, mapping of lithic sources and petrographic ceramics source studies in addition to analyses of settlement and subsistence dynamics characterizing the full spectrum of prehistoric and historical period occupation of the White Rock Canyon locale.

Some final thoughts:

In addition to exemplifying the scope and range of research that could be achieved using contract funding, these two projects offered venues for publication of previously conducted research. Tom Windes, in collaboration with Stew Peckham, published the formal type descriptions of the Chuska Series ceramics that Stew had developed during work along the Chuska range years earlier; and the Cochiti Reservoir series afforded Helene Warren a venue for publishing results of her years-long study of Rio Grande Glazeware production and distribution patterns throughout the upper middle Rio Grande region. In many ways, the CGP and Cochiti Reservoir projects served to set a standard for archeological research conducted under the new contract paradigm at OCA for many years to come, and we like to think that these two project publications established a good precedent for what could be achieved through contract research "out of the gate" at the onset of the contract archeology era. Certainly, the research synergy of students and faculty at UNM during this volatile era of the early 1970s was profound and was exemplified not only by the creation of OCA, but of Human Systems Research, and the establishment of the Chaco Research Center at UNM as well. We are reminded of the now classic portrait photo of the Human Systems Research group standing in front of Gordy Hall's shop in the north valley of Albuquerque taken in 1973 featuring UNM Anthro Department and Maxwell Museum faculty, and many of the individuals (then Anthro students at UNM) who went on the play significant roles not only at OCA projects, but in contract and academic work elsewhere through the following decades. And their loyal, though sometimes not so good, dogs.....

For those interested, and with apologies to anyone we overlook, the following individuals worked on one or more phases of the CGP and Cochiti Reservoir Archeological Projects:

Personnel for the CGP project included:
Jim Judge and Frank Broilo (PI), Chuck Reher (PD)

Field Personnel: Chuck Reher, Rich Loose, Bill Allan, John Thrift, John Beardsley, Jan Biella, Jim Enloe, Ron Ratkevich, T. Weber Greiser, Tom Windes, Dan Witter

Lab Personnel: Al Ward, Jeanne Schutt, Emily Abbink, Lisa Jones, Rene Richardson, Pat Sagal, Dickie Taylor, John Hewitt, Charles Lumpkin, Susan McLean, Alan Osborn, Sharon Debowski, Margaret Brooks, Clara Gultieri

Consultants/Analysts: Dan Witter, Richard Chapman, Dave Love, Rich Loose, Robert Hitchcock, Jim Ebert, Lynn Jorde, Tom Fulgham

For the Cochiti project:

UNM/OCA: Frank Broilo (PI)

Field and Lab: Jan Biella, Richard Chapman, Jim Enloe, Patty Marchiando, Marcel Kornfeld, Mike Marshall, John Stein, Rick Wessel, Emily Abbink, Lynne Arany, John Beardsley, Tom Folgham, Karol Klager, Ann Ramage, Jim Rancier, Michael Schneider, Sara Stech, Jeanne Schutt, Elizabeth Kasner, Carolyn Reeves, Joan Mathien, Helene Warren, Molly (Streuver) Toll, Charlie Haecker, Dwight Drager, Rich Loose, Ann Cully, Art

Harris (UTEP), Susan McLean, Jerry Livingston, Alan Kennish, John Broster, Rosalind Hunter-Anderson, Carlos Caraveo, John Frizell, Patricia Prince, John Acklen, Bonnie Bagley, Joelle Hawes, Anita Klaenhammer, Brent Marshall, Lee Heinsch, Martha Binford, Liz Cashden, Patrick Doughterty, Dave Eck, Mati Heck, Beth O'Leary, Larry Spear, Marsha Zeblich, Fred Trembour, Lynn Jorde, Gary Klimowitz, Alan Rogers, Rocky Chasko, Gail Tierney, Stephen Fosberg, Dedie Snow, Meade Kemrer, Sandra Kemrer, John Husler, Robert Brakenridge, and Eileen Camilli.

NMSU: Stan Bussey (PI)
Field and Lab: Karl Laumbach, Toni (Sudar-Murphy) Laumbach, Billy Naylor, Shirley Rorex, Van Albertson, Mark Bond, Victoriano Contreras, Jeanne Houghten, Richard Kelly, Colleen McNulty, Frank Schulte, Dennis Toom, Jeff Worrell, Dabney Ford, Beth Bussey with field camp: Allen Rorex and Paul Milner.

The Pajarito Archaeological Research Project

Robert W. Preucel
Director, Haffenreffer Museum of Anthropology

W. Nicholas Trierweiler
Ama Terra Environmental Inc.

The Pajarito Archaeological Research Project (PARP) was an NSF sponsored survey project directed by James N. Hill (Professor of Anthropology at UCLA) beginning in 1977. Janet D. Orcutt served as the assistant director. The study area was 621 km^2 of the Pajarito Plateau and the adjoining Caja del Rio Plateau in north-central New Mexico. In the course of four field seasons (1977-1980), the project surveyed a total of 66.0 square km and recorded 880 sites (Hill and Trierweiler 1986:18) including 39 previously recorded sites and 841 newly documented sites. In the early 1980s, this work was followed by three more seasons led by graduate students including limited excavations on 19 sites, survey of an additional 8.1 km^2, and recordation of 55 more sites. Ultimately, the project surveyed 74.1 km^2 (18,311 acres) and recorded 935 sites. A series of preliminary reports were submitted to various land management agencies (de Barros and Hill 1980, Hill 1979, Hill and Orcutt 1979, Orcutt and Hill 1981, Trierweiler at al. 1979, Walsh et al. 1978) and interim and final reports were submitted to NSF (Hill 1984, Hill and Trierweiler 1986).

Over the life of the project, PARP trained 61 undergraduate and graduate students in archaeological field methods and dozens more in laboratory techniques (see Appendix 1 for a complete listing). Most student participants came from UCLA, but some were from UC Santa Barbara, UC Berkeley, Harvard, University of Michigan, California State University at Northridge, and Pomona College. The project generated nine Masters Theses (Davis 1981, de Barros 1981a, Garza 1980, Johnson 1981, Leach 1981, Preucel 1982, Russell 1980, Trierweiler 1978, Walsh 1980) and four doctoral dissertations (Orcutt 1981, Preucel 1988, Trierweiler 1987, Walsh 1997).

PARP was very much a product of the "New Archaeology." In many ways, it was a natural outgrowth of the Southwestern Archaeological Research Group (SARG) (Plog and Hill, 1971, Hill 1971). However, PARP's theoretical focus was grounded in general systems theory, the idea that culture is a system composed of articulating subsystems. It drew inspiration from Hans Selye's (1950, 1956) biological model of stress that

specified stressed organisms pass through sequential stages of alarm, adaptation, and exhaustion. PARP argued that cultural systems, unlike biological organisms, can respond to stress by means of structural change. The project's ambitious goal was nothing less than to understand "the nature and order of human responses to long-term subsistence stress" (Hill 1977:1). The ultimate objective was "to derive viable cross-cultural generalizations that could be used to predict or retrodict not only how people would likely respond to unreliable food supplies, but also the general order in which various known coping mechanisms would be employed" (Hill 1977:1).

PARP developed a series of hypotheses and test implications regarding expected responses in community food production, community food distribution and regional food distribution. For example, Hypothesis A1 argued that in response to food stress a community should increase in diet breadth. The argument was that when regularly used foods become scarce, the community will broaden its resource base to include relatively less valued foods (sometimes termed "famine foods" in the ethnographic literature). Test Implications were that there should be an increase in the diversity of both faunal and floral foods and an increase in the diversity of tool types, since new foods might require new kinds of tools.

The Pajarito Plateau was a particularly appropriate area to conduct this research. The Plateau was known to have a rich diversity of archaeological sites, and an excellent dendro-climatological record. Moreover, its proximity to the contemporary Rio Grande Pueblo communities provided a ready source of ethnographic analogy. PARP originally proposed to sample a large swath of land from Santa Clara Canyon to the north to the Canada de Cochiti to the south and from the Valle Caldera to the arid plateau west of Santa Fe. This ambitious vision included all of Bandelier National Monument and Los Alamos Scientific Laboratories, much of the Santa Fe National Forest, as well as lands controlled by the Bureau of Land Management, Santa Clara Pueblo, and the State of New Mexico. However, the project ultimately gained access only to Forest, BLM, and Los Alamos lands, which nonetheless constituted a major portion of the study area.

The project applied a two-stage sampling strategy to discover both where sites *were* located as well as where they were *not.* For the first two years (1977 and 1978) the project employed a systematic stratified unaligned sampling design. This involved surveying 1 mi. long by 1/10 mi. wide transects (64 acres) in each USGS section. Over these two seasons, we surveyed 149 of these transects totaling 9,536 acres. This strategy was without regard to topography and crews often surveyed down steep canyon slopes and then up the opposite canyon wall. Not surprisingly, we tended to find sites on the flat mesa tops and fertile valley bottoms with few sites on the steep slopes and in higher elevations. Overall, this strategy yielded relatively few sites (N=284, or 7.4 sites/km^2). In 1979 and 1980 we shifted to the second phase of survey that stratified the study area by nine topographic landforms (e.g., mesa tops, canyon bottoms) cross-cut by five elevation zones. The sampling design selected 111 of these irregularly shaped topographic units and surveyed 6,770 acres. This tactic yielded a significantly higher site density (N=596 sites, or 21.7 sites/km^2).

Viewed from our modern, digital perspective, the PARP methodology was decidedly low tech. Crews navigated with Brunton pocket transits and USGS 7.5 minute topographic quadrangles and marked out transect boundaries with (biodegradeable) TP. We drew pencil sketch maps on graph paper and completed a 10-page site record form (additional USFS forms were completed for sites on Forest Service lands). Crews generally took no site photographs, but did make collections of surface artifacts. Ultimately, the project collected several hundred thousands of lithic, ceramic and ground stone artifacts and analyzed these in the PARP laboratory at UCLA. These collections are property of the state of the state of New Mexico and currently curated by the Fowler Museum at UCLA.

Field conditions were rather primitive, although standard for the times. During the 1977-1979 seasons, the project headquartered in an abandoned and remote Forest Service log cabin at Pine Springs in the northern portion of the study area. In 1980, the camp headquarters shifted to an abandoned adobe ranch house on the Caja del Rio Plateau west of Santa Fe to provide easier access to the southern plateau. Everyone lived in tents and cooked communally. Due to the large size of the study area coupled with its rugged topography and dirt

roads, survey crews often embarked on week-long expeditions, bivouacking in remote campsites and cooking over campfires while planning the next day's survey.

Key to the project was the retrodiction of periods of subsistence stress. This research was performed by Patricia Garza (1978, 1980) and Jan Orcutt (1978). The Palmer Drought Severity Index was used along with tree-ring, climate, and agricultural productivity data to model periods of subsistence stress. Drought was defined as three or more consecutive years of precipitation below the minimum required for corn agriculture (Hill and Trierweiler 1986:13). It was assumed from ethnographic analogy that the prehistoric Pajaritans typically stored two years of food. This process allowed the identification of four stress periods during the Early Coalition period, one for the Late Coalition period, four for the Early Classic period, six for the Middle Classic period and two for the Late Classic period (Hill and Trierweiler 1986: Table 1B, Hill et al. 1996: Table 3)

Site dating was largely accomplished by Phil de Barros and Glen Russell. Phil conducted a microseriation of Santa Fe Black-on-white pottery (deBarros 1981a, b) and also of Biscuit wares. This analysis identified the Santa Fe/Wiyo transition and allowed for fine-grained distinctions between different occupations. His microseriation further refined the Coalition and Classic period sites into five distinct subperiods. Glen identified obsidian sources and conducted obsidian hydration analyses to provide chronological information on aceramic sites (Russell 1981). This research was particularly important for dating sites occupied during the Archaic period. Using the Northern Rio Grande ceramic chronology, the Oshara Tradition typology, and historic material culture typologies, the project assigned dates to 765 of the 935 sites, consisting of 19 Archaic period sites, one Developmental period site, 704 Coalition and Classic period sites, and 42 Historic period sites.

Although the project's ambitious goals were never fully realized because of the complexity of human responses to subsistence stress and the difficulties of developing reliable proxy measures for use in archaeological contexts, a number of contributions can be identified (Mathien 2004). The project's main finding was that all of the stress responses identified in the research can be considered forms of increased cultural complexity (Hill and Trierweiler 1986:49). That is, ancestral Pajaritan society became more complex in response to drought conditions. Significantly, this complexity was heterarchical (the development of different social structures), rather than hierarchical (the emergence of social classes) (Hill et al. 1996:123). This work inspired a variety of other research projects (Cordell 1996, Minnis 1985, Tainter and Tainter 1996).

The project also made several significant contributions to the archaeology of the Pajarito Plateau. It quantified for the first time the variety and distribution of different kinds of archaeological sites. It documented shifts in settlement from high to low elevation finally resulting in the location of the modern pueblo villages along the Rio Grande (Orcutt 1981, 1991, Preucel 1982, 1990). It revealed trends in village size over time, with villages becoming fewer in number but larger. It provided evidence for the broadening of the niche width, with more plant and animal species exploited over time (Davis 1981, Trierweiler 1990). This work set the stage for the Bandelier Archaeological Excavation Project (Kohler 1989, 1990, 2004; Kohler and Root 1992, Kohler and Linse 1993) and the Bandelier Archaeological Survey (Powers and Orcutt 1999). The collections continue to be a valuable source of data for archaeological research (Duwe 2006).

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Appendix 1. Members of the Pajarito Archaeological Research Project

1977- James N. Hill (Director), Janet D. Orcutt (Assistant Director), Phillip L. DeBarros (crew chief), Glenn S. Russell (crew chief), W. Nicholas Trierweiler (crew chief), Michael R. Walsh (crew chief), David Blundell, Deborah J. Fong, Nancy L. Gausewitz, Rory Gauthier, D. Blair Gibson, Susan E. Handy, Karen Klinger, Edward P. McLean, Walter Oetzell, Kathryn E. Pedrick, Richard L. Weisbrod

1978- James N. Hill (Director), Janet D. Orcutt (Assistant Director), Phillip L. deBarros (crew chief), Glenn S. Russell (crew chief), W. Nicholas Trierweiler (crew chief), Michael R. Walsh (crew chief), Wayne Bonner, Jennifer Corsiglia, Jefferey L. Feder, Deborah J. Fong, Nancy L. Gausewitz, Susan E. Handy, Bruce A. Herman, Keith P. Johnson, Michael Kelley, Roderick McLean, Joseph B. Miller, Kathryn E. Pedrick, Katherine A. Spielmann, Nancy S. Wills

1979- James N. Hill (Director), Janet D. Orcutt (Assistant Director), Lois M. Davis (crew chief), Susan E. Handy (crew chief), Glenn S. Russell (crew chief), W. Nicholas Trierweiler (crew chief), Michael R. Walsh (crew chief), Leslie H. Atik, Sharon Biagi, Patricia A. Busse, Susan M. Hector, Bruce A. Herman, Keith P. Johnson, Melinda Leach, David A. Luther, Joseph B. Miller, Kevin R. Mulligan, Robert W. Preucel, Martin D. Rosen, Theresa Zajac, Jacqueline U. Zak

1980- James N. Hill (Director), Janet D. Orcutt (Assistant Director), Lois M. Davis (crew chief), Susan E. Handy (crew chief), Keith P. Johnson (crew chief), Glenn S. Russell (crew chief), W. Nicholas Trierweiler (crew chief), Michael R. Walsh (crew chief), Leslie H. Atik, Patricia A. Busse, Maria E. Brahme, Melissa B. Hagstrum, Brian How, Robin Kay, Teri E. Kramer, Beverly M. Larson, Melinda Leach, David A. Luther, Glen D. Middleton, Antonette Pasquini, Robert W. Preucel, Enid J. Robinson, Edward Rosenblatt

1982- W. Nicholas Trierweiler (Director), Judith Habicht (Assistant Director), Lisa Ambrosy, Craig Blumenthal, David Crandall, Gigi Evans, Kenneth Kelly, Rachael Pittler, Jocelyn Vinograd

1983- Beverly M. Larson (Director) David Berry, Dana Wandrocke

1985- Robert W. Preucel (Director), Gregory Haynes, Justin R. Hyland, Helen Robbins, P. Thomas Shoenemann, Edmund Veloz

Figure 1. 1977 PARP field crew on bivouac. Left to right: (bottom row) S. Handy, K. Pedrick. N. Trierweiler; (top row) D. Fong, M. Walsh, B. Gibson, G. Russell, N. Gausewitz, K. Klinger, D. Blundell, R. Weisbrod.

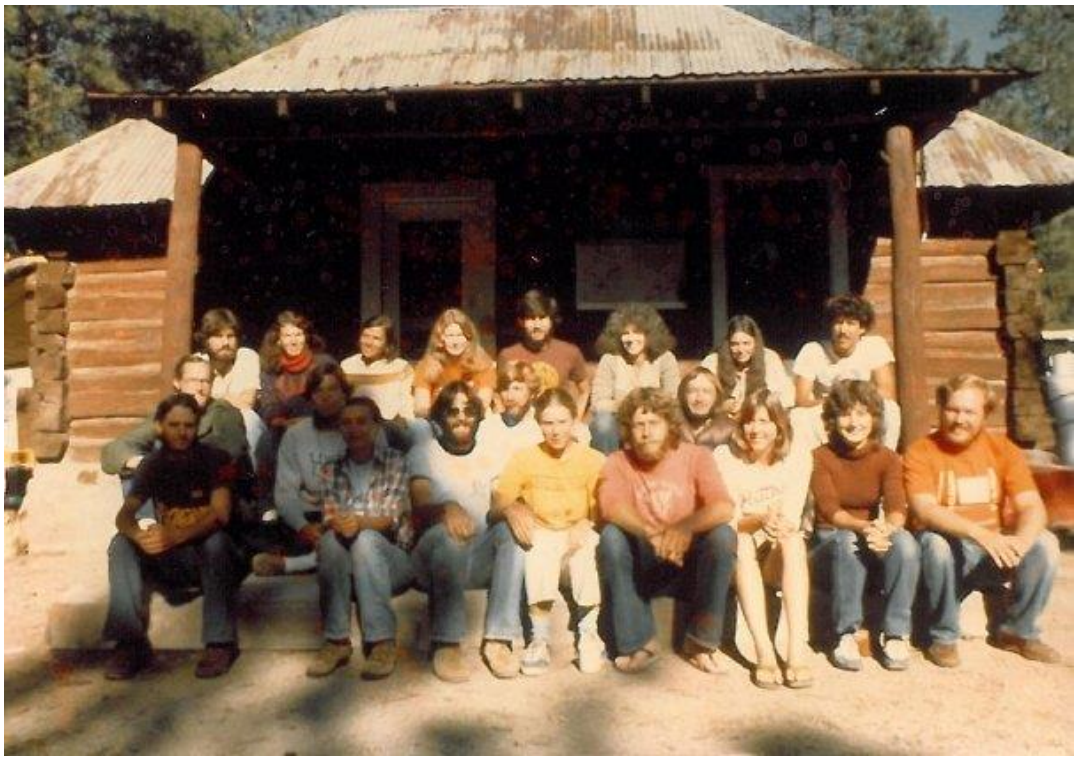

Figure 2. 1979 PARP crew at field HQ. Left to right: (bottom row) D. Luther, T. Zajac, M. Rosen, S. Hector, M. Walsh, S. Handy, J. Zak, K. Johnson; (middle row) J. Hill, B. Preucel, K. Middleton, J. Miller; (top row) B. Herman, S. Biagi, L. Atik, J. Orcutt, N. Trierweiler, M. Leach, P. Busse, G. Russell.

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