THE GARDEN CANYON PROJECT: STUDIES AT TWO ROCKSHELTERS AT FORT HUACHUCA, SOUTHEASTERN ARIZONA

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The sites are on an Army Fort and we received numerous courtesies from the military personnel at the post. Recording was done under supervision of Dr. Marie Cottrell, Post Archaeologist, who participated throughout our field recording project. With the guidance of Mary Ann Black and Page Bakarich, we were able to visit some important comparative sites in the San Pedro Valley area. Antoinette Padgett worked on graffiti removal during our field trip, and was able to contribute to our record a couple of elements hidden under the graffiti at the Rappell Cliffs Rockshelter.

I am also indebted to colleagues who generously provided me with copies of their unpublished reports: Jeffrey Burton and Mary M. Farrell (Coronado National Forest), Jane Kolber, and Jeffrey Altschul. Preliminary draft copies of this report were reviewed by Jeffrey Altschul, Jane Kolber, Polly Schaffsma, Raymond H. Thompson, Jeffery Burton, and of course Marie Cottrell who supervised the overall work. All of these provided very useful comments and insights which allowed me to remove some of my more naive statements and interpretations-for those that remain I am obliged to admit my own responsibility.

At the beginning of this project, some very helpful leads were provided by Frank and A.J. Bock of the American Rock Art Research Association. They have extensive field experience in Arizona and put me on the track of important reports and manuscripts.

Part 2

The Garden Canyon project could not have been completed without the help of many people. First and foremost, we are grateful for the help, encouragement, and insights provided by Fort Huachuca archaeologist Dr. Marie Cottrell. The excavations were conducted July 10-19, 1991 under contract with the Los Angeles District, U.S. Army, Corps of Engineers (Contract, DACA09-90-D-0027 Delivery Order # 7). We appreciate the help provided by Ms. Pam Maxwell of the Los Angeles District. The professionalism and expertise of the field crew, Ms. Kimberly Greene-McClure, Mr. Keith Vlastos, and Mr. Chris Doolittle, was an invaluable aid to the project. Various people were consulted about the archaeology of the area and offered helpful insights into the use of the sites and Huachuca Mountains. We thank Dr. C. Vance Haynes, Dr. Bruce B. Huckell, Ms. Lisa Huckell, Dr. Jane Rosenthal, and Mr. John Welch for donating their time and expertise. Ms. Kate Rylander offered excellent advice concerning the prehistoric use of various plants in the area and her suggestions added a great deal to this report. All maps were drawn by Mr. Jim Holmund of Geomap, Inc. of Tucson. The figures were drafted by Ms. Carol Ellick and Ms. Kathy Kubish.

Susan Benaron served as technical editor for the entire volume. Alexandra Jackson and Michael S. Pellerin provided clerical and technical support and helped produce the final report. To all of the above, and anyone who may have been inadvertently omitted, we are grateful.

ABSTRACT

This report presents the results of rock art recording and analysis, and archaeological test excavations in two small rockshelters on the Fort Huachuca military reservation in southeastern Arizona. The sites were investigated as part of the Legacy Resource Management Program Demonstration Project #21 under the auspices of the Department of Defense, and the U.S. Army Corps of Engineers, Los Angeles District. The Garden Canyon Pictograph Site (AA EE:11:15, ASM) and Rappell Cliffs Rockshelter (AZ EE:11:30, ASM) are listed on the National Register of Historic Places. Part 1 discusses and provides illustrations of the rock art at the two sites. Part 2 describes the archaeological testing and provides a regional framework for interpreting the information on the rockshelters. Archaeological testing was limited in scope in order to preserve the cultural remains at the sites.

The Garden Canyon Pictograph Site was nominated to the NRHP because of abundant, well-preserved black, white, red, and polychrome pictographs on the walls and ceiling representing both the historic and prehistoric periods. The test excavations documented a substantial Formative period occupation during the 13th century. The site was occupied on repeated occasions, but not on a permanent basis. The function of the site was that of a temporary camp used while exploiting mammals and possibly wild plant foods in the Garden Canyon area. The occupants of the rockshelter were probably associated with the large village site (AZ EE:11:13, ASM) at the mouth of Garden Canyon and may have used the site as a logistical camp while hunting or traveling through the Huachuca Mountains. The test excavations failed to document a historic period occupation associated with the Apache use of the area.

The Rappell Cliffs Rockshelter (AZ EE:11:30, ASM) contains black, white and red pictographs of the historic and prehistoric periods. The test excavations indicate a sparse occupation sometime during the Formative period. The function of the occupation was probably similar to that at the Garden Canyon Pictograph Site, but a paucity of artifactual remains makes such a conclusion somewhat speculative. The project failed to document any association between the occupation and the creation of the rock art in the rockshelter.

THE GARDEN CANYON PROJECT: PREFACE

by

Marie G. Cottrell

THE GARDEN CANYON PROJECT:
PREFACE

Marie G. Cottrell

In 1991, the U.S. Congress enacted a bill to establish and fund a Legacy Resource Management Program for the Department of Defense (DoD). The DoD is the steward of about 25 million acres of land in the United States and these lands possess an irreplaceable collection of natural and cultural resources. Since many DoD facilities have restricted access, they have become islands of conservation in areas where resources have been degraded or lost to growth and development. The Legacy Program recognizes the importance of natural and cultural resources located on DoD lands and the need to conserve these resources for future generations. To this end, the purpose of the Legacy Program is to "promote, manage, research, and conserve, any historical resources which exist on public lands, facilities, or property held by the Department of Defense".

The first Legacy Program focused on two main areas of activity: demonstration projects and program development. One of the demonstration projects was a multi-services, multi-state project to "develop a management plan for Native American rock art, including recordation, public access, and preservation." Two projects were funded under the Native American rock art program; an overview of rock art site preservation and management for 48 states, and rock art recording, restoration, protection, and evaluation at Fort Huachuca.

This monograph presents a summary of the activities that were completed at Fort Huachuca to record, restore, protect, and evaluate the two rock art sites located in Garden Canyon. This first section is a general discussion of the protective, educational and enhancement processes implemented for the sites. The second portion of this monograph presents the recording and analysis of the painted glyphs or pictographs completed by Dr. Clement Meighan with an appendix by Antoinette Padgette. The third section of the monograph presents the findings of the excavations completed at the two rock art sites. The entire document is compiled under the auspices of Statistical Research, Incorporated, the prime contractor for the Legacy Program completed at Fort Huachuca.

As with any complex project, cooperation among various agencies, contractors, and individuals is necessary to bring the project to fruition. First of all, the U.S. Army Engineering and Housing Support Center, administering the Legacy Program funds, provided Fort Huachuca with the necessary resources to complete the project. Dr. Constance Remirez and Ms. Marie Bourassa of this agency were instrumental in initiating the project and provided much needed encouragement and support throughout. The U.S. Army Corps of Engineers, Los Angeles District issued and administered the Contract for recordation, restoration, and evaluation. Ms. Pamela Maxwell of Los Angeles District was the Corps' project manager. Statistical Research, Incorporated of Tucson was the prime contractor for the project and Dr. Jeffrey Altschul was the project's principal investigator. Subcontractors to Statistical Research were Dr. Clement Meighan who completed the rock art recordation and analysis; Ms. Antoinette Padgett, rock art conservator, restored much of the rock art to its original condition; and Ms. Mary Ann Black assisted with all phases of the investigation.

The Nature Conservancy was issued a contract by Fort Huachuca to assist in the rock art project. The two rock art sites are located in Garden Canyon, an ecologically diverse and sensitive riparian, mountain habitat, termed by the Nature Conservancy as "mountain islands". To ensure that no sensitive plant species would be adversely impacted by proposed activities in the canyon, the Nature Conservancy performed a vegetation survey of the area to establish baseline conditions and to demarcate sensitive areas for avoidance. For three years following the project, the area will be

monitored by the Nature Conservancy to ensure that the habitat is not degraded. Additionally, since one of the purposes of the Legacy program is public awareness and education, it was decided to implement a cooperative effort to produce interpretative signs for this area of the canyon to educate the public on the biological and cultural uniqueness and importance of the setting. Four anodized aluminum signs were developed by Nature Conservancy and Fort Huachuca personnel and installed in this area of the canyon. Mr. Tom Wood, Ms. Sherri Williamson, and Mr. Peter Warren of the Nature Conservancy worked diligently with the archaeologists on this program to ensure its success. (Figure P.1)

The U.S. Army Garrison, Fort Huachuca provided Command, financial, and volunteer support to the project. The Directorate of Engineering and Housing (DEH) provided funds to fence the rock art located at the Rappell Cliffs and to maintain the bridges accessing the resources. Additionally, the DEH purchased the materials necessary for Boy Scout Troop 475 of our Lady of the Mountain Catholic Church of Sierra Vista to construct steps to the rock art at the Rappell Cliffs. Twenty years before, the Garrison built the protective fence, the trail, and the bridge accessing the first rock art site, AZ EE:11:15 (ASM) (hereafter referred to as AZ EE:11:15). The Installation and Garrison Command at Fort Huachuca have had a long-termed commitment to protecting resources and the support provided during this project carried on with this long-standing tradition.

Appreciation is extended to the San Carlos Apache Indian Tribe for their interest in the project. Councilman Ernest Victor, Jr. visited Fort Huachuca and was instrumental in identifying the white pictographs as Apache. He identified the figure at Locus 2 at AZ EE:11:15 as a crown dancer and the large birds with the band across their tails as Golden Eagles. The black and red glyphs were not familiar and are not historic Apache in origin.

The goals of the Legacy Rock Art Program at Fort Huachuca were to record, restore, protect, and evaluate the pictographs found at the two sites in Garden Canyon. As noted, there were two rock overhangs in upper Garden Canyon that were used by prehistoric and historic Native Americans for various purposes. The evidence for this use consists of rock paintings on the walls and ceilings at both locations as well as midden soil. The first site, AZ EE:11:15, is listed on the National Register of Historic Places. The site was fenced in 1969 to protect it from vandalism (Figure P.2) and, a bridge and trail were developed to facilitate public access (Figure P.3). The second site, AZ EE:11:30, is located approximately 1/4 of a mile further up the canyon, beneath the cliffs used by the Army for rappelling (Figure P.4). The second rock art site, AZ EE:11:30 (ASM) (hereafter referred to as AZ EE:11:30), was recently recorded.

While AZ EE:11:15 contains red, black, and white pictographs and exhibits few signs of vandalism, AZ EE:11:30 has primarily red and black pictographs which have been extensively covered with modern graffiti (Figure P.5). The Legacy Program at Fort Huachuca was initiated with the construction of a protective fence at AZ EE:11:30 (Figures P.6 through P.8). The fence was constructed flush with the cliffs, thereby affording protection to the rock art and not impeding rappelling training and practice. A new bridge was constructed to provide access (Figure P.9) to the site. The fence was funded as a protective measure by the Directorate of Engineering and Housing, Fort Huachuca.

The second stage of the program involved excavations at both rock art sites. It was hoped that the excavations would yield data that could be used to date the rock art and to give clues as to the types of activities that occurred at the sites. Archaeologists from Statistical Research, Incorporated completed the excavations (Figure P.10) and the results are presented elsewhere in this report.

Garden Canyon forms a natural pass through the Huachuca Mountains. It is possible that the prehistoric and historic Native Americans of the San Pedro Valley used this pass to traverse the mountains and left their marks on the walls of the rock overhangs. It is also possible that upper

Garden Canyon was part of the hunting territory for the various groups occupying the area, or of some religious significance to the people of the valley. In any case, the prehistoric and historic Native American people of the San Pedro Valley left their paintings on the walls. Based on information provided by Earnest Victor, Jr., the Apache probably performed at least one ceremony involving crown dancers and after the ceremony secreted the crown somewhere in the mountains. The first rock art location, AZ EE:11:15, appears to have been used by the Apache for ceremonial purposes and not for other types of activities. It is unknown what importance the locations had for other inhabitants of the area.

During October 1991, Dr. Clement Meighan assisted by Joan Meighan, Marie Cottrell, and Mary Ann Black recorded the rock art at both sites in upper Garden Canyon (Figures P.11 through P.13). Ms. Antoinette Padgett, rock art conservator, and Marie Cottrell removed graffiti from AZ EE:11:30 (Figures P.14 and P.15). Robert S. Brown and Johnny R. Murray, volunteers, recorded the historic military graffiti from AZ EE:11:30 (Figure P.16). All of these efforts are presented in Part 2 of this report.

To be successful, a program to protect and preserve natural and cultural resources must include education as to the value of the resource. During the 1991-92 school year, approximately 500 students from the Sierra Vista and Fort Huachuca school systems visited the sites in Garden Canyon (Figures P.17 and P.18) and became acquainted with the cultural resources present on Fort Huachuca. This was the only opportunity in the local area for students to become familiar with prehistoric and historic Native American sites. Most of the students came away with a greater appreciation for the culture history of the area.

In addition to the students from the local schools, the Arizona Archaeological and Historical Society visited the Garden Canyon sites. Members of the Defense Cultural Resources Council and Joint Services Rock Art Group Visited the sites (Figures P.19 and P.20) as part of their familiarization tour of rock art sites. The Garrison Commander and deputy Commander also visited the sites and provided encouragement and assistance in completing aspects of the project (Figures P.21 and P.22).

Figure P.1. (L-R) Peter Warren, Sherri Williamson and Tom Wood of the Nature Conservancy and Mary Ann Black at Garden Canyon Pictograph Site (AZ EE:11:15).

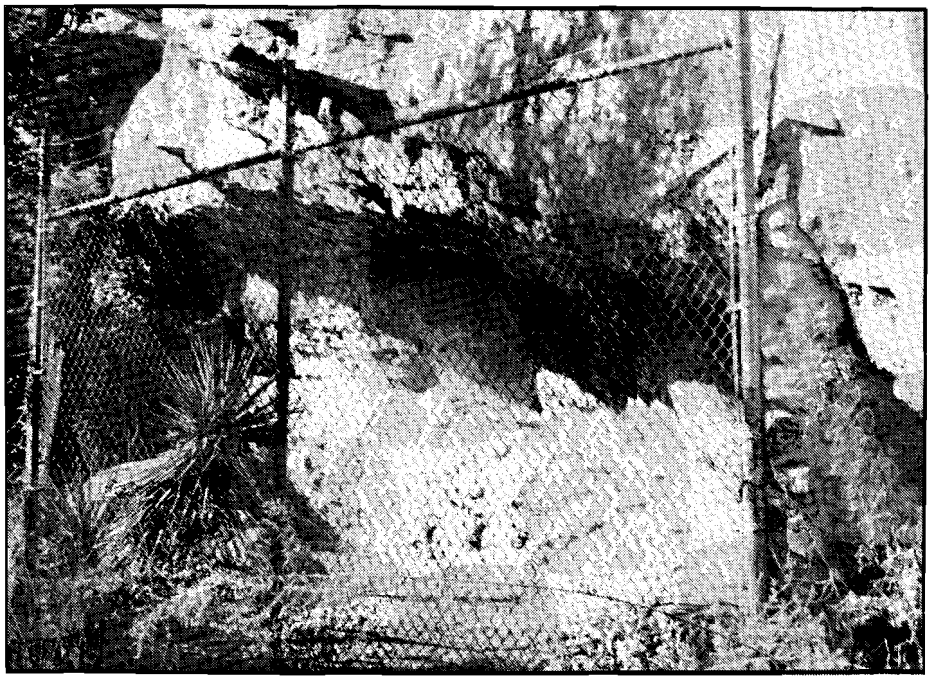

Figure P.2. Fence at AZ EE:11:15 constructed in 1969.

Figure P.3. Trail leading to AZ EE:11:15 to facilitate public access.

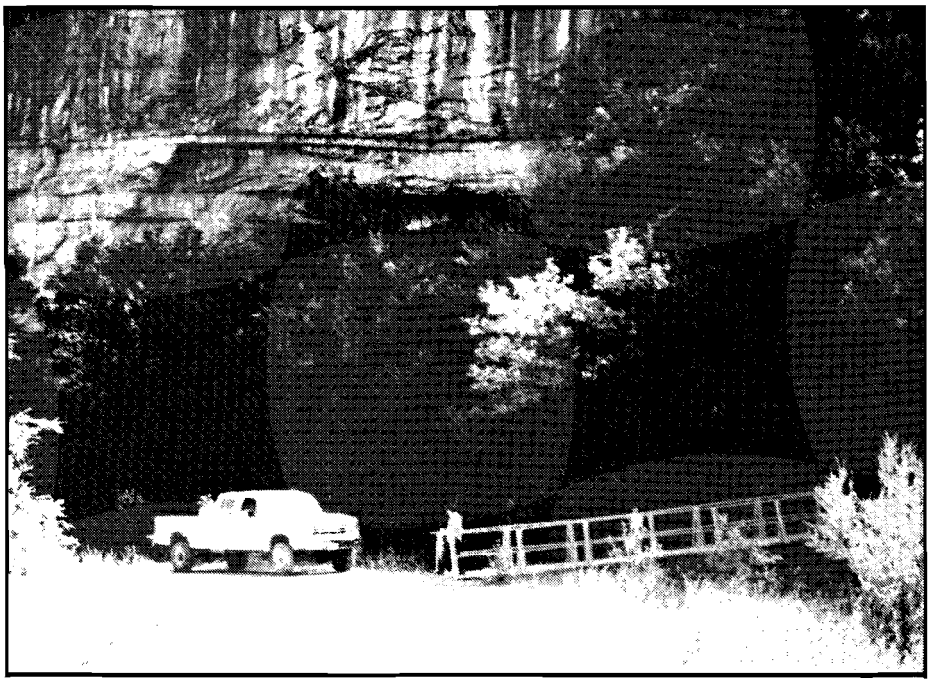

Figure P.4. View of Rappell Cliffs Rockshelter.

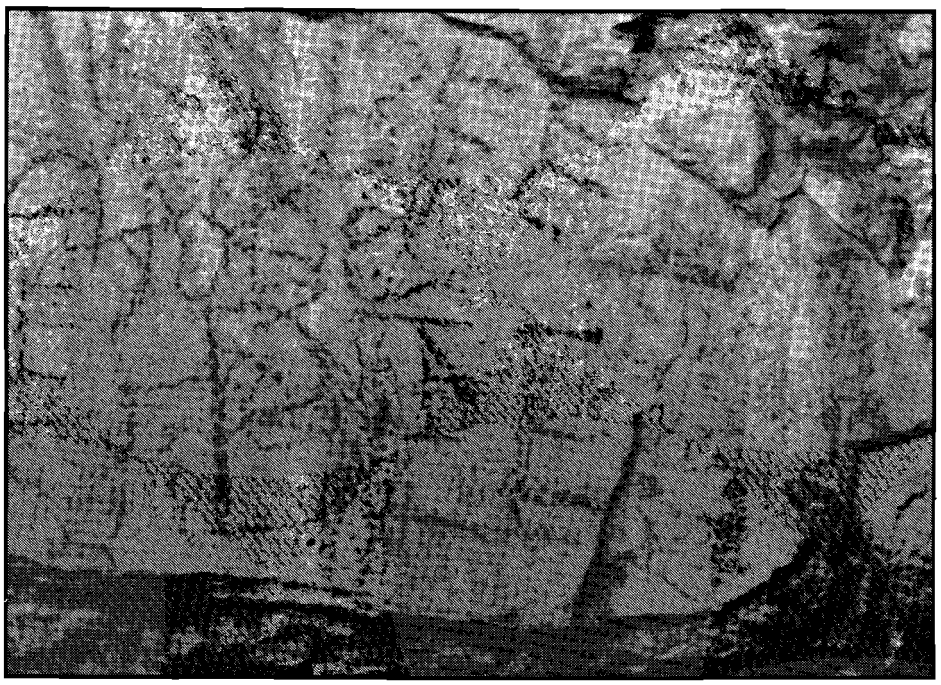

Figure P.5. Example of modern graffiti at AZ EE:11:30.

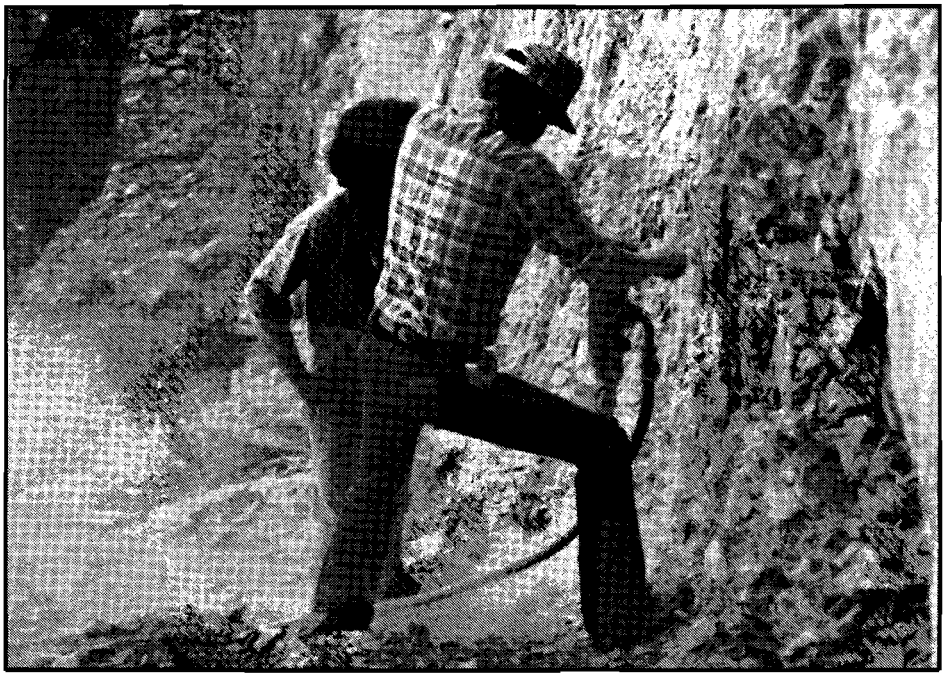

Figure P.6. George Jones and Cathy Black of Morrison-Knudsen Corporation drilling post holes for fence at AZ EE:11:30, April 1991.

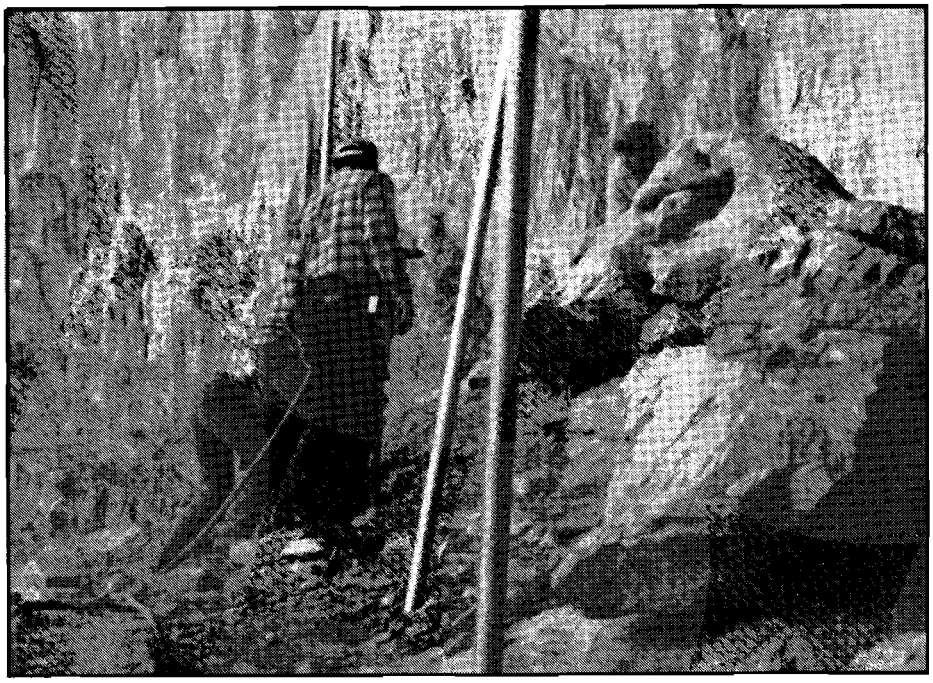

Figure P.7. Setting posts at AZ EE:11:30.

Figure P.8. George Jones inspecting completed fence at AZ EE:11:30.

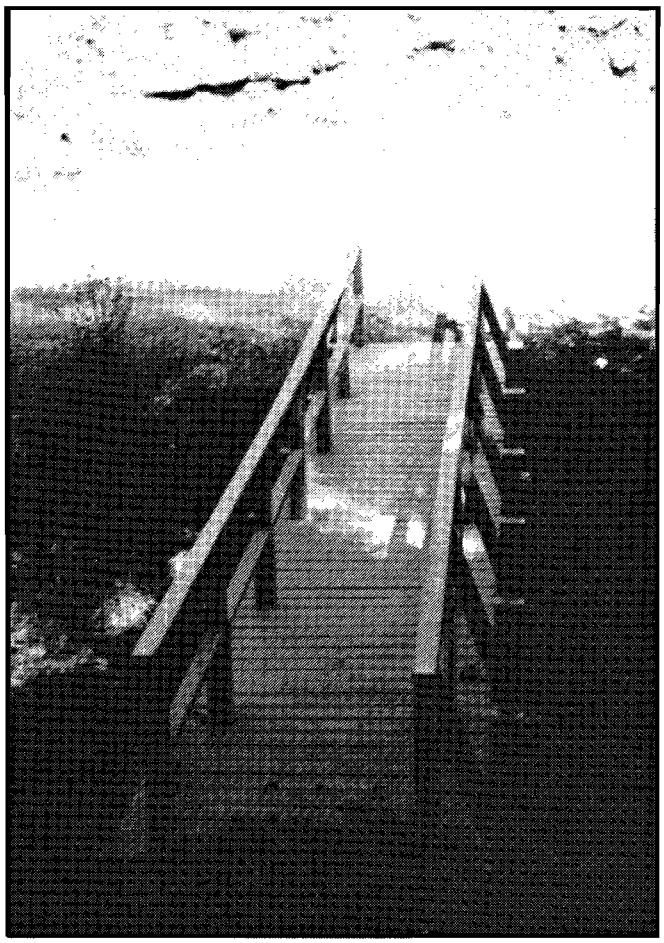

Figure P.9. Bridge constructed at Rappell Cliffs Rockshelter to facilitate access.

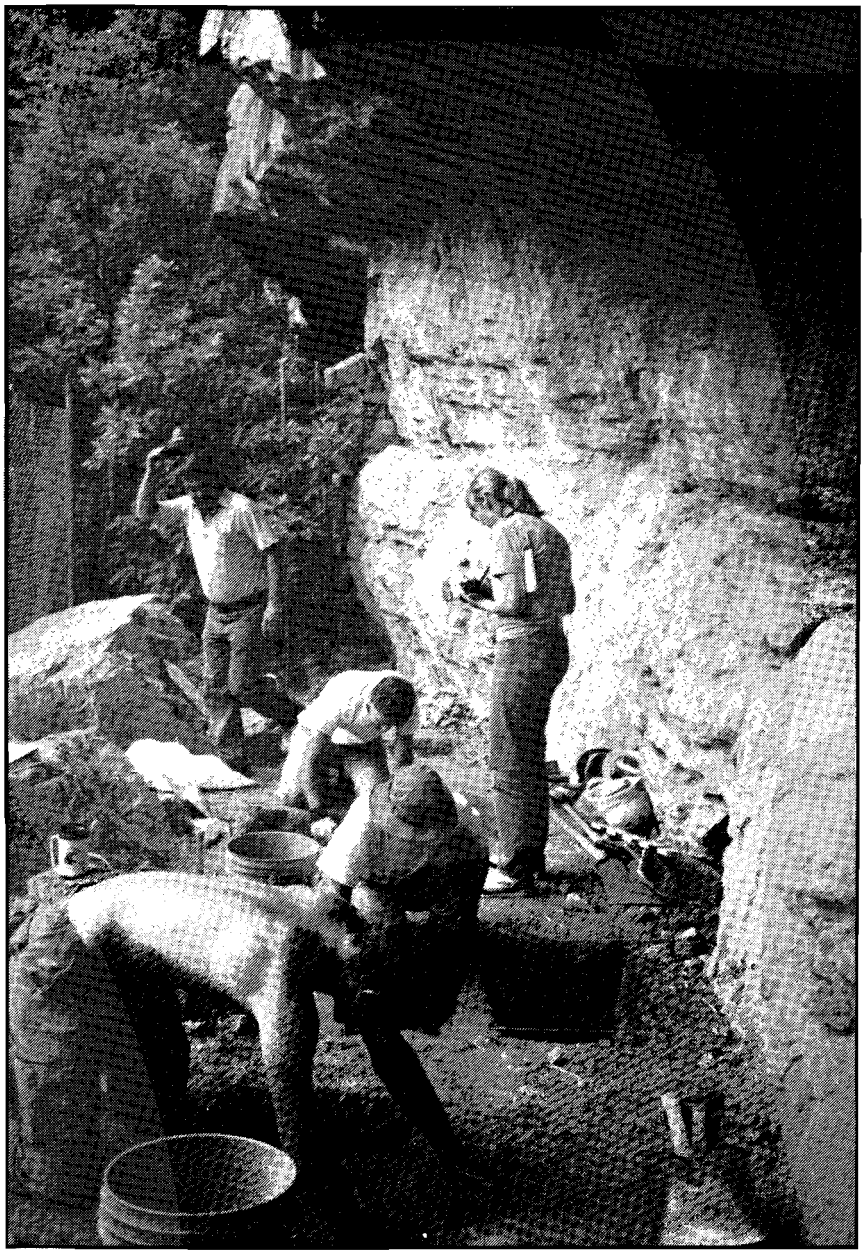

Figure P.10. Excavations at AZ EE:11:15. Sgt. Sue Harper of Huachuca Scout examines the dig. Statistical Research personnel included in the photo are; (from top-bottom) Ronald H. Towner, Christopher J. Doolittle, Kimberly Greene-McClure and Keith J. Vlastos.

Figure P.11. Joan Meighan photo recording glyphs.

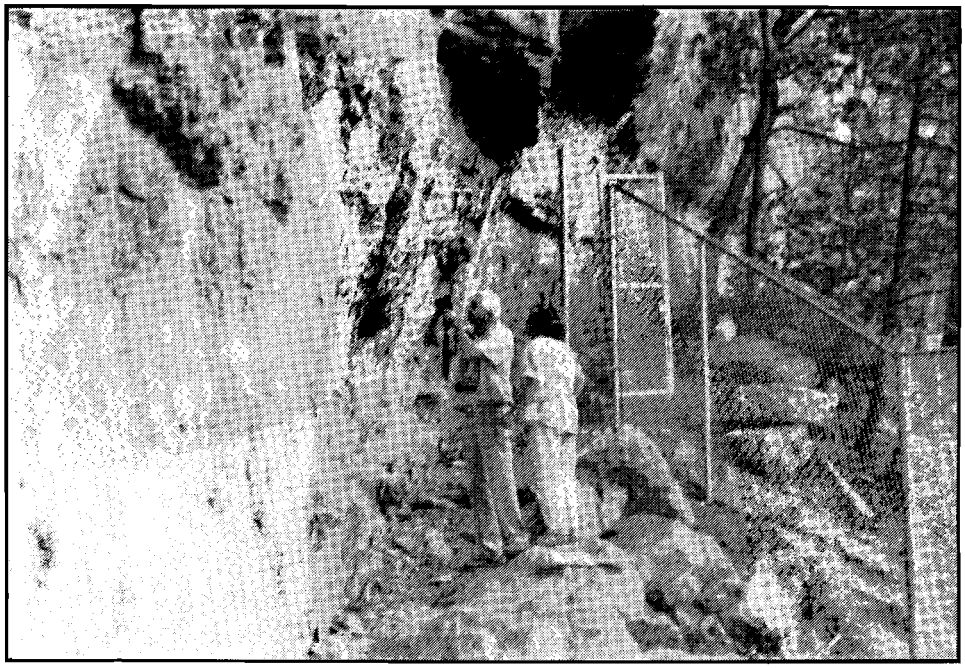

Figure P.12. Dr. Clement Meighan and Joan Meighan recording rock art at AZ EE:11:30.

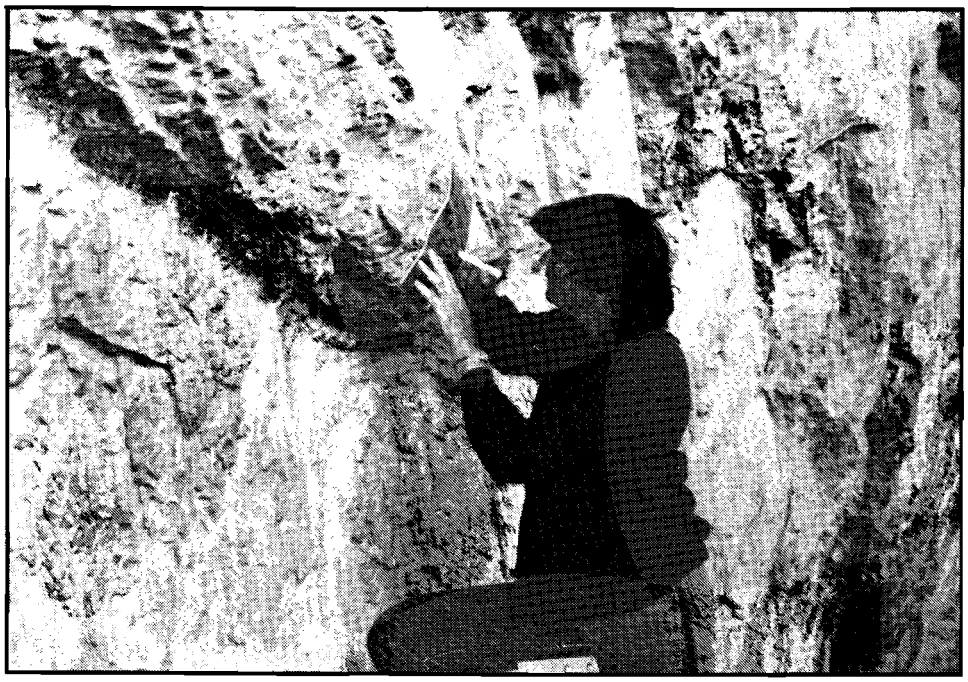

Figure P.13. Mary Ann Black tracing glyph.

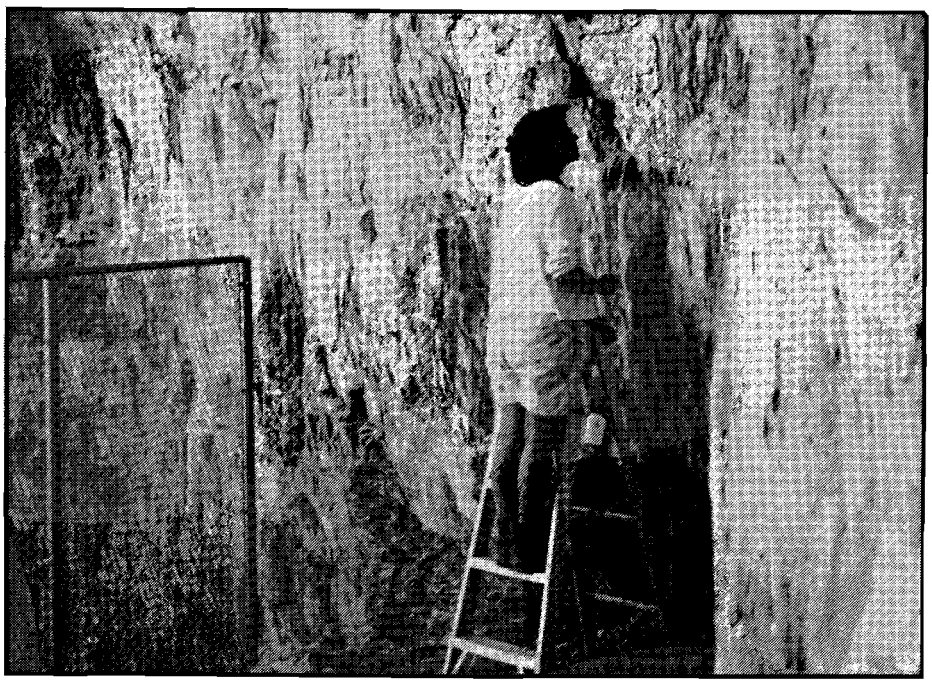

Figure P.14. Antoinette Padgett removing graffiti.

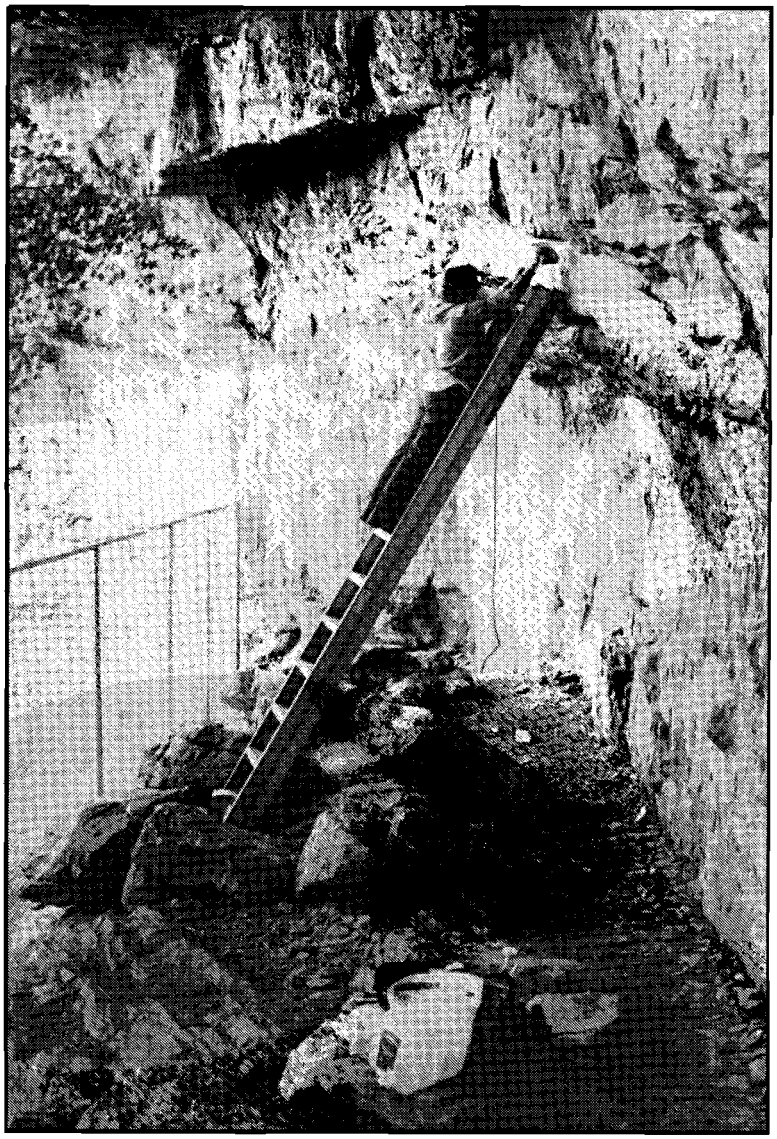

Figure P.15. Marie Cottrell cleaning surface of graffiti.

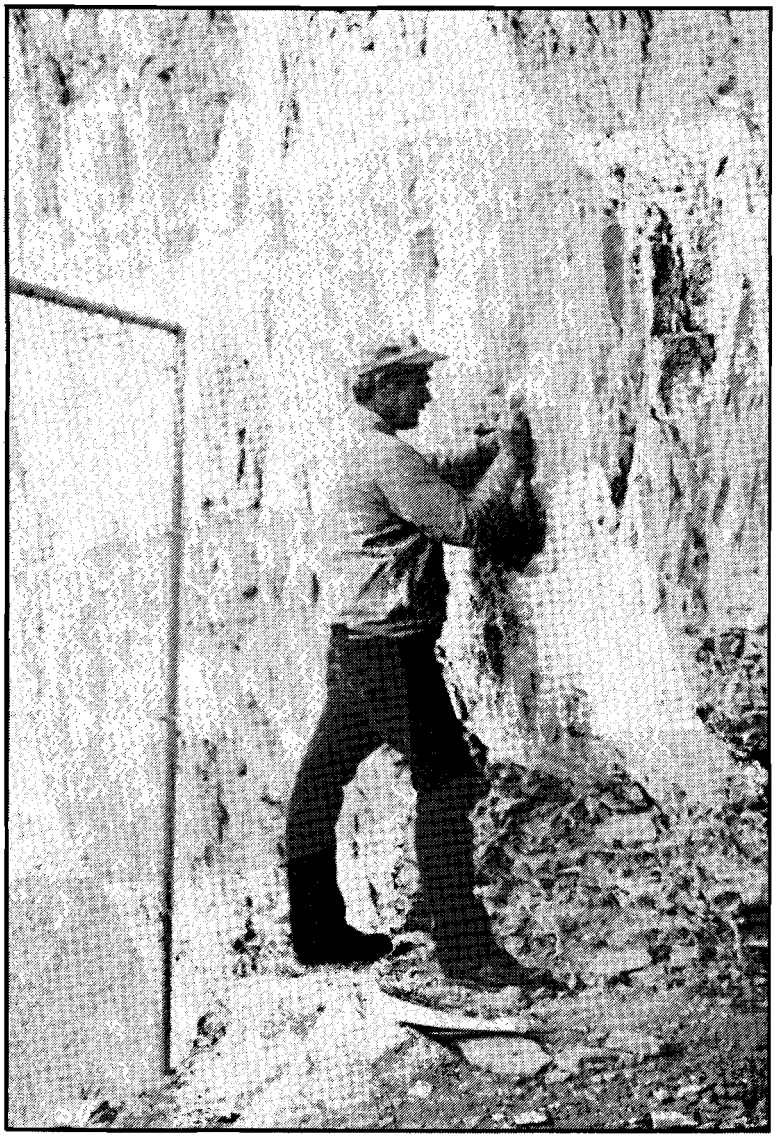

Figure P.16. R. S. Brown tracing historic military graffiti.

Figure P.17. 5th grade students from Town and Country elementary school, Sierra Vista, Arizona.

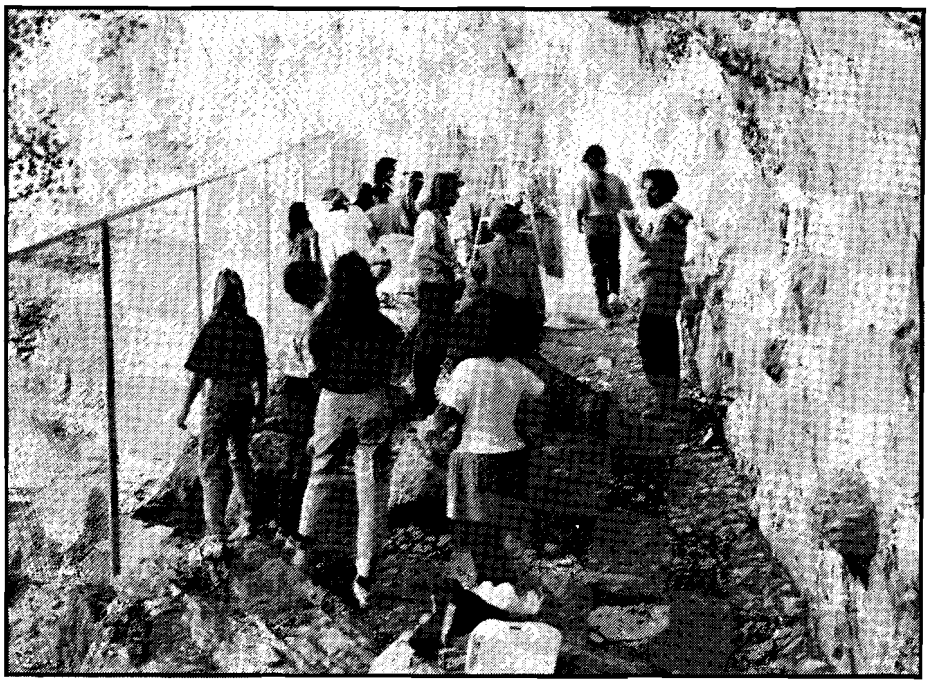

Figure P.18. Marie Cottrell describes rock art to 5th graders.

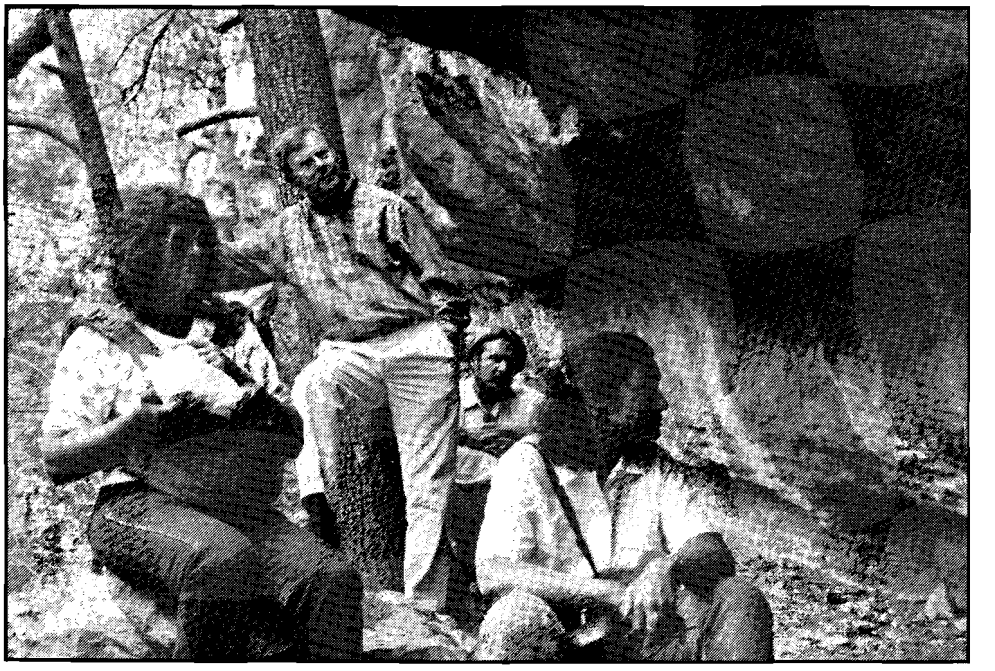

Figure P.19. Mary Ann Black, Donna Akers (USAF), John Bernard Murphy (USN), William Eckhardt (USN) and Marie Bourassa (USA) examine crown dancer glyph.

Figure P.20. Marie Bourassa, Cultural Resources Program Coordinator examines graffiti at AZ EE:11:30 during site visit.

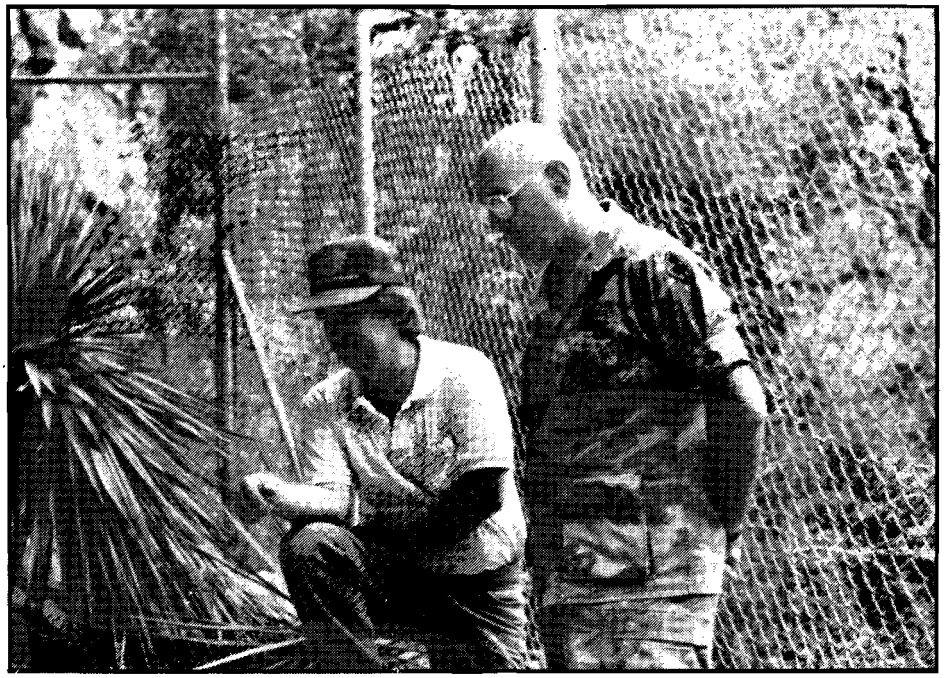

Figure P.21. Colonel Robert J. Covalucci, Garrison Commander (1990-1992), discusses excavations at rock art site with Ronald H. Towner, Field Director.

Figure P.22. Colonel Robert J. Covalucci, Garrison Commander (1990-1992), discusses excavations at rock art site with Ronald H. Towner, Field Director.

THE GARDEN CANYON PROJECT:

PART 1

TWO ROCK ART SITES AT FORT HUACHUCA, ARIZONA

by

Clement W. Meighan

THE GARDEN CANYON PROJECT: PART 1
TWO ROCK ART SITES AT
FORT HUACHUCA, ARIZONA

Clement W. Meighan

This study documents two small sites containing painted rock art in the Huachuca Mountains, southeast of Tucson, Arizona. Recording was done in October 1991 by the author with the assistance of Joan Meighan, Mary Ann Black and Dr. Marie Cottrell, Post Archaeologist at Fort Huachuca. The major site studied is the Garden Canyon Pictograph Site (official site number is AZ EE:11:15). This site has been on the National Register of Historic Places since 1974.

The other site is a short distance to the south, on the other side of Garden Canyon Creek. It was named the Rappell Cliffs Rockshelter (AZ EE:11:30), following the terminology of Burton (1988a: 248) who first recorded the site. The cliffs above and adjacent are used by the army for rappel training; the unusual spelling of the site name comes from an army sign formerly at the location. In my field notes, I designated the two sites in Garden Canyon as GC-1 and GC-2, but in this report the names will be used.

Documentation of the sites was done as part of the Legacy Resource Management Program of preserving and interpreting the rock art resources of Fort Huachuca. This work, under the direction of Dr. Marie Cottrell, has included excavation of a "Hohokam" village site on alluvial fans at the mouth of Garden Canyon, about three miles downstream from the rock art sites. The rock art sites themselves are now under careful conservation. Although damaged by graffiti in the past, both sites are now enclosed in chain link fences and are off limits to unauthorized visitors. In addition, graffiti removal was undertaken by Antoinette Padgett, a trained conservator of rock art (see her report in this volume). The sites are reasonably secure except for natural weathering of the rock.

SETTING

Both rock art sites are in a very narrow canyon in the Huachuca Mountains, at an elevation of approximately 6300 ft. At this elevation, the canyon floor is just wide enough for a vehicle road and the adjacent creek. The rock art sites are in shelters weathered out of limestone ledges, so both have an overhang of rock forming the roof of the shelter, and a vertical cliff of some 30 meters above the sites. Both had casual residential use in the past, based on small test excavations conducted by Statistical Research, Inc. in early 1991 (Towner and Altschul this report). The level floor suitable for a camp, however is only 1-4 meters wide in both sites, and there is not room for more than a few people, perhaps a couple of families, to occupy either shelter. The excavation work showed only a shallow layer of cultural deposit overlying the rock base. The sites appear to be temporary stopping places for bands traveling through Garden Canyon, very likely engaged in gathering plant foods and hunting deer, which are abundant in the canyon. The canyon is also a trail to the south and the shelters were convenient stopping places for travelers moving through the canyon.

Garden Canyon Creek has flowing water year round at the location of the Garden Canyon Pictograph Site, but the Rappell Cliffs Rockshelter only 150 meters upstream does not have flowing water by the late fall (October); obviously the Garden Canyon Pictograph Site itself is adjacent to a

spring which replenishes the creek just above this location. It is likely that the Garden Canyon shelters were used primarily in the summer months and not during the cold and snowy winters.

PREVIOUS WORK

An excellent preliminary study of both of these sites was done by Jeffrey Burton (1988a: 242-250), in his review of some 57 sites in and adjacent to the Coronado National Forest. Thirty of his sites have painted pictographs, ranging from one to 226 elements per site (Burton and Farrell, 1990: Table 2). Fort Huachuca is not part of the National Forest, hence these sites received somewhat less analysis than others reported by Burton (the sites are also discussed in Burton and Farrell, 1990: 10-11). In general, however, my observations are in agreement with his. There are some differences in element counts and interpretations; these result in part from differences in the way the individual elements were counted. Several small lines or figures close together can be counted as one element or as several, depending on the recorder's interpretation of whether they were all made at the same time by the same artist.

Both sites have had extensive visits in the historic period, based on limited graffiti at the Garden Canyon Pictograph Site and many recent names and other marks in the Rappell Cliffs Rockshelter. The scientific discovery of the Garden Canyon site must be related to its nomination to the National Register in 1974. The Rappell Cliffs Rockshelter is noted in the same nomination form but is not referred to as a separate location. The first reporting of the Rappell Cliffs Rockshelter dates from Burton's work prior to his 1988 report. Towner et al. (this report) say that the latter site was discovered in 1989 by U.S. army personnel but the site has been clearly known and visited by soldiers for many years judging from the extensive graffiti and use of the area for army training exercises. Army correspondence refers to these sites as early as 1964. I differentiate these visits from "scientific discovery" because it is obvious that local people generally know of rock art sites for a long time before they come to the attention of scholarly recorders, yet the latter are the discoverers in that they provide the first documentation of the site.

GARDEN CANYON ROCK ART SITE

The National Register nomination of 1974 calls the Garden Canyon Pictograph Site a petroglyph location and states incorrectly that the "...petroglyphs are cut into the roof...". All of the art is painted. Garden Canyon has rock art done in red, white, and black, including some fairly large figures and two polychrome figures There are three elements combining red and black colors, one of these (element 19, Figures 1.3, 1.9, 1.10) is also painted in white, making it a polychrome figure. The other two (elements 28, 29) combine red and black; it is not clear whether the black paint was deliberately added to red figures, or whether natural black stains were incorporated with red paintings to give a two-color appearance. There is one white figure, a cross (element 18) which also appears to incorporate natural black stains to give a two-color appearance. An additional polychrome figure is element 3 (Figure 1.4); for this one, however, it is apparent that a small white circle was added to the element some time after the original painting was done, and it is not part of the original element as illustrated.

The main part of the site consists of the roof and overhang which drops down to a ledge a few feet above the ground surface. For most of the length of the site, it is possible to climb onto the ledge, which served as a platform for the painters who applied 31 elements of rock art to the roof. The vertical face of the ledge itself bears another 19 painted elements. Finally, at some distance there are 3 "outlier" paintings that I consider to be part of the same site even though they are separated spatially by over 21 meters of undecorated rock surface.

The Garden Canyon Pictograph Site is very unusual in that the color paintings are largely separated from each other spatially and there is a clear sequence of paintings present. The roof of the shelter is dominated by elements painted in white, with older red figures also present. The vertical surface below the roof is dominated by paintings in black but also has red elements. In part, this is a reflection of the color of the rock surfaces. The roof of this site is largely stained black, whereas the wall below is a light yellowish color. It makes sense that the aboriginal painters would use white paint on the dark surfaces and black paint on the light surfaces. Some of the white paint elements, however, are on light patches of the roof from which the dark surface had previously spalled off, and one is on the light-colored ledge. It has been assumed by most visitors that the dark stain on the roof of this shelter is smoke from camp fires. Most if not all of it, however appears to be water-deposited mineral stain. The sequence of styles is discussed in more detail below; it is the evidence for sequence that makes the Garden Canyon Pictograph Site a very important one.

Nearly all of the rock art is concentrated in an area about 15 meters long and is enclosed in chain link fence. However, a small amount of rock art occurs on the same ledge at a distance of 21.4 meters north of the fence. Here the overhang is 1.5 meters in width and only 1.5 meters above the ground surface. The adjacent ground surface is just wide enough for a path. On a horizontal surface facing downward, one masked figure and some ancillary elements are painted in white (Figures 1.2, 1.11). Burton classifies this location as a separate site and calls it Cave 2, Garden Canyon. I consider it to be an outlier of the main site and have included it as part of the Garden Canyon Pictograph Site.

A tabulation of elements at the Garden Canyon Pictograph Site is given in Table 1.1, along with references to the illustrations. Figures 1.1 through 1.4 give a pictorial catalog of the motifs at the site.

In addition to the native rock art, some graffiti are present, but they are limited in extent and number and do little damage to the rock art. Most of the graffiti are illegible scratchings. All of the graffiti at this site appear to be fairly old and not the result of recent visits by army personnel or contemporary picnickers.

One inscription of historical interest is done with a burned stick (charcoal): "T.L.J. Apache scout 1922." Smith (1976: 265) lists Apache scouts who were sent to Fort Huachuca in 1922. Most are listed under their Apache names and none can be linked to "T.L.J." This, however, is certainly the last Apache addition to the rock art at this site.

Another inscription consists of faint scratched letters and a date. The latter part of the date is obscured but could be 190-, or sometime in the first decade of this century, when Arizona was still a Territory. Whoever was responsible for these marks, they were probably also associated with the garrison at Fort Huachuca which was established in 1877.

A few other graffiti are present, some done with a lead pencil, but they do little damage and have no historical interest.

Fifty-three individual aboriginal elements were recorded at Garden Canyon. Burton (1988a: 245) tabulates 38 elements, but as mentioned previously there may be differences in the way individual recorders count elements that are close together, and our records are basically in agreement with those published by Burton. As his report illustrates only selected elements, I cannot make a detailed match-up between his tabulations and mine. My frequencies and percentages (Table 1.3) vary considerably from those of Burton because my number of elements is 30 percent greater.

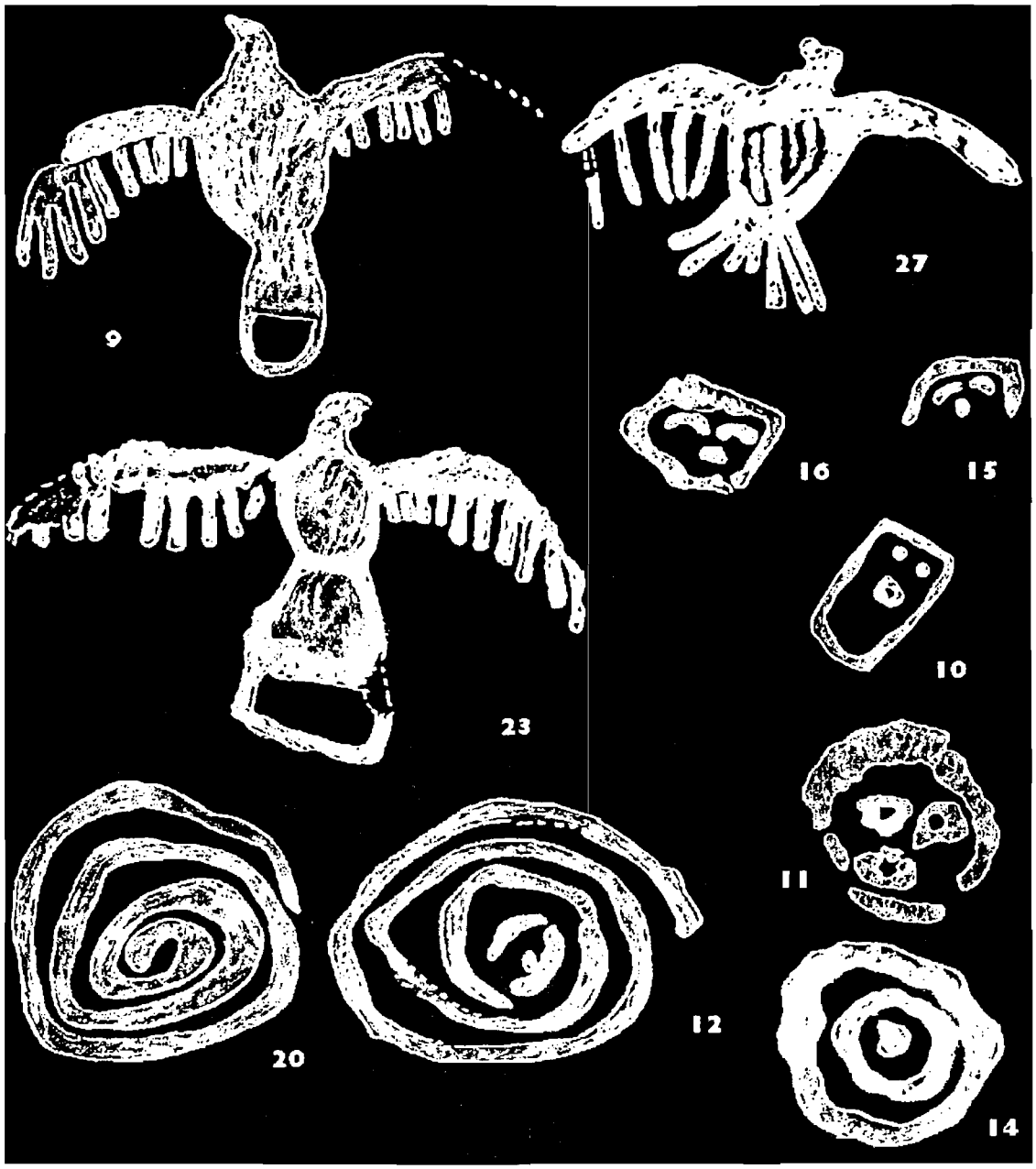

Figure 1.1. Elements in white paint: eagles, masks, spirals, concentric circles. Garden Canyon Pictograph Site, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.1.]. C. Meighan, 1992.

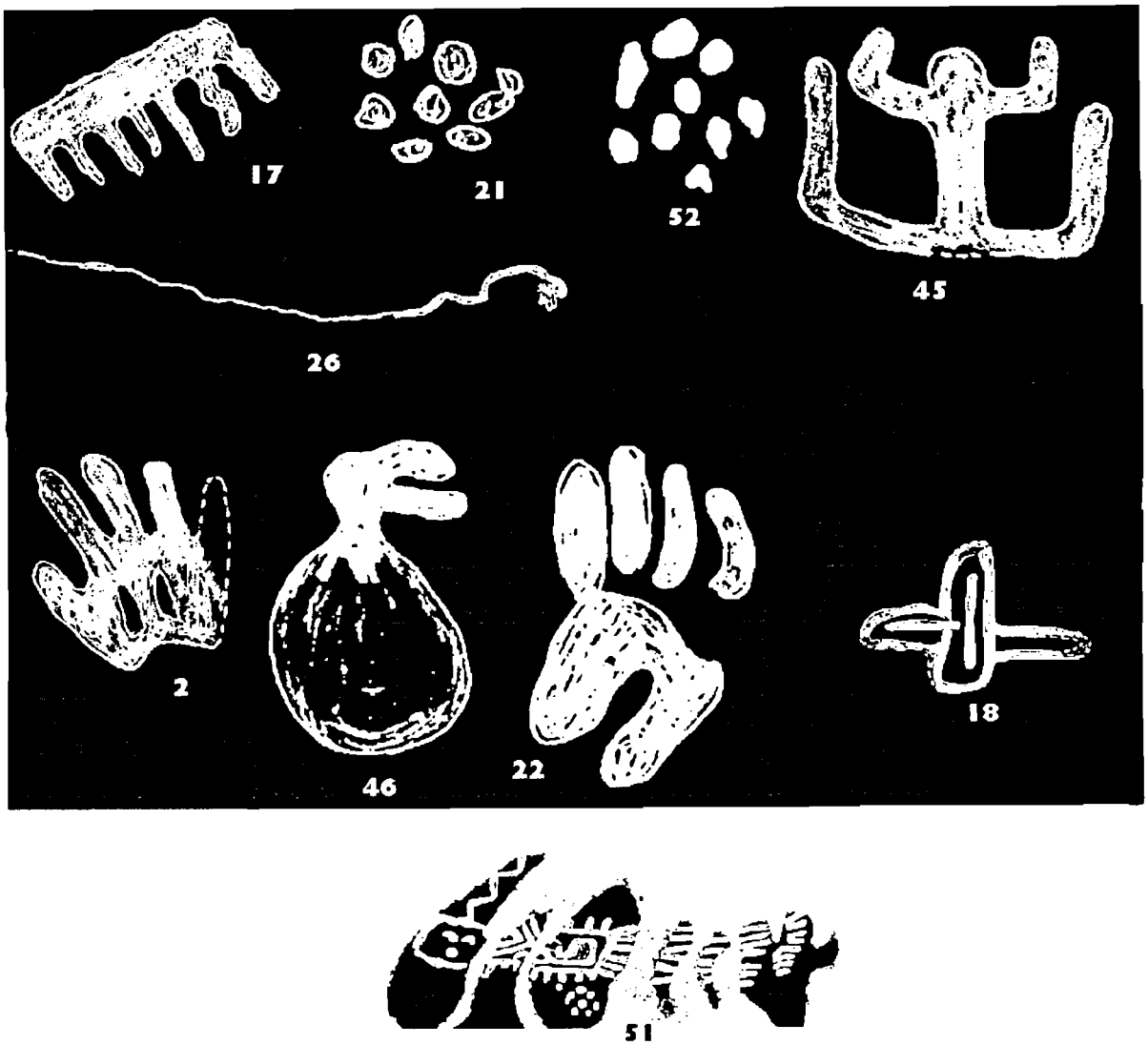

Figure 1.2. Elements in white paint: rake, dots, human figure, hands, unidentified, cross, masked figure. Element 26 is a white sinuous line (snake?) across roof of Garden Canyon. The "head" at right incorporates small polychrome human figure (#19), here shown in white. Element 51 is painted on a black surface crossed by ridges of white mineral deposit. The painting does not underlie the ridges but is painted between them. The white dots under the figure are separate element (#52). Garden Canyon Pictograph Site, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.1.]. C. Meighan, 1992.

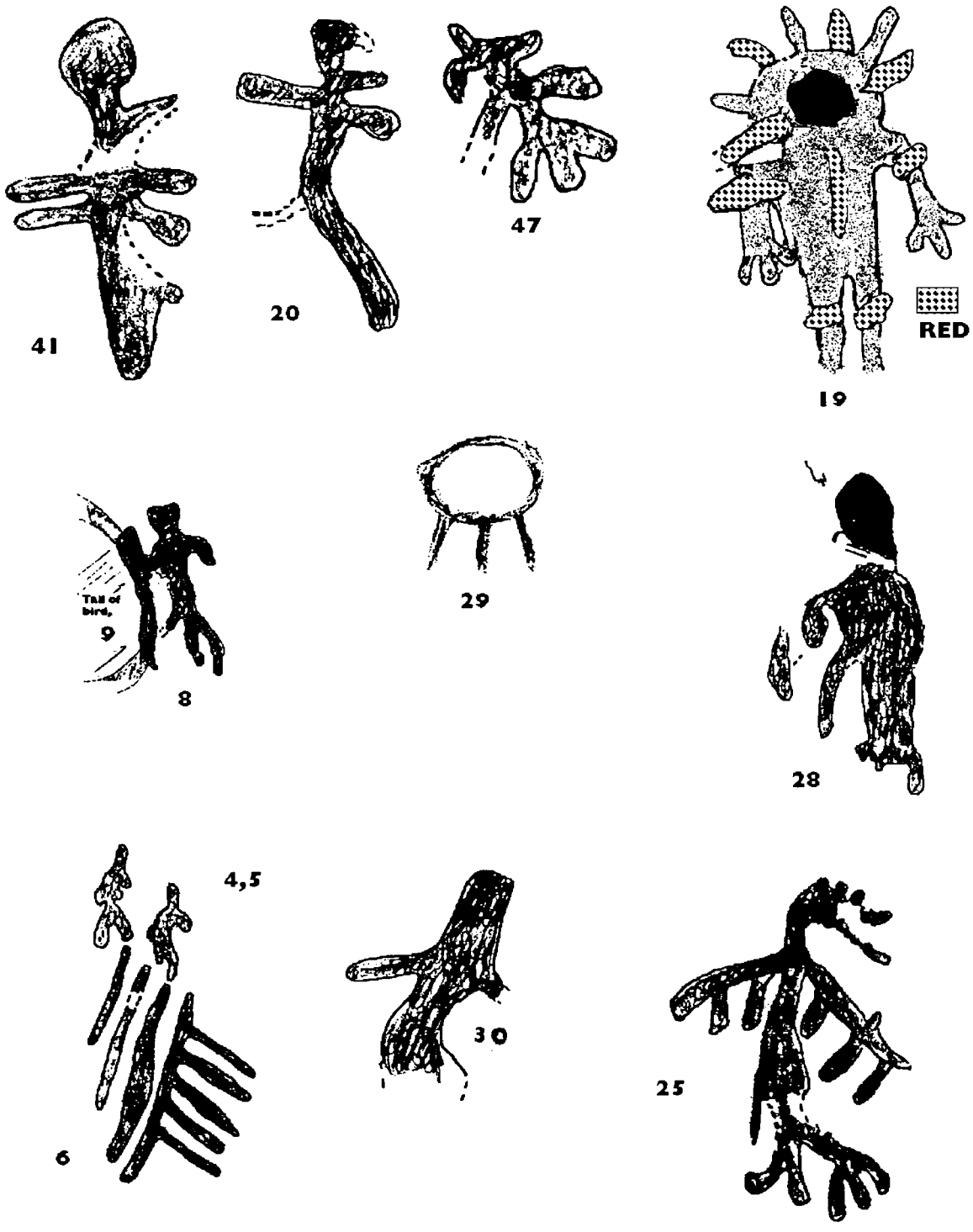

Figure 1.3. Elements in red paint: Human figures, multi-arm figures, eagle, rake, circle with lines. Element 19 face is black. Element 8 is a red figure holding a staff; incorporated into tail of later painting of eagle (see Figure 1.9). Element 29 center is black. Element 28 head is black. Garden Canyon Pictograph Site, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.1.]. C. Meighan, 1992.

Figure 1.4. Elements in black paint: mask, eagle, multi-arm figure, human figures, animal figure, lines, rake, "insect," sun figures. Element 3 center is red. Garden Canyon Pictograph Site, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.1.]. C. Meighan, 1992.

Table 1.1. Catalog of Elements at Garden Canyon Pictograph Site

No.	Element	Color	Size (cm.)	Meters	Affliation	Remarks	Figure
ROOF OF CAVE							
1	Rake & unidentified	Black	15 x 11	1.7	Apache		4
2	Hand	White	10 x 14	1.6	Apache	Drawn, not handprint	2
3	Concentric Circles	R,W,B	13 x 13	2.3	Pre-Apache	Faint, poorly preserved	4
4	Rake, lines	Red	25 x 13	4.7	Apache	Similar to white rake, #17	3
5	Human Figure	Red	11 x 6	5.0	Pre-Apache	Faint, goes with #6	3
6	Human Figure	Red	13 x 6	5.1	Pre-Apache	Faint, older than # 4	3
7	Human Figure	Red	14 x 7	6.6	Pre-Apache	Faint, obscured by mineral deposit	
8	Human Figure	Red	15 x 7	6.7	Pre-Apache		3,8
9	Eagle	White	82 x 17	7.2	Apache	Barred tail	1,8
10	Mask	White	27 x 15	8.0	Apache		1,8
11	Mask	White	19 x 18	8.0	Apache		1,8
12	Spiral	White	31 x 32	8.6	Apache		1
13	Arc	White	13 x 13	8.6	Apache	Faint; unfinished mask?	
14	Concentric Circles	White	15 x 15	8.9	Apache		1
15	Mask	White	21 x 17	10.0	Apache		1
16	Mask	White	18 x 16	10.3	Apache		1
17	Rake	White	9 x 15	11.0	Apache		2
18	Cross	White	29 x 23	11.4	Apache		2
19	Human Figure	R,W,B		12.0	Pre-Apache	Later Apache additions?	3,9,10
20	Spiral	White	23 x 24	13.1	Apache		1,9
21	Dots	White	15 x 9	13.8	Apache	9 dots, finger tip	2,9
22	Hand	White	16 x 12	13.5	Apache	Handprint	9
23	Eagle	White	50 x 37	14.0	Apache	Barred tail	1,9
24	Dot	Red	3 x 3	14.3	?		
25	Eagle	Red	24 x 18	14.8	Pre-Apache	See discussion	3
26	Snake	White	2 x 504	12-17	Apache	Sinuous line, no head	2,9,10
27	Eagle	White	47 x 27	13.1	Apache		
28	Figure	R,B	15 x 18	15.2	Pre-Apache		
29	Circle W/lines	R,B	11 x 7	14.3	Pre-Apache		3
30	Human Figure	Red	7 x 15	14.6	Pre-Apache	Faint, details obliterated	3
31	Unidentifiable	Red	6 x 27	14.3	?	Faint red smear, no details	
47	Figure, multi-arm	Red	15 x 10	15.5	Pre-Apache		3

Table 1.1. (cont.) Catalog of Elements at Garden Canyon Pictograph Site

No.	Element	Color	Size (cm.)	Meters	Affiliation	Remarks	Figure
VERTICAL LEDGE							
32	Human Figure (?)	Red	7 x 15	18.0	Pre-Apache	Mineral depositis, obscure	
33	Lines	Black	22 x 7	1.2	?	Faint, only part preserved	
34	Line	Black	16 x 22	1.5	?	Loop on top; a figure '9'	
35	Animal figure	Black	10 x 22	3.4	?		4
36	Eagle	Black	13 x 38	3.8	?	See discussion	4
37	Hourglass	Black	6.8	4.4	Apache		4
38	Lines (foot?)	Black	8 x 20	4.5	Apache		4
39	Figure, multi-arm	Black	42 x 15	5.0	Apache	Elaborate, partially gone	4
40	Lines	Black	32 x 26	5.5	Apache	7 vertical lines	4
41	Figure, multi-arm	Red	11 x 22	6.2	?		3
42	Human Figure	Black	35 x 15	7.1	Apache	Recent, supine figure	
43	Mask	Black	11 x 11	7.6	?	See discussion	4
44	Zoomorph	Red	12 x 12	10.6	Pre-Apache		
45	Human Figure	White	18 x 16	12.0	Apache	Only white element on vertical ledge	2
46	Figure, multi-arm	White	15 x 10	11.8	?	Too faint to record details	2,11
48	"Sun"	Black	21 x 10	6.8	?	Faint, partially missing	4
49	"Insect"	Black	4 x 4	6.5	?		4
50	Human figure (?)	Black	15 x 15	15.9	?		4
OUTLIERS							
51	Masked Figure	White	16 x 80	-21.4	Apache	Elaborate, see discussion	2,11
52	Dots	White	8 x 6	-21.4	Apache	Associated with #51	2
53	Dots	Black	15 x 8		?		4

* "Meters" refers to the distance south of the northernmost post of the chain-link fence, which is against the rock face. This is the horizontal location of individual elements. Vertical locations are recorded but not given here; however, all Vertical Ledge" elements are at a lower level than all "Roof of Cave" elements.

Discussion of Individual Elements

The representation of sets of parallel lines, sometimes in alternating black and red colors, is probably so widespread that it cannot be attributed to specific cultural groups. It is interesting to note that such elements occur in both of the sites reported here as well as others reported by Burton (1988a) and Burton and Farrell (1990; see Figures 1.8 and 1.19, where parallel zigzag lines occur in both petroglyphs and pictographs, the latter assigned to Mogollon Red style). Painted lines closely similar to those in Garden Canyon are also reported from Ventana Cave (Haury 1950: 468-70) where they are considered to be of Papago origin. Papago informants stated these marks to be tally marks for keeping record of the duration of sickness.

A note on the illustrations: Figures 1.1 to 1.4 were made by tracing photographs of the individual elements. Details not visible in the photographs were added from the notes and drawings made in the field. Some details were too faded or obscured to show up in a photograph even though they could be seen by the recorders. The finished drawings were individually scanned into the computer and grouped as shown on the printed figures which were printed out on a laser printer. Direct scanning of the photographs was tried initially, but this proved not feasible because of the lack of detail in some photos and the great amount of "noise" due to variable colors of the surrounding rock. It is possible to isolate the drawing from the background once it is in the computer, but it was very time-consuming and the finished picture was not as good as that made by scanning tracings of the elements.

Since most painted rock art is spotty in appearance due to uneven application of the paint, irregularities in the rock surface, and deterioration of the rock, this effect was mimicked in the drawings by filling in the tracings with lightly penciled surfaces. The tracings look like solid pencil drawings. By adjusting the contrast on the scanner and in the software, the mottled gray tones of the drawings are converted to black and white, producing a more realistic visual appearance of the rock art. This is an effect, however, and not a detailed recording of every missing spot of paint.

The white-on-black elements were reproduced by inverting the colors of the black tracings. Three Macintosh software programs were used: LightningScan for the scanning of images (saved in PICT format), Videopaint to add element numbers, scale and edit the drawings, and invert colors where necessary. ReadySetGo, a page layout program, was used to arrange the individual elements for printing as a group. The printed size is 40 percent of the scanned drawing size. Because of the great variation in size of the drawings, they are not reproduced to scale (sizes are shown in Tables 1.1 and 1.2).

The elements of the Rappell Cliffs Rockshelter (Figures 1.5, 1.6) were reproduced following the same procedures but few of them could be traced from photographs because they were for the most part too faint, obscured by graffiti, or otherwise damaged so that they did not photograph well. The illustrations for this site depend more on field drawings although photographs were used when the details were clear enough to allow a tracing.

Some elements listed in Table 1 require additional discussion. The "outlier" rock art element (here Figures 1.2, 1.11, element 51; illustrated in Burton, 1988a as Figure 4.118 and in Burton and Farrell, 1990, as Figure 20n) is painted on a smooth black surface which is crossed by several ridges of white dripstone deposited by evaporating water which trickles across the rock during rainy seasons. The ridges are up to 5 centimeters wide and up to 4 centimeters thick. Careful examination shows that the painting is not overlain by any of this deposition; it was simply painted on the black surfaces between the ridges. The painting is not readily visible except from below, and there are ample areas of unused black surfaces available for painting. The painting is likely to be where it is because of some association between the rock art and the apparent water coming from the rock and turning to stone.

This is one of the more elaborate Apache elements at the site. It was identified as a crown dancer by Apache Councilman Ernest Victor Jr.

The long and sinuous white line which links together much rock art in the main panel is defined by everyone as a snake, but it has no head or other features to confirm this identification.

Apache informants identify some of the large bird figures at Garden Canyon as golden eagles because of their barred tails (characteristic of immature birds). This is one of the largest and most dramatic western birds, with a wing span of 2 meters or more. It is universally present in the mythology and folklore of Indians in the western U.S., and was a central part of ceremonial ritual among southern California Indians. The "thunderbird" occurs throughout the Southwest in archaeological contexts; in rock art, ceramic painting, and shell and turquoise jewelry. There can be no doubt that this bird and other eagles have had religious significance in the West for thousands of years.

The most striking visual elements (and the largest) at Garden Canyon are the three eagles painted in white (Figures 1.1, 1.8, 1.9). These are clearly Apache in origin. However, the site also includes two other eagles, one red and one black (Figure 1.3, element 25; Figure 1.4, element 36). These are much smaller in size and of quite different style. They were not painted by the same artist who did the white eagles, and they could be older and of different cultural affiliation. The style differences for the smaller bird figures include:

a) Size is much less than the white figures. The latter range from 47-82 centimeters in wing-span; the red one has a wing span of 24 centimeters, the black one 13 centimeters. The white eagles are two to six times larger than those in other colors.
b) The smaller birds show the feet, absent from the larger ones
c) Plump oval bodies are indicated for the white eagles; thin angular bodies for the others.
d) The smaller birds have the wings indicated with angular lines rather than curved lines.
e) The wing feathers on the smaller birds are an integral part of the painting. The wing feathers on the white eagles are clearly separately-painted additions; that is, the wings were painted first, then the feathers were added, probably by using finger-tips dipped in white paint. Related to the size difference, the larger figures have more feathers shown (average 6 per wing). The smaller ones have 1 to 3 feathers per wing.

Judgment of relative age, based on the preservation of the figures, cannot be very secure when figures painted in different colors are compared, since differential weathering of the paint could make quite a difference in a sample of only 5 bird figures. The black eagle, however, is very faint and poorly preserved compared to other black figures at the site; it requires some study to make out the details. The red eagle, on the other hand, is vivid and among the better-preserved red elements at the site.

An interesting observation is that all three of the large white eagles are associated with small red human figures; two of them have white paint superimposed over the red figures (see Figure 1.3, elements 8 & 9). Because the small red figures are few in number and widely spaced on the rock surface, this association is not accidental and no doubt carried meaning to the painters who added the birds. For two of the examples, the superimposition is also clear evidence that the red-painted figures are from an older art.

At first glance, all of the smaller red figures at Garden Canyon appear to be representations of humans. Closer inspection shows that several are not so easily classified because they have multiple appendages (Figure 1.3, elements 41, 20, 47; Figure 1.4, element 39). The latter may be a small human figure with an elaborate head-dress; the others represent something else which is not easily identifiable. In Table 1.1, these have been referred to as "multi-arm figures."

In two instances, small red human figures occur in pairs. Burton (1988a: 262) suggests that "Paired anthropomorphs may in itself be characteristic of a historic or protohistoric style." I would disagree so far as Garden Canyon is concerned. Although I counted individual figures as individual elements, there are two pairs of small red anthropomorphs (elements. 5, 6; and 7, 8); I believe them to be pre-Apache.

Sequence and Dating

Everyone agrees that the Garden Canyon figures painted in white are the most recent figures and that they are to be attributed to the ethnohistoric Apache. These figures include the largest elements in the site. In general, they are coarsely done with thick and irregular white paint, probably applied with one or two fingers. The paint is likely to be white wood ash mixed with some sort of a binder; water alone would not give much permanence to the paintings. In the absence of chemical analyses, however, these identifications of paint materials are speculative.

The evidence for age and sequence includes:

1. The white paint is very fresh in appearance compared to the other rock art at the site (noted also by Burton, 1988a: 244). Red elements include many that are very faint, have much of their surface eliminated by spalling of the rock, and in some cases (elements 7, 32) are partially covered by water-laid mineral deposits.

2. Superimpositions are few at the site, and tend not to be complete overlays but unintentional edges of one figure which chance to cross another. What superimpositions are present show the white elements to always be the more recent. They include:
Element 25 (red eagle) over 28, (unidentifiable red element)
Element 23 (white eagle) over 29 (red symbol)
Element 26 (white snake) overlays one of the hands, element 19, (polychrome human figure.) Element 19 also has white wash of more recent white paint, extending into the head and body but without definable form
Element 9 (white eagle) over element 8 (red human figure with staff). The tail of the eagle was painted to lie next to the staff held by the human figure but a little of the white paint got on top of the red figure (Figures 1.3, 1.8).
Element 3 (concentric circles in red and black) has a small white circle which was added later.
Element 19 (polychrome human figure) has later white paint additions.

3. There is a distinct seriation of rock art types between Garden Canyon and the neighboring Rappell Cliffs Rockshelter. The latter contains no white elements and is clearly older.

Unfortunately, archaeological testing of the Garden Canyon Pictograph Site did not yield any cultural remains or radiocarbon dates that could be directly linked to the "Apache period" and although we can recognize this rock art as recent, we are left to reason out what that means in terms of calendar years. Towner and Altschul (this report) believe that the Apache rock art was almost certainly created after European contact although there are no European elements (e.g. men on horses, rifles, Christian crosses, etc.) in the art. They note that there is little mention of the Apache in Spanish sources before the Pueblo Revolt of 1680, but that the Apache are known to have been in the San Pedro Valley in the late 1600s and became the sole occupants in 1762. Their best estimate is that the Apache rock art was painted during the 18th century. This is a reasonable suggestion, particularly in view of the absence of

historic artifacts, which would be expected if the occupation continued into the American period. Assuming that the Apache rock art is largely represented by the white-painted elements at Garden Canyon, the consistent appearance of freshness and lack of weathering suggests that the rock art was produced in a fairly short period of time, perhaps in only one or two visits.

There are no doubt temporal and regional variations of Apache rock art to be identified in detail. Polly Schaafsma (personal communication) has recently found an additional Apache variant style dominated by geometric elements. The overall style of Apache rock art is recognized by several authors, however, discussed under the general rubric of Apache Rock Art:

> Dry charcoal line drawings and paintings are common, and although a range of colors occurs, a heavy black pigment is characteristic. In contrast, however, at Hueco Tanks paintings attributable to the Apaches are frequently done with thick white paint. (Schaafsma, 1982:335.)

Apache rock art is best known from regions considerably east of Fort Huachuca and is best defined at sites like Hueco Tanks in Texas (Newcomb and Kirkland, 1967). Some elements of the style (as listed below) occur as far west as the San Pedro River, however, and Burton (1988a: 255) states that Apache rock art occurs throughout the Coronado National Forest, parts of which essentially surround our area of study. Other Southern Arizona rock art sites attributed to the Apache were called to my attention by Raymond H. Thompson-they include sites AZ AA:8:17 (Owl Head Butte Glyphs), BB:2:16 (Malapais Hill Petroglyph Site), and DD:2:23 (Mendoza Canyon Painted Cave). These sites were recorded in the 1960s and 70s; they are cited here but not discussed in detail because they are not very similar to the sites in this report. They are mainly important at showing the wide areal extent of rock art sites attributed to Apache. Common elements of Apache style are listed as horses and riders, shields, bison, snakes, lizards, masks, "thunderbirds," hourglass designs, and "miscellaneous small unidentifiable animals." Of these, only the first two (horses with riders, shields) are absent from the Garden Canyon site. For reasons stated below, however the "lizards" and "small unidentifiable animals" at the Garden Canyon site may be earlier in time and not reflections of Apache rock art.

Burton provides a regional summary of Apache-style rock art in southeastern Arizona:

> "Work attributable to the Apache style is widespread, corresponding to the wide ethnographic range of the Apache. Examples occur in the Dragoon..., Santa Rita..., Huachuca (Blind Canyon, Garden Canyon), [and several other regions in the Coronado National Forest]. The distribution of typical kachina masks..., common in the Apache style, correlates with the distribution of painted four-armed torah figures, suggesting that torahs are also Apache...
>
> Another example of widespread Apache rock art motif are the large bird figures at Pictograph Spring, Garden Canyon, and Stronghold Canyon East. Horse and rider figures, a common Apache motif, were not observed on the [Coronado National] Forest. White paint appears to be most commonly used in the Apache sites, but the characteristic multiple paint colors were present, including black, buff, red, orange, blue and green pigments." (Burton, 1988a: 261-2).

These comments provide regional comparisons for the rock art at Garden Canyon. Burton illustrates the Garden Canyon bird figures and masks as examples of Apache rock art. Burton and Farrell (1990: Figure 20) show a number of Garden Canyon elements as examples of the Apache pictograph style.

Marie Cottrell has provided me with photographs of rock art on the San Carlos Apache Reservation. These elements are painted in white and are recognized by the Apache as their own. The general style and the use of thick white paint to produce rather crude figures lacking in fine detail are

much like Garden Canyon. Specific parallels to Garden Canyon elements include rakes, small square masks, and human stick figures with raised arms. Other elements have no parallels at Garden Canyon but represent part of the regional variability referred to below.

Defining the overall corpus of Apache rock art remains a task for the future. In part this is due to regional variations, for example common horse-and-rider motifs in the eastern part of Apache territory, none reported in the western portion. This could also be a chronological difference, with such elements occurring only late in the historic period. A further difficulty, not so far overcome by anyone, is the fact that Apache rock art is by definition the latest rock art in the places where it occurs, and there is usually older rock art in these same places, Garden Canyon being a very good example. Furthermore, as noted by Burton, when the Apache added rock art to preexisting sites, they may well have imitated the existing rock art and copied older styles in part [see, for example, the previous discussion of bird figures at the site. It is possible that the large white eagles were stimulated by the presence of older and smaller birds in black and red]. Hence there is a mixture of elements in the sites, and it is difficult or impossible to assign each individual element to Apache or earlier users of the same site. Until we have objective dating methods for determining the age of individual elements, the separation of styles and periods must remain in the realm of plausible suggestion rather than proven fact. From his sample of 53 sites, Burton identifies eight rock art styles in southeastern Arizona (1988a: 255; see also Burton and Farrell, 1990). None of these have been wholly defined in detail by anyone, and they are discriminated largely on the basis of a few distinctive features, such as the large white birds in the Apache style, which are not found in other styles of rock art.

Small sites with a limited number of elements, such as those discussed in this report, cannot define general styles of rock art; this requires a much larger sample of sites and a regional analysis. For present purposes, I have to analyze the Garden Canyon locations in terms of themselves and the associated archaeological data. My conclusions about sequence and styles are therefore even more tentative that those of other rock art scholars in the Southwest, all of whom have expressed qualifications and made clear the limitations of their style definitions. The Garden Canyon sites, however, are important and useful in their clear discrimination of some aspects of style, and they offer an important contribution to more general studies.

So far as Garden Canyon is concerned, we can be quite sure that the large, wide-line, white-painted figures are to be attributed to the ethnohistoric Apache and that these paintings were done over a period of no more than a couple of centuries, centering on the 18th century. I now turn to examination of Garden Canyon rock art in other colors and styles. How much of this art can also be attributed to Apache, and what elements can be assigned with some confidence to other styles and periods? My judgment, based on the appearance of recent painting and the overall crude style, includes as Apache some additional elements in red or black paint, as listed in Table 1.1.

Pre-Apache Rock Art at the Garden Canyon Pictograph Site

Some early observers of the Garden Canyon site have concluded that all of its rock art derives from the Apache. Evidence contrary to this belief lies in superimposition of some newer elements over older ones, differential fading and weathering, substantial stylistic differences in the size, color, and treatment of elements, and the comparison of the elements with known styles in other sites and regions. Burton (1988a) and Towner and Altschul (this report) recognize that there is more than one period of rock art at the site.

All of this leads to the conclusion that not all of the rock art at Garden Canyon was made at the same time, leaving us with the problem of sorting out the different styles and periods. Here we are greatly aided by the excavation studies and the series of radiocarbon dates obtained by Statistical

Research and their conclusion that the Garden Canyon site had a single occupation during the 13th century (Towner and Altschul this report). There is no evidence that earlier people made use of the site, although so far as rock art goes we must remember that there is also no archaeological evidence that the Apache made use of the site despite the abundant Apache rock art. Nevertheless, the most economical and logical explanation for pre-Apache rock art is that it was associated with the known time at which the site was inhabited: the 13th century, some 400 years prior to the time when the Apache added their paintings to the site.

My count of elements attributed to Apache at Garden Canyon is 27 (51%). This includes all of the elements in white, 6 in black, and 1 in red. Eleven elements (21%) are poorly preserved or uncertain. Of these, several of the black elements consisting of lines and simple figures may be Apache in origin, so that perhaps as much as 60 percent of the total rock art at the site may be attributed to Apache. This leaves 14 elements (26%) that I attribute to earlier visitors, some or all of which may derive from the 13th century occupation of the site. Hence, in terms of total rock art, about half is Apache and half is either uncertain or earlier. Visually, however, this does not appear to be the case, because the white-painted elements are in general much larger as well as more striking because they are less faded and weathered; the red elements in particular are often not obvious and in some cases are difficult to find and record. My judgment on cultural affiliations of the various elements is not certain and other observers might disagree with respect to individual elements.

I have no great confidence in some of my individual attributions but consider the overall impression to be correct. For example, I considered the red "rake" (element 4) to be probably Apache because of its relatively fresh appearance. Rakes, however, are also present at Rappell Cliffs Rockshelter, which is almost entirely pre-Apache, and the latter site also includes numerous sets of parallel lines like those accompanying element 4. Since element 4 is the only red element at Garden Canyon which I considered to be Apache, I may be fooled by the good preservation and perhaps it is older.

Because of difficulties in classifying the earlier users of the site as Hohokam, Mogollon, or something else, in Table 1.1 I have referred to the earlier art merely as Pre-Apache without drawing a conclusion on the precise cultural affiliations. Possibilities are discussed below.

While Hohokam peoples of the Classic period no doubt traversed and used the area for hunting and gathering, and Hohokam pottery is found in the region, the characteristic Hohokam archaeology is not clearly evidenced in the excavations of the rock art sites conducted under the direction of Altschul (Towner and Altschul this report). They believe that the lower San Pedro Valley was largely abandoned by the Hohokam by the beginning of the Classic Period (A.D. 1200-1450). From the evidence of four radiocarbon dates, the Garden Canyon site is placed in the 13th century, early in the Classic period. However, the cultural affiliations at the site, based on the pre-Classic non-micaceous red-on-brown wares, "look Mogollon in some aspects and Hohokam in others" (see p. 2-55). Additional sherds resemble Chihuahuan Classic period wares suggesting a shift in influence over time. Other cultural influences are possible and there is considerable terminological confusion, which is to be expected in a region on the edges of the standard culture areas defined in the Southwest.

Aside from difficulty in identifying the affiliations of the users of the Garden Canyon Pictograph Site, it is noteworthy that identified Hohokam rock art as described by Schaafsma (the Gila Petroglyph style) is not present in the sites described here. We must conclude that one or more cultural affiliations is possible for our earlier rock art:

1. Hohokam rock art may include a painted style of small figures, in addition to the better known Gila Petroglyph style which is pecked on rock surfaces. The Gila Petroglyph style *is* present along the San Pedro River immediately to the north of our study area (Kolber, *in press*). Absence of this style from the Garden Canyon Pictograph Site may reflect a difference in function or meaning (several

groups are known to produce more than one style of rock art at the same time, with different meanings attributed to each). There may also be a functional difference in that the Gila Petroglyph style is done on hard rocks, often with patinated surfaces, while the Garden Canyon sites are soft but smooth limestone which is better suited to painted rock art.

2. The earlier rock art at Garden Canyon may be the result of activity of groups other than the known Hohokam and Mogollon cultural groups. These groups are poorly defined so far as their rock art is concerned and include such peoples as the Paquime in northern Mexico, the Dragoon culture, the Sobaipuri, and others as suggested by Towner and Altschul (this report). Since the rock art styles associated with these other cultures are not specifically defined, no clear linkage to the Garden Canyon rock art can be demonstrated at this time.

3. The Garden Canyon Pictograph Site may have been visited by a variety of peoples over a period of time, with the earlier rock art representing no specific group, but rather short term visits by disparate peoples. This is suggested by the location of the site on a route of travel, its intermittent and short-term use, and some variability in style among the elements considered to be early at the site.

Some suggested possibilities for the earlier rock art at Garden Canyon:

Mogollon

A style called Jornada, linked to the Mogollon archaeological culture, appears in some of the same sites as Apache rock art and is likely to be some centuries older than the Apache rock art in the same locations. Wellmann (1979: 81) comments that, "Faces and masks dominate the Jornada style, at least that of the Eastern Phase..." Since masks are also present in Apache Rock Art, some stylistic discriminators remain to be worked out in detail (see Sutherland, 1975, 1977; the relationship of masks to the kachinas of historic times is discussed in Schaafsma, 1981. "Kachina" should not be used with Apache rock art). Jornada masks, however are generally smaller (with some exceptions), are much better drawn, and often have facial details, including almond-shaped eyes, a high nose, and the eye pupils indicated as single dots, double dots, or a vertical line. The presumed Apache masks at Garden Canyon are larger, crudely done with thick lines and very simple facial features, usually only the eyes and mouth being indicated and those rather irregular circles. Although Polly Schaafsma informs me that size and shape are not discriminators of Jornada masks, she agrees with Burton (cited below) that Jornada Mogollon does not occur as far west as Garden Canyon.

At Garden Canyon, one small mask in black paint is the only conceivable comparison to the Jornada style (Figure 1.4: element 43), and that is based on the very small size of this mask compared to others at the site. The style is more commonly found in Texas and areas to the east. Since the archaeological ceramics include both Mogollon and Hohokam-appearing sherds, it is not impossible that rock art of both Mogollon and Hohokam origins can be present in the Garden Canyon Pictograph Site. Burton (1988a: 255) specifically excludes the Jornada style from his research area (which included Garden Canyon) and does not believe it to occur in the Coronado National Forest. I agree that the masks at Garden Canyon must all be attributed to Apache.

Burton does recognize a style known as Mogollon Red at several locations in his survey, and comments:

> "These occurrences are also slightly beyond the extent of Mogollon Red depicted in Schaafsma (1980: 184); they are, however, within the Mogollon 'territory' and no further west than sites reported by Rucks (1986). Some elements in the Dragoon Mountains...may

also be Mogollon Red, however, their occurrence among Apache elements makes positive identification problematic." (Burton 1988a: 259)

In general, the available literature tends to place the cultural affiliations of rock art on the basis of the described boundaries of archaeological and ethnographic cultures in the Southwest. This is logical but may not be securely founded. The cultural boundaries may have moved during past centuries, the boundaries as published are not as clear-cut or well-known as they appear on a map, and penetration to "foreign" areas for trade and pilgrimage can introduce rock art at some distance from the centers of settlement (See for example Michaelis, 1981). These are serious problems in the Garden Canyon area, partly because it is clearly a culturally mixed zone with its own distinctive archaeology (DiPeso, 1953; 1956, and all of the local research done by the Amerind Foundation). And, as previously noted, it is almost on the Mexican border and we do not know much about rock art in northern Mexico, nor do we understand the archaeology in detail except for the massive report of DiPeso on the Casas Grandes Site (DiPeso, Rinaldo, and Fenner, 1974). The variability of rock art in Southeastern Arizona is very great, including multiple styles and techniques (Burton and Farrell, 1990); and all recent scholars have had considerable uncertainty in assigning rock art to specific prehistoric groups. The absence of a good chronology for rock art styles adds to the difficulty; this is gradually being overcome and a pioneering study by Farrell and Burton (1992: 237) provides a direct radiocarbon date for nearby Tom Ketchum cave, based on accelerator mass spectrometry dating of charcoal used for paint. The dates place the rock art in the second to fourth centuries A.D.. Unfortunately, this sites does little for interpretation of age or affiliation of the sites reported here, because while the cave contains many simple animal and human figures, they are not very similar stylistically to the pre-Apache rock art of Garden Canyon (Farrell & Burton, 1992; Burton 1988b), which in any event should be considerably more recent than Tom Ketchum Cave based on the midden dates obtained by Towner and Altschul (this volume).

Hohokam

Although the Gila Petroglyph style is the best-known rock art attributed to the Hohokam, as mentioned previously we must consider the possibility that other kinds of rock art were made by Hohokam peoples as well. The presence at Garden Canyon of small red figures only a few centimeters in height, some of them anthropomorphs and others unidentifiable zoomorphs that could be lizards or frogs, are suggestive of Hohokam ceramic decoration, which is marked by repetitions of small red figures, including both human and animal representations.

Burton agrees with this evaluation of the concentration on red anthropomorphic figures and postulates the occurrence of a Hohokam painted style:

> ...for three reasons. First, the high percentage of anthropomorphs suggests an emphasis on life forms similar to that in Hohokam ceramics and petroglyphs. Second, some of the anthropomorphs have characteristics that are common in other Hohokam material culture...A figure at Rappell Cliffs is depicted with a burden basket and staff, a common theme in Hohokam ceramics. Finally, although three of the sites have no associated cultural diagnostic artifacts, Ramanote Cave contained much Hohokam material dating from the Pioneer through the Classic Periods. Although extending the cultural affiliation of associated cultural material to rock art is somewhat problematic, the artifacts do not controvert a Hohokam ascription (Burton, 1988a: 271).

The Rappell Cliffs figure with "burden basket and staff", (here element 21, Figures 1.5 and 1.14) could equally be interpreted as a hunchback. What he is holding is not a staff since it does not touch the ground; it could be a snake or even some sort of musical instrument since it extends to the figure's face.

Since Garden Canyon contains some of the same small red figures seen at Rappell Cliffs, and the limited excavation evidence puts Hohokam residents at the site in the 13th century, it is logical to agree with Burton that a Hohokam Painted style is present. As with possible Mogollon elements, the co-occurrence of Apache rock art makes it difficult to sort out the older paintings, but in the case of the Garden Canyon Pictograph Site, for the most part the red elements are differentiated from the white-painted Apache material in being smaller and generally much more faded and weathered, some so far gone they cannot be recognized or recorded in detail. Burton (1988a: 244) also notes "The red elements are faint and except for one red bird, include motifs that are notably different from the rest of the site."

Our few superimpositions put the Apache elements on top of red figures, confirming the latter to be older. Other styles identified by Burton in the Coronado National Forest are not recognizable at Garden Canyon.

Polly Schaafsma (personal communication) is bothered by the fact that none of the painted elements are specifically like life forms on Hohokam ceramics (see discussion of the "burden basket and staff" above, which is only superficially similar to a common Hohokam ceramic motif). Since typologically similar rock art elements do occur in the Gila Petroglyph style, clearly recognized as Hohokam in origin, this is a serious concern which raises doubts about the attribution of the red-painted elements to Hohokam artists. Perhaps the rock art was done by a separate set of artists, in different ways and for different purposes, than the painters who decorated ceramics. However, additional evidence is needed to confirm a Hohokam attribution for the earlier rock art at Garden Canyon.

Other Possibilities

The two polychrome figures (elements 3 and 19) appear to be pre-Apache. The small human figure in black, white, and red was added to by Apache who put a white wash over at least part of the figure. Schaafsma (1980, Figure 283) did record some Apache anthropomorphs with sunburst headgear at Malpais Hills further north on the San Pedro River, and simple figures of this kind, both petroglyphs and painted, are reported in the area by Kolber (1992, Figure 6). I believe that my element 19 is pre-Apache, however. It has a later overlay of white paint which is no doubt Apache and would suggest addition to an older figure, and the white paint of the polychrome figure is yellower than the white paint of most Apache elements (possibly older, but in any case a different paint). In style, the figure is quite different from the Apache rock art at the site, being very small and delicate compared to the relatively wide-line and more simple Apache art. It is possible that the figures with similar headdresses recorded by Schaafsma are imitative of older rock art known to the Apache. The large white serpentine figure at the site (element 26) overlies a bit of the polychrome figure and was clearly a later addition which incorporated the polychrome figure into what may have been a general "scene" tying together several elements of the site.

The other polychrome figure (element 3) is classified as pre-Apache because of its very faint and weathered appearance; this fairly elaborate "sun symbol" has apparently not been recorded previously. It is not illustrated in reports on the site. It also has a later addition in white, a small off-center circle in the middle of the figure.

Figures with rayed head-dresses, and "sun symbols" occur in many rock art styles and I cannot assign these figures to any specific group. They may have been made by the same people responsible for the red-painted figures, although the latter are so simple in style, concentrating on stick figures without embellishments, that the polychrome examples suggest a quite different artistic tradition.

Because of the spatial separation of elements done in white, red, or black, it is tempting to suggest that such color choices represent three different groups of people or three different time periods. Such a sequence would relate the red figures to Hohokam peoples, the black possibly to Sobaipuri, and the white to Apache. This scenario, attractive as it is, is an oversimplification, and while there may be a germ of truth in it, it cannot be applied generally. It makes no allowance for the occasional polychrome figure which combines two or all three of these colors. Association of white paint with Apache rock art is generally valid, but Apache rock art is also known to include some black elements, particularly those done with a burnt stick (such a simple thing to do that charcoal lines are very likely present in most rock art painted styles). Burton (1988a: 262) believes Apache rock art to include six colors other than white. This may turn out to be true, or it may be the result of overly broad assignment of all the rock art to "Apache" in sites where Apache rock art is recognized to occur. In any event, it is too simple to assume that any cultural group confined its painted rock art to a single color, even though a cultural preference for one or another kind of paint may well have been present.

THE RAPPELL CLIFFS ROCKSHELTER

Although the Rappell Cliffs Rockshelter is virtually adjacent to the Garden Canyon Pictograph Site, only a couple of minutes walk distant, Rappell Cliffs appears to have had very little visitation or use by the Apache. There is only a single white painted element at Rappell Cliffs, and none of the more obvious Apache motifs such as masks are present. Only three of the 32 elements at Rappell Cliffs are classified as Apache in origin (Figure 1.6, Table 1.2, elements 28, 29, and 32, the white element). The rock art at Rappell Cliffs is widely dispersed along the shelter wall, with much space between individual elements, and it is much more faint and weathered, too obscure for recording in some cases. A few concentrations of elements are found in small areas of the wall which are smooth and level. The site represents the older period of rock art production, and by analogy we can assume that the rock art here is primarily the style suggested by Burton (1988a: 269) as a Hohokam painted style.

Thirty two elements at Rappell Cliffs are summarized in Table 1.2. Three of these were found concealed by graffiti at the time graffiti removal was undertaken by Antoinette Padgett; I am indebted to her and to Marie Cottrell for photographs and drawings of these elements. Burton (1988a: 249) tabulates 22 elements, but we are in basic agreement as to the nature of the rock art present. As with the Garden Canyon Pictograph Site, my frequencies and percentages (Table 1.3) again differ from Burton's because of the additional 10 elements in my records. One significant difference between our two records is in Burton's statement (1988a: 248) that there is only one black element at the site. There are at least 6 elements at the site in black or incorporating black paint; most are very faint and two are outside the chain link fence protecting the site.

Graffiti at this site are so numerous as to cross or cover most of the aboriginal painting at the site. They range from a multitude of names and initials to a plaintive message: "Send More Beer." A few graffiti from the 1920s were noted by R. S. Brown but the remainder do not appear to be old enough to have historical interest. A project of graffiti removal was undertaken by Antoinette Padgett (this volume); this improved our recording of many elements and led to the discovery of three new elements which were completely obscured under graffiti. The site is now protected by a chain link fence, and cleaning up many of the graffiti has returned it to more of an appearance of an aboriginal site. Compared to Garden Canyon however, this site is much less impressive artistically.

It is likely that a considerable amount of the recent marks at the site were made by people who did not even see the aboriginal rock art or know that it was present. Use of the cliffs overhanging the rock art site for rappel training has caused large numbers of military trainees to descend to the floor of the shelter. The present training procedure puts the descent at both ends of the rock art site, just

outside the chain link fence. People coming down the cliff on ropes were part of the scenery during our recording effort.

Comments on Individual Elements

The small red human figures at Rappell Cliffs are similar to those at the Garden Canyon Pictograph Site. However, Rappell Cliffs includes three red human figures that appear to be holding something in one hand (Figure 1.5, elements 7, 16, 21). Two of these figures (7, 21) are holding a zig-zag object (a snake?). Element 21 is also depicted with a projection on the back, either a pack or a depiction of a hunch-back (a common element in prehistoric art of the Southwest).

Element 22 is a particularly interesting anthropomorph because of its association with the single incised element at the site (No. 22a). This figure has 7 very fine vertical scratches the length of the body. There are also fine scratches running the length of the arms and legs.

The painted figure partially overlaps a simple incised geometric design made with a sharp object, presumably a stone flake (Figure 1.15). Careful examination under a 30 power lens indicates that the geometric design is older than the painted figure. It appears that somebody painted the small red figure on top of the incised element, and then imitated its technique by placing fine scratches within the painted figure. The latter are too faint and too carefully placed to be the result of vandalism.

Incised rock art is very difficult to see, but it is increasingly being recognized over wide areas of the West. Our single example does not support much comparison or interpretation, but for what it is worth it argues for an incised style which is older than the red-painted elements which dominate the rock art. The time separation may not be very great, and it is possible that the incised lines, both beneath and above element 22, were associated with some magical or ritual act involving this particular painted image.

Rappell Cliffs has four animal figures (elements 10, 11, 28, and 29). All are black, and very faint. They lack sufficient detail to identify the animal portrayed; the upturned tail suggests deer or antelope. The difference in color, weathering, and subject matter might argue that the animals were not painted by the same people or at the same time as the dominant rock art at the site.

The only other repeated element at Rappell Cliffs consists of linear figures, sometimes in sets (elements 1, 4, 5, 8, 9). Element 4 is a rake. Elements 5 and 8 have alternating red and black lines. Elements 3, 5, and 9 include zigzag lines; a zigzag line also forms parts of elements 7 and 21, being held by human figures. The zigzag element held by element 7 is black; all others are red.

The rest of the elements at Rappell Cliffs comprise a cluster of dots (Burton, 1988a, counted more than 91 dots; our photograph shows only 24 as shown in Figure 1.6 element 27; however, more could be seen by eye and I suggest in Table 1.2 that this element may have been a circle filled with dots), a solid circle (possibly a red and black sun symbol originally), a cross, and a few nondescript geometric elements.

Discussion

The Rappell Cliffs Rockshelter shares little with the adjacent Garden Canyon Pictograph Site. Table 1.3 provides some comparisons. It can be seen that the two sites share a significant number of red elements but their pattern is quite different in other colors. Rappell Cliffs has 3 elements in red

and black; Garden Canyon also has two such elements but in the latter case it may be a result of incorporating black rock stain into the picture rather than painting of a black color. Garden Canyon has two polychrome paintings; none were seen at Rappell Cliffs.

So far as individual drawings are concerned, again there is not much similarity. The two sites share wavy lines (snakes?), rakes, groups of dots, zoomorphs, and a significant number of small anthropomorphs but there is no overlap at all in such elements as eagles, masks, hands and feet, circles and spirals. The style similarities are even less than the numbers indicate if elements are compared individually.

There can be little doubt that the rock art at Rappell Cliffs was done by a different set of artists at a different time than the rock art at Garden Canyon. It is tempting to suggest that the overlaps represent the non-Apache users of the sites in the 13th century. In its overall art however, Rappell Cliffs is so much different from Garden Canyon that it may well include art older than anything at Garden Canyon. In particular, the emphasis at Rappell Cliffs on simple geometric elements: lines, dots, and combinations of these, suggests an earlier group of people. Certainly the general faded and weathered appearance of the majority of the art at Rappell Cliffs argues for greater age than is present at Garden Canyon-however, the two sites face in opposite directions, which could have a big effect on weathering. And as noted, Rappell Cliffs has experienced much heavier human use in recent times, and as a result a considerable amount of inadvertent vandalism.

Burton (1988a: 248) sees similarity of individual motifs at Rappell Cliffs to elements seen in Hohokam, Mogollon, and Papago art. However, he postulates that Rappell Cliffs represents a Hohokam painted style, also present in the earlier rock art of Garden Canyon (1988a: 271). I agree that this is the most likely interpretation. However, the rock art at Rappell Cliffs was probably done over a considerable period of time, based on the variable preservation and weathering of individual elements, and it may span several hundred years of the Hohokam sequence. With a more extensive data base of Hohokam painted rock art, it may be possible in the future to develop time periods within the style and provide more precise affiliations for the various elements present. There is no archaeological evidence at Rappell Cliffs which can be linked to the rock art. However, among Burton's other recorded sites he notes one (Ramanote Cave) which contained Hohokam material dating from the Pioneer through the Classic periods, showing that Hohokam use of cave sites could be of long duration.

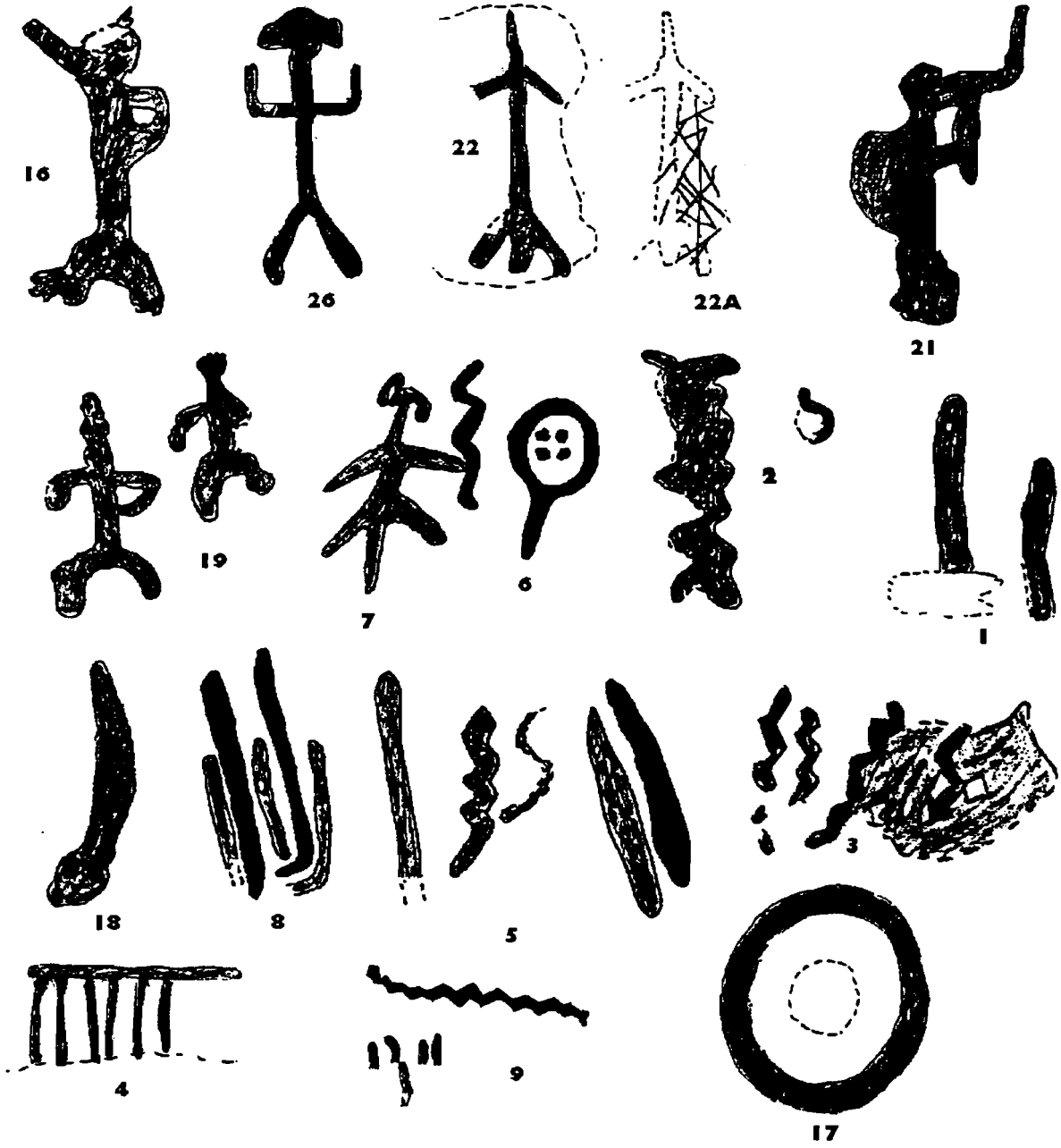

Figure 1.5. Elements in red or black paint; incised element (22A). All are red except 6, "snake" with 7, alternate lines of 8, right-hand line of 5. Rappell Cliffs Rockshelter, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.2]. C. Meighan, 1992.

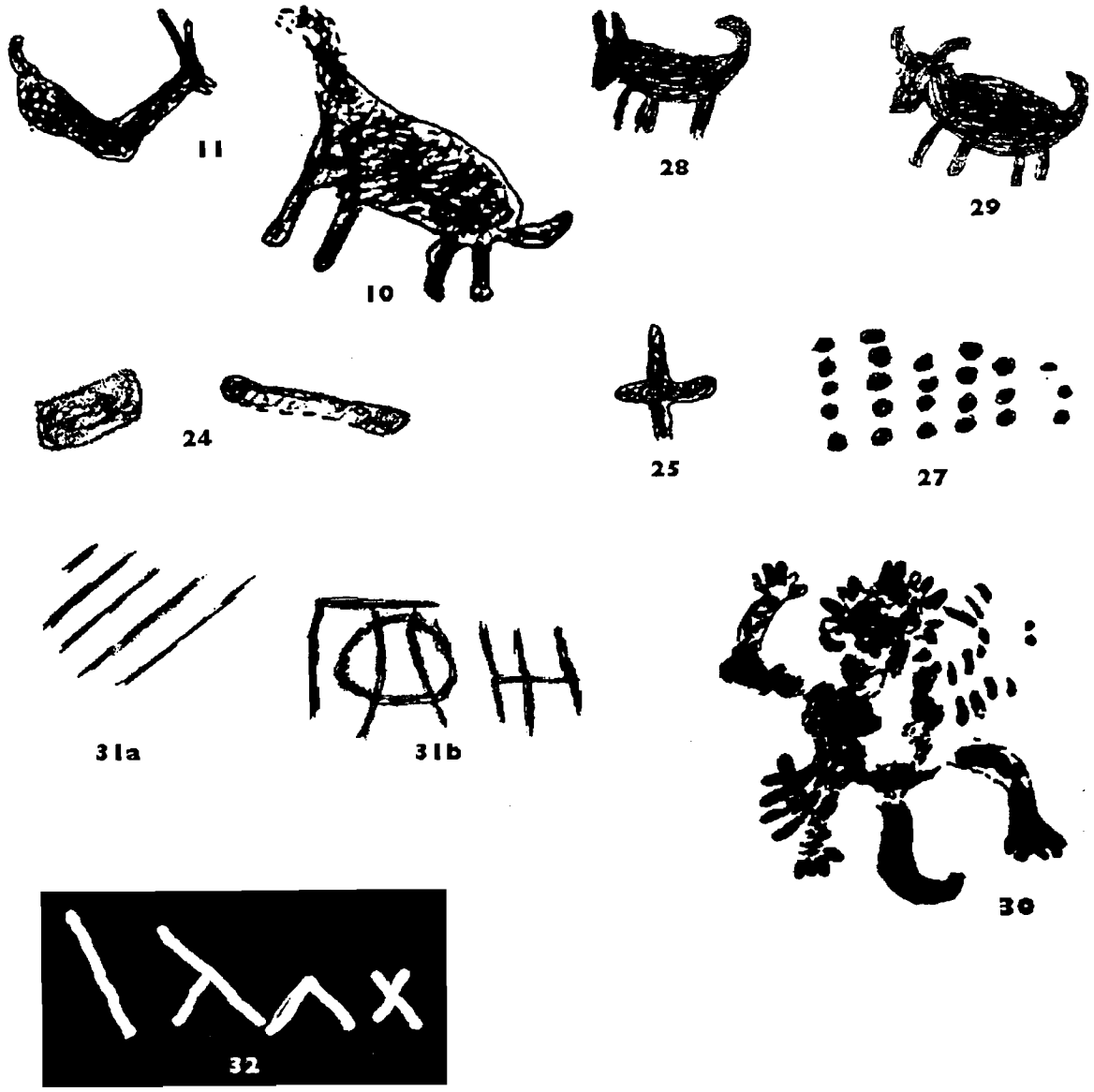

Figure 1.6. Elements in red, black, and white paint: animal figures (top row) and element 31a are in black, others in red. Element 32 is the only white-painted element in the site. Rappell Cliffs Rockshelter, Fort Huachuca, Arizona. [Not to scale; for size of numbered elements, see Table 1.2]. C. Meighan, 1992.

Table 1.2. Rock art Elements at Rappell Cliffs Site

No.	Element	Color	Size cm.	Meters	Affiliation	Remarks	Figure
1	Parallel Lines	Red	10 x 5	2.4	Pre-Apache		5
2	Unidentifiable	Red	22 x 17	4.0	Pre-Apache	Faint, not recognizable	
3	Zigzag Lines	Red	16 x 4	4.1	Pre-Apache		5
4	"Rake, lines"	Red	18 x 8	4.6	Pre-Apache		5
5	Lines	Red, Black	18 x 21	4.8	Pre-Apache		5
6	Symbol	Black	15 x 13	4.9	Pre-Apache		5
7	Snake & Human	Red, Black	27 x 14	5.1	Pre-Apache	"Snake" is black	5
8	Lines (5)	Red, Black	24 x 12	5.3	Pre-Apache	Alternating colors	5
9	Snake	Red	6 x 7	6.1	Pre-Apache		5
10	Quadruped	Black	12 x 17	7.0	Pre-Apache		6
11	Quadruped	Black	15 x 15	7.5	Pre-Apache		6
12	Vertical Line	Red	19 x 4	8.5	Pre-Apache		
13	Snake and Lines	Red	18 x 19	9.3	Pre-Apache		
14	Lines (11 Vertical)	Red	14 x 53	11.6	Pre-Apache		
15	Lines (3 Vertical)	Red	28 x 27	11.6	Pre-Apache		
16	Human Figure	Red	12 x 5	18.2	Pre-Apache		5
17	Bullseye	Red	9 x 9	18.3	Pre-Apache		5
18	Crecent	Red	8 x 17	18.4	Pre-Apache		
19	Paired Humans	Red	25 x 23	18.7	?	Very clear, thick red paint	5,13
20	Unidentifiable	Red	8 x 17	19.05	Pre-Apache		
21	Human Figure	Red	19 x 12	19.7	Pre-Apache	Pack on back, hunchback?	
22	Anthropomorph	Red	15 x 8	20.0	Pre-Apache		15,5
22A	Cross-hatch	Incised	10.8	19.9	Pre-Apache		15,5
23	Unidentifiable	Red	44 x 18	20.1	Pre-Apache	Orange red painted area	
24	Dot and Line	Red	2 x 18	20.3	Pre-Apache		6
25	Cross	Red	8 x 9	20.5	Pre-Apache		6
26	Human Figure	Red	33 x 14	20.6	Pre-Apache	Clear image, dark red color	5,16
27	Dots	Red	28 x 27	21.6	Pre-Apache	May have been circle filled with dots; very faint	
28	Quadruped*	Black	10 x 17	-1.3	Apache	Outside fence, very faint	6
29	Quadruped*	Black	19 x 15	-1.5	Apache	Outside fence, very faint	6
30	Horned toad?	Black	10 x 12	10.7	Pre-Apache	Discovered under graffiti	6
31	Symbol & lines**	Red, Black	70 x 87	11.1	Pre-Apache	Discovered under graffiti	6
32	Geometric figure	White		10.8	Apache(?)	Very faint, originally probably a line of X's	6

* At the time these elements were recorded, they appeared to the eye to represent pack animals. If so, they must be quite recent; could be Apache.
The illustrated figures do not look much like pack animals and may represent difficulties in drawing very faint elements.
These elements remain problematical and require further study.

** 31a is gray (faded black?). 31b is red. Elements 30-32 are based on drawings and photos from Marie Cottrell and Antoinette Padgett.
These elements are faint, very difficult to photograph, and different observers draw them slightly differently.

Table 1.3. Comparison of Garden Canyon with Rappell Cliffs

Item:	Garden Canyon	Rappell Cliffs
Colors used:		
White	21 (40%)	1 (3%)
Red	14 (26%)	22 (69%)
Black	15 (28%)	6 (19%)
Red and black	2 (3%)	3 (9%)
Polychrome	2 (3%)	0 (0%)
Motifs:		
Eagles	5 (9%)	0 (0%)
Masks	6 (11%)	0 (0%)
Human/anthropomorph	10 (19%)	5 (16%)
Multi-arm figures	4 (8%)	0 (0%)
Rakes	2 (3%)	1 (3%)
Hands & feet	3 (6%)	0 (0%)
Animals (exc. birds)	5 (9%)	5 (16%)
Circles, spirals, "suns"	5 (9%)	1 (3%)
Wavy lines ("snake")	1 (2%)	4 (13%)
Other	12 (23%)	16 (48%)

CONCLUSIONS: USES AND MEANINGS

Interpreting the purpose of rock art is difficult. In the absence of ethnographic evidence from the makers of the art, or their descendants who know something about it, any interpretations must remain in the realm of plausible suggestions rather than proven fact. A dozen possible uses of rock art have been suggested, based on ethnohistoric evidence and the statements of informants in various parts of the world (Meighan, 1981; Sanger and Meighan, 1991: 165-170). This is very likely not a complete list of possibilities. More than one of the known uses may occur in the same site, particularly if the site was used over a long period of time. Nevertheless, the content of the art shows us what was in the minds of the artist, and in many cases gives us strong clues providing convincing (if not provable) explanations of meaning. What is present in the art (and what is absent) needs to be examined in detail-this is why it is important to have a total documentation of what is present in the site if we are to attempt interpretations. For example, Towner and Altschul (this report) point out the absence of horses and riders in the Garden Canyon site, and suggest therefore that the site is not "documentary," i.e. a record of historic events, but is more likely to have religious significance. They add that the "kachina"/sun shaman figure, serpent, and square masks are all common elements in Apache religion. To be added to this list are the large eagle figures and the hourglass motif, both of which have symbolic significance. There are also black thunderbird figures at Circle I Hills, near Wilcox, Arizona (Schaafsma, 1980, Figure 282) comparable to similar figures in white paint at Garden Canyon. The former site also includes a snake done in black and white paint, to be compared with the large white sinuous "snake" at Garden Canyon.

The hourglass is of particular interest. As pointed out by Schaafsma (1980) this element may be symbolic of "Child of the Water," a major mythological figure among the Chiricahua and Mescalero Apache. Schaafsma notes that the hourglass, often sketchily drawn in charcoal, occurs from Texas to the San Pedro River Valley in Arizona. It is, however, a fairly simple figure and has been recorded by Kolber (personal communication) in sites that are pre-Apache.

There is no direct ethnographic documentation of the uses of Apache rock art. Towner and Altschul (this report) cite an ethnographic account recorded by Opler (1965: 312) mentioning a cave where men go to pray, that has the sun, moon, stars, and mountain spirits depicted on the walls. It is conceivable that the rock art at Garden Canyon does include symbolic representations of the "sun, moon, stars, and mountain spirits," particularly if the astronomical bodies are symbolically represented by circles and spirals and the mountain spirits are represented by masks. The association of the mountain spirits with water may be symbolized by the outlier motif (no. 52) crossed by ridges of limestone deposited by rain water. Also to be considered symbolic is the association between large white-painted eagles and small red human figures which were left by earlier users of the site. This association certainly had a meaning for the Apache painters, but we cannot know in detail what that meaning was.

From this overall evidence, thin as it is, it seems fair to conclude that the Garden Canyon Pictograph Site was used as a place of religious import to the Apache, marked by symbols having mythological or religious meaning. It is worth noting that there is no evidence that the Garden Canyon Pictograph Site was used by the Apache for residential or domestic purposes, supporting the idea that it had other meanings for Apache visitors. Perhaps the presence of earlier rock art at this location suggested the site as a special place to the Apache. Exactly what the Apache did here will not be known in detail.

All of this discussion applies to the Apache rock art. Pre-Apache rock art may well have had a quite different set of meanings to its makers. Again, we can make a preliminary estimate of meaning based on the content of the rock art. It can also be compared to other artistic productions, particularly in the decoration on pottery and other archaeological items from the 13th century.

Unfortunately, the pre-Apache rock art at Garden Canyon is for the most part exceedingly simple and there is not enough pictorial content to give much of an idea of meaning. The elements which presumably date from the 13th century use of the shelter consist primarily of small anthropomorphs, occurring singly or in pairs, and while such figures may well have had a symbolic meaning to the artists, it is impossible to specify what that meaning may have been. There are also a few animal figures, but most of the rock art at Rappell Cliffs consists of lines and geometric figures.

The "hunchback" or figure with a burden basket at the Rappell Cliffs Rockshelter (Figure 1.5, element 21) is recognized as a common element in Hohokam ceramic decoration and was so noted by Burton (1988a: 271). If this figure is Hohokam, it no doubt represents a personage of Hohokam myth or legend. As previously noted, however, this painting is not typologically the same as those appearing on Hohokam pottery. Both this figure and one other are shown holding a zigzag element which may be a snake; it is not a staff because it does not reach the ground. The horned toad, so identified because of the spiny head and limbs (Figure 1.6, element 30), is also frequently represented in Hohokam art, but again the rock art element is poorly preserved and not done in the same way as similar representations on ceramics. Relating the Rappell Cliffs rock art to Hohokam symbolism is the most logical interpretation at present, but it is not certain. And, as mentioned, the pictorial content of the rock art at this site is so limited that it is not possible to interpret its uses or meaning. Unlike the Apache rock art, for which there are strong reasons for believing it to be in the realm of religion and ritual, the earlier rock art could be casual and secular and is not of any obvious esoteric meaning. The only exception is the small painted figure associated with incised lines, for which a ritualistic or witchcraft performance is possible.

Others of the small anthropomorphs may also have carried symbolic referents, but they are lacking in any attributes which we can recognize. The general absence of astronomical symbols or some other set of symbolic elements in this style argues against a codified religious use of the art.

The fact that the sites sustained some domestic occupation during this period of rock art production may or may not have anything to do with ceremonial or ritual meanings of the rock art. This use of the shelters is in contrast with that of the Apache however, who left rock art but apparently never lived in the Garden Canyon Pictograph Site. These differences in the use of the area may reflect differences in the meaning of the rock art by the two groups. This raises the possibility of secular versus sacred rock art, a difficult and arguable set of issues, but it cannot be assumed that all rock art is by definition religious in meaning. Codified religious use has to be demonstrated and not assumed, and in the absence of any evidence the interpretation has to be left uncertain.

The use of symbolism in rock art puts us in an impossible position if we cannot interpret any of the symbols used. When the rock art elements have no attributes to suggest any special meaning, it is dubious that there was a codified religious use. This conclusion could, of course, be wrong, but if religious use is assumed we won't bother to look for evidence one way or another.

How many artists were involved in producing the rock art observed at the two sites? With respect to the white-painted rock art at Garden Canyon, consistency of style and appearance suggests only one (or a small party), possibly in a single visit. The other elements present may well have been added by other artists at other times. For the earlier pre-Apache rock art, the limited stylistic attributes do not give any basis for identification of individual artists. Furthermore, as the archaeology shows, this rock art is probably associated with occupation of the sites, and rock art in a residential site may well be produced by many people over a period of time.

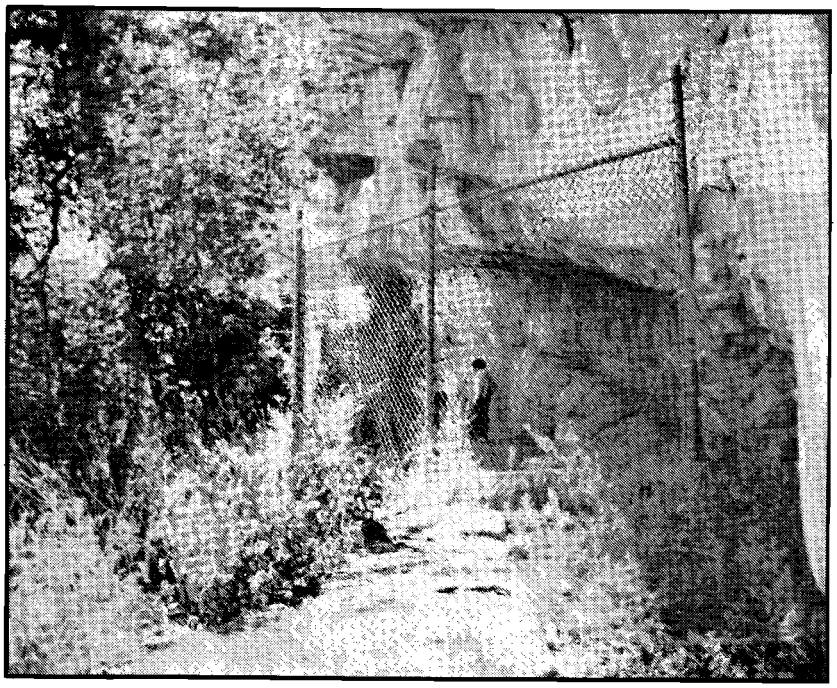

Figure 1.7. Garden Canyon Pictograph Site. Marie Cottrell at far end near entrance gate. Rock art is on back wall above her head and on the overhang above that. Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.8. Garden Canyon Pictograph Site. Elements 8-11. Element 11 is on left edge below arrow. Note: size of individual elements is given in Tables 1.1 and 1.2.

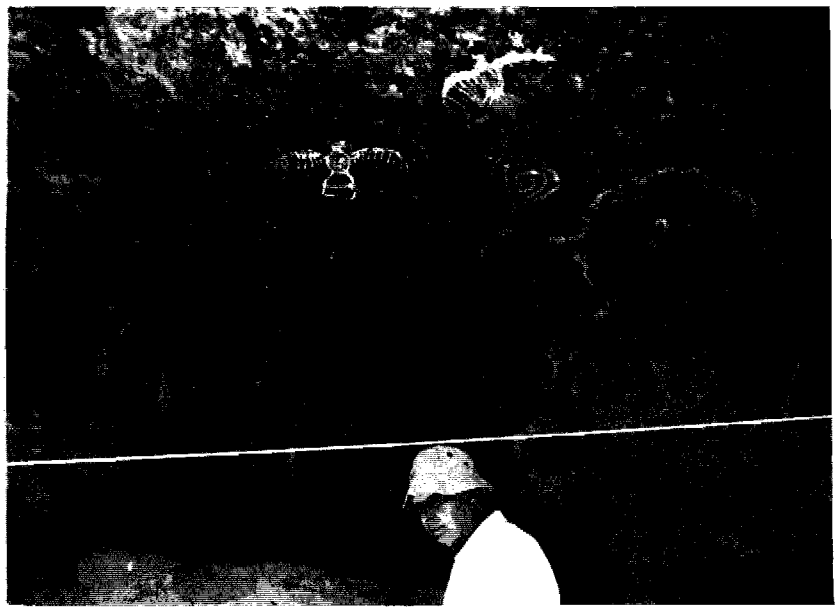

Figure 1.9. Garden Canyon Pictograph Site. Elements 19-31; 44,45. Element 45 is to left of author's head. Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.10. Garden Canyon Pictograph Site. Detail of adjacent Fig 9. Element 19 (polychrome man), end of element 26 (white "snake"). Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.11. Garden Canyon Pictograph Site. Element 51. White areas are water-deposited mineral deposit. Painting was done after the deposit was formed. Identified as crown dancer by Apache informant. Note: size of individual elements is given in Tables 1.1 and 1.2.

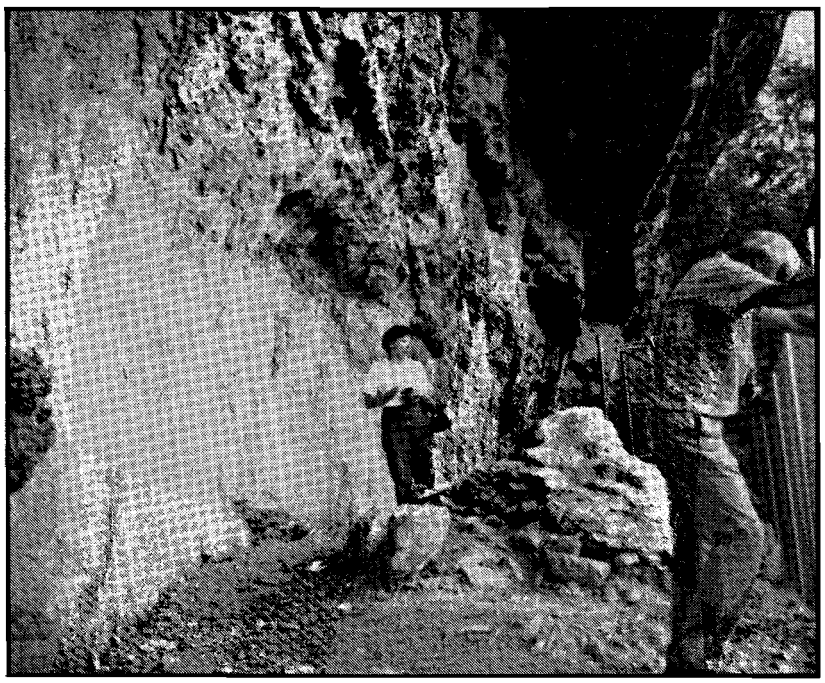

Figure 1.12. Rappell Cliffs Rockshelter. Author in foreground; Marie Cottrell in center of site. Rock art is on back wall and small areas of smooth overhang. Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.13. Rappell Cliffs Rockshelter. Element 19. Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.14. Rappell Cliffs Rockshelter. Element 21. Hunchback holding object (snake?). Note: size of individual elements is given in Tables 1.1 and 1.2.

Figure 1.15. Rappell Cliffs Rockshelter. Element 22. An incised geometric figure is associated, and incised lines are on the limbs of the painted figure.

Figure 1.16. Rappell Cliffs Rockshelter. Element 26. Note: size of individual elements is given in Tables 1.1 and 1.2.

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APPENDIX: A

Somewhat of a digression, but important, is a discussion of the terminology applied to individual rock art figures. There is a short story by Mark Twain in which he talks about how things got named in the beginning. According to him, they named the animal "pig" because it looked like a pig. All of us engaged in recording rock art have a tendency to name rock art images because they "look like" something with which we are familiar. Two terms quoted in this report should not be used with reference to Apache rock art: "torah figure" and "kachina". With respect to the former, whatever the Apache were drawing it was not a torah (recognized by Jeffrey Burton who now wants the term deleted from his report). The term "kachina" is properly reserved for the Pueblo manifestations (pointed out to me by all the reviewers of this article). Not every mask is a kachina. Terms that imply meaning get in the way of objective interpretation.

Unfortunately, the recorder in the field, myself included, finds it practical to use short-hand terms that immediately bring a picture to the mind of the reader. The element "rake," for example, is easily understood by everyone, even though we can be quite sure that these elements are not pictures of rakes. To be entirely objective is to be overly pedantic; we could call these elements "horizontal lines with vertical lines attached beneath," but systematic use of such verbiage produces a prolix and complicated text.

No one will be confused into fuzzy interpretations by an element called "rake," because we know that it is just a geometric element in the form of a rake, and not a representation of a rake. But we may well build in unintended interpretations in much of the other terminology we use-what is an anthropomorph to my eye may be a "lizard" (and hence zoomorph) to another recorder. Identifying all wavy lines as "snakes" is another example. Even the universally used "sun symbol" may in fact be an incorrect interpretation of a circular element.

Terminology also becomes important in any enumeration or statistical treatment since it can make a very large difference in the way frequencies are calculated, particularly in small sites like those reported here, where each element is a significant percentage of the total art present.

Everyone who deals with bodies of descriptive data becomes aware of these problems. Scientific meetings frequently have heated presentations telling us that we have to standardize our terminology and all make use of the same words for the same things. It isn't going to happen in rock art studies however, if for no other reason than the different observational qualities and abilities of individuals, not to mention the large amount of rock art which is faded, weathered, obscured, or partially missing so that recognition of the element is very difficult. People will continue to define rock art elements in terms of what they look like to the observer. Those making interpretive and comparative studies (particularly studies involving computer analyses) will have to live with the necessity of developing their own correlations and translations of diverse terminologies.

There are a couple of ways in which confusion can be minimized. First, avoid terms which suggest interpretations not likely to be valid for the culture being studied. Second, separate the description from the interpretation. In the interpretation, it is possible to examine the meaning of elements apart from their names (all wavy lines are not "snakes"; all faces are not "kachinas" nor even necessarily "masks," etc.). In other words we are obliged to examine our own terminology and not assume that the labels we have used *are* the interpretation. It goes without saying that all of us will do an imperfect job of this, but the effort needs to be made.

APPENDIX B

GRAFFITI REMOVAL AT RAPPELL CLIFFS, FORT HUACHUCA, ARIZONA, SITE AZ EE:11:30

Antoinette Padgette

INTRODUCTION

In October 1991, a project commenced at Fort Huachuca Military Reservation to assess and remove graffiti from a shelter known as Rappell Cliffs Rockshelter, (AZ EE:11:30, ASM). This shelter contains pre-Apache rock paintings (Meighan, personal communication 1991) and historic initials from Buffalo soldiers dating to 1925-26, executed in army issue paint (Cottrell, personal communication 1991). The majority of the graffiti at the site consisted of charcoal names and dates; however, there were also chalked, penciled and scratched graffiti, as well as one number (9) stenciled in black paint. In addition, large yellow spray painted graffiti can be seen above the site in an area used by rappellers in the cliff face above the shelter.

The aim of this part of the project was specifically to remove or lessen the visual impact of the graffiti within the shelter. While graffiti removal is important, it is necessary to examine the motives behind vandalism to prevent reoccurrence. Site management was therefore examined at the Rappell Cliffs Rockshelter and the nearby Garden Canyon Pictograph Site, (AZ EE:11:15, ASM). Recommendations are made for keeping the sites free from future graffiti.

RECORDING AND TESTING

The Rappell Cliffs Rockshelter is located in a north facing limestone rock shelter composed of several horizontal joint planes. The rock art is found mainly on vertical surfaces between the joint planes in close proximity to the base of the shelter. Some paintings near the roof of the shelter were discovered during the graffiti removal. Rock surfaces in the shelter are covered with a deposit of dust which is brown in color or with a whitish deposit (possibly calcium carbonate). Some of these deposits appear to have bonded with the rock surface. The limestone surface varies from being quite smooth to very rough and bumpy. Graffiti were removed more readily from the smooth surface.

Prior to and during the project, 31 painted elements and one incised element were recorded by Dr. Clement Meighan. As many of the elements are faint in color, it was extremely helpful to have Dr. Meighan's assistance in locating all the rock art elements in close proximity to the graffiti before removal commenced.

Prior to testing form removal, all graffiti were photographed using 35 mm color print film. Testing began on graffiti located well away from rock art. Mechanical methods were tested first, such as dry brushing with bristle and fiberglass brushes (which require the use of protective hand and face gear) and use of kneaded tacky substances which can remove loosely bound graffiti. Solvent selection was based on materials available at Fort Huachuca which could be easily brought out to the site. Table B.1 provides information on techniques and solvents tested.

Table B.1. Results of Testing for Removal of Charcoal Graffiti.

Graffiti Type	Technique	Solvent/Material	Success
Charcoal	Dry brushing	Bristle brush	No
Charcoal	Dry brushing	Fiberglass brush	Yes, but leaves residue (can be removed with water)
Charcoal	Dry brushing	Brass brush	No, leaves residue
Charcoal	Wet brushing	Bristle brush/Orvus	Yes, partially
Charcoal	Kneaded substance	"Hold-it"	No
Charcoal	Rolling poultice	Water	No
Charcoal	Rolling poultice	Acetone	Minimal
Charcoal	Rolling poultice	Methanol	No
Charcoal	Rolling poultice	Tuoluene	No
Charcoal	Rolling poultice	Methylene chloride paint stripper	Minimal

GRAFFITI REMOVAL TECHNIQUES

A non-ionic detergent (Orvus) in deionized water was found to have the most success at removing the charcoal graffiti. The solution was applied using various sized "Pictor Eterna" bristle brushes which were cut to the desired stiffness. Brushes were washed frequently in deionized water. In addition, fiberglass brushes were used on difficult graffiti.

The stenciled number nine was removed using a rolling poultice with methylene chloride paint stripper. A rolling poultice is made by wrapping cotton wool around a stick to resemble a swab and adding a solvent, in this case paint stripper. The swab is rotated back and forth so that both the rock surface and the material being removed could be viewed simultaneously (Thorne 1991). The swab and poultice need to be changed frequently, therefore this method is only appropriate for small areas. After treatment, the area was rinsed with water which was collected by sponges.

Graffiti which were not located in close proximity to the rock art were removed first. Graffiti occurring closer to the motifs were removed last. Some graffiti which were found high up on the rock face required an extension ladder for removal. During the removal of these graffiti, additional aboriginal motifs were discovered which had not been previously recorded. This information was relayed to Dr. Meighan for his report.

All areas requiring graffiti removal were rinsed with water which was collected by sponges after application of the non-ionic detergent. These areas were photographed both during graffiti removal and afterwards when the rock surface was dry. Although not all graffiti were completely removed, the visual impact was significantly lessened.

DISCUSSION AND RECOMMENDATIONS

Garden Canyon Pictograph Site (AZ EE:11:15), has been fenced for approximately 20 years. The Rappell Cliffs Rockshelter (AZ EE:11:30), was fenced in April of 1991. New graffiti began to appear outside the fence in May of the same year (Marie Cottrell personal communication 1991). During this project, some aboriginal elements were discovered outside of the fenced area, just below some recent

charcoal graffiti. The sites are not advertised to the public, but there are bridges for access which can be seen from the road.

As fences can present a challenge to a would-be vandal, it is recommended that these sites be monitored carefully. Visitor books should be installed at both sites. In many instances, visitor books have been found to deter vandals who will write comments in a book rather than on the rock face (Gale and Jacobs 1987; Lambert 1989). Visitor books have an "official presence" at sites and give visitors a feeling that the site is regularly monitored and cared for. Because these sites are on a military reservation, an official presence should not be difficult to achieve. The visitor book should contain spaces for name, address, number in party, date and comments.

Interpretive signage is recommended at both sites. Alternatively, interpretive material can be placed in the front of a visitor book. This material should state the cultural significance of the site and information about previous use, including the presence of the Buffalo soldiers, so that the visitor will have a better understanding of what is seen in the shelter, why the site is fenced and the reasons for its protection. If at some point in the future it is felt that the fences can be removed, the option of a wooden boardwalk should be investigated. Boardwalks have been successful at rock art sites as a means of guiding visitors through a shelter and keeping them at a safe distance from the rock art (Walsh 1991). Rerouting the trail and installing wooden steps in steep places at the Rappell Cliffs Rockshelter is recommended to prevent erosion. Removal of the graffiti at the Garden Canyon Pictograph Site is recommended as is removal of the graffiti on the cliff face at the Rappell Cliffs Rockshelter. These sites should be monitored closely for future graffiti and for trash. Sites which are kept clean are more likely to be respected by visitors.

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THE GARDEN CANYON PROJECT:

PART 2

EXCAVATIONS AT TWO ROCKSHELTERS AT FORT HUACHUCA, SOUTHEASTERN ARIZONA

by

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Jeffrey H. Altschul

with contributions by

William L. Deaver
Kellie M. Cairns

CHAPTER 1
INTRODUCTION

Caves and rockshelters have long been considered typical places of human occupation by archaeologists and the general public. In both fact and fiction, rockshelters have a long history of use in both the New and Old Worlds. Although we now know that prehistoric peoples lived in a variety of geographic settings, caves and rockshelters still evoke images of long periods of occupation with an abundance of artifactual materials and features. Archaeological research in Arizona has benefited from excavations at some of the deepest and best preserved rockshelters in the western United States. This report documents recent research at two small rockshelters on the Fort Huachuca Military Reservation in southeastern Arizona.

Fort Huachuca lies in the middle portion of the environmentally and culturally rich San Pedro River Valley of southeast Arizona (Figure 2.1). The fort is steeped in history. Originally established in 1877 as one of the string of forts from which the Apache Wars were waged, Fort Huachuca has been involved in most U.S. military undertakings of the late nineteenth and twentieth centuries. But Fort Huachuca history goes back much earlier than 1877. Archaeological remains on the fort date from as early as 10,000 years ago, and artifacts and sites on the post have been associated with all prehistoric and protohistoric cultures that occupied the San Pedro River Valley.

Fort Huachuca is extremely proud of its history. Listed as a National Historic Landmark, the original section of the fort is one of the best preserved examples of a late nineteenth century military outpost. Fort Huachuca also claims two listings on the National Register of Historic Places. The Garden Canyon Site (AZ EE:11:13, ASM) is one the largest prehistoric villages in the middle San Pedro Valley. The second listing is composed of two rockshelters: the Garden Canyon Pictograph Site (AZ EE:11:15, ASM) and the Rappell Cliffs Rockshelter (AZ EE:11:30, ASM), both of which are located in the mountains near the headwaters of Garden Canyon Creek. Recently, a third rockshelter with pictographs was found in the same general area, and may be associated with the other two sites (Marie Cottrell, personal communication, 1992).

Fort Huachuca deserves credit for having the foresight and dedication to preserve and protect its cultural heritage. Given the long-standing interest of Fort Huachuca in its history and prehistory, it comes as no surprise that when the Department of Defense (DoD) initiated the Legacy Resource Management Program in 1991, the post was one of the first participants. The Legacy initiative is designed to inventory, protect, and manage biological, cultural, and geophysical resources on DoD land (U.S. Department of Defense 1991). In 1991, post archaeologist Marie Cottrell (1991) submitted a proposal to Legacy for rock art recording, restoration, protection, and evaluation at the Garden Canyon Pictograph and Rappell Cliffs Sites. The proposal outlined three tasks. The first involved the restoration and recording of the rock art at the two sites and was directed by Clement Meighan (see Part 1 of this report). The second task consisted of protection by way of constructing a fence around the Rappell Cliffs Rockshelter (the Garden Canyon Pictograph Site had already been fenced) and was accomplished by an Army contractor under the supervision of Marie Cottrell (see Preface). The third task called for limited archaeological excavations of the shelters themselves and was conducted by Statistical Research, Inc. under the direction of Jeffrey Altschul. It is the results of the latter task that are the subject of this section of the report. The Garden Canyon Project is a testament to Fort Huachuca and the Legacy program. Both deserve to be credited and acknowledged for their efforts to preserve our past. Our efforts were small compared to others, and we feel honored to have been allowed to participate with them.

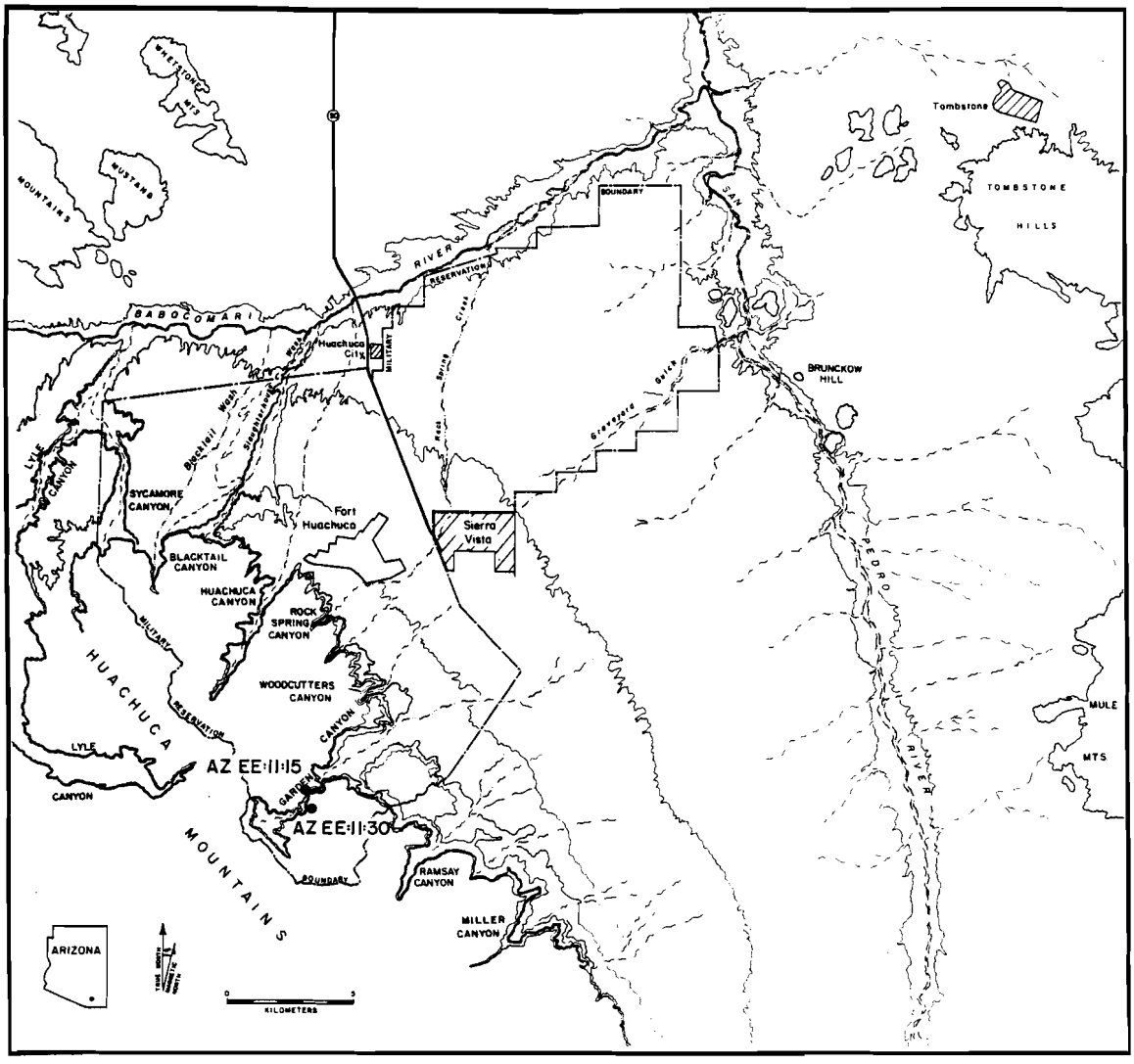

Figure 2.1. Fort Huachuca and the project area.

Site Settings

The Huachuca Mountains form the western portion of the Fort Huachuca Military Reservation and are a north-south trending range of Precambrian granite and Cretaceous shale, limestone, and sandstone that reach a maximum elevation of 9,445 feet at Miller's Peak. Precipitation that falls on the east slope of the Huachucas flows down several canyons toward the broad San Pedro Valley. One such canyon, Garden Canyon, contains two small rockshelters eroded out of the limestone (see Figure 2.1). Test excavations were conducted by Statistical Research, Inc. at Garden Canyon Pictograph Site (AZ EE:11:15) and Rappell Cliffs Rockshelter (AZ EE:11:30) in the summer of 1991 to identify whether intact cultural deposits existed at either shelter and to relate any such deposits to use of the rockshelters by Native American peoples (Figures 2.2 - 2.5).

Figure 2.2. View south of excavations in AZ EE:11:15.

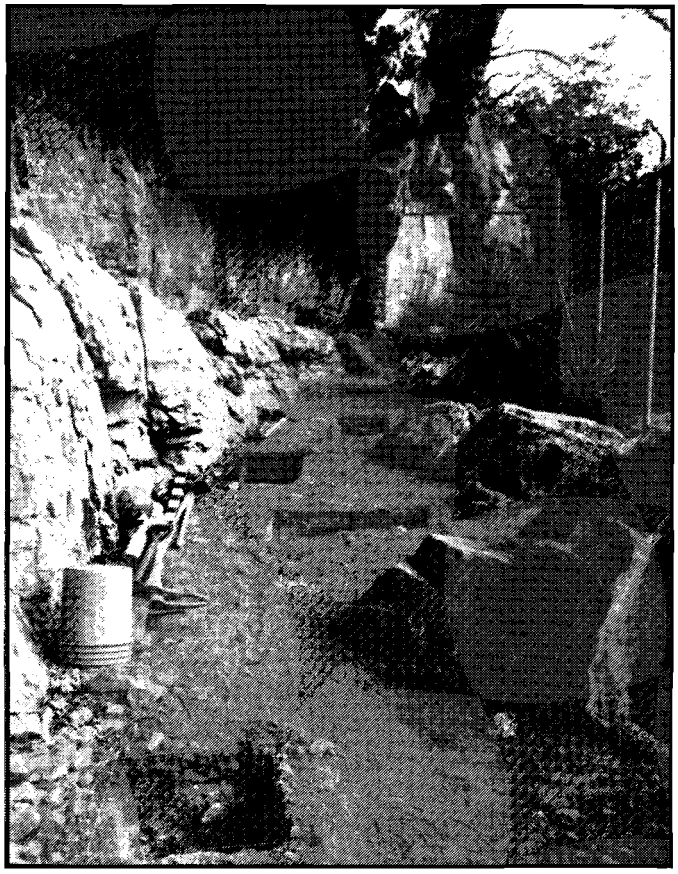

Figure 2.3. View north of excavation in AZ EE:11:15.

Figure 2.4. View west of excavations in AZ EE:11:30.

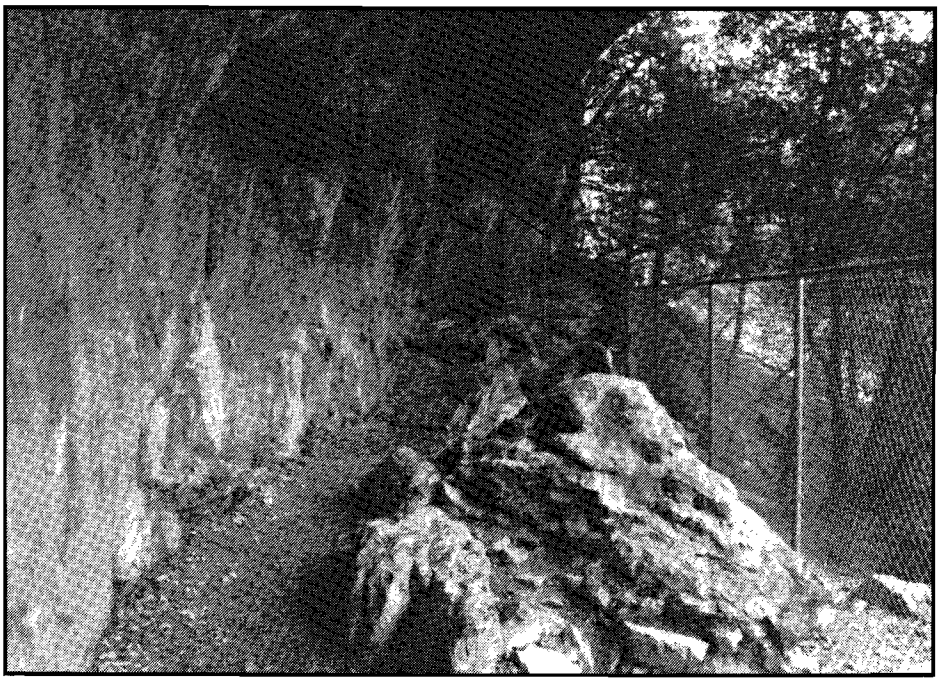

Figure 2.5. View east of excavations in AZ EE:11:30.

The Garden Canyon Pictograph Site (AZ EE:11:15) is listed on the National Register of Historic Places (Puzzi 1974). The most striking visual aspect of this site is the presence of abundant white, black, red, and polychrome pictographs on the roof and walls of the shelter. Detailed descriptions and analyses of the pictographs are presented by Meighan in Part 1 of this report, but a short summary of their content is necessary for understanding the goals and results of the test excavations. The majority (n=21) of the pictographs in the rockshelter consist of white pigment painted onto the black, manganese-stained roof and walls. Motifs include large raptors, square faces, a long snake, spirals, and hand prints. The design and execution of the white pictographs indicates they were created by Apache artisans, probably sometime in the 18th century (Schaafsma 1980). The black pictographs (n=14), painted on the lighter limestone wall of the shelter, include lines, human figures, masks, dots, an eagle, an hourglass, and other designs. Some of the black pictographs are thought to be Apache in origin, although others may date to an earlier occupation. The red pictographs (n=12) include human figures, an eagle, a rake, a zoomorph, and a dot. Meighan believes that most of the red elements are pre-Apache creations; they may represent a Mogollon or Hohokam occupation of the shelter, but such cultural affiliations are tentative at best (Farrell and Burton 1992). Two pictographs combine both red and black within the same element; the first is a black-and-red human figure,whereas the second is a circle with lines; both are thought to be pre-Apache. The polychrome pictographs (n=2) combine red, white and black, and include a series of concentric circles and a human figure. Both are thought to be pre-Apache creations, although the human figure may include Apache additions. The pictographs are some of the best-preserved examples of this style in Arizona, in large part due to the foresight of Fort Huachuca personnel who erected a protective fence in front of the rockshelter in 1969.

A preliminary examination of the rockshelter indicated that the sediments contained organic materials and charcoal and that intact subsurface deposits were probably present. One of the overall aims of the test excavations was to identify and characterize the Apache occupation. Early historic Apache sites have not been well documented (Longacre and Ayres 1968) and this project was viewed as an opportunity to define what a short-term Apache special use site contained in the way of artifacts and cultural features.

The Rappell Cliffs Rockshelter (AZ EE:11:30) has been known for years. Indeed, the site was mentioned as part of the National Register of Historic Places nomination of the Garden Canyon Pictograph Site. The first formal recordation of the site, however, was in 1988 by Jeffrey Burton (1988). A much shallower shelter than AZ EE:11:15 (see Figures 2.4 - 2.5), AZ EE:11:30 presented different problems and opportunities. Pictographs in this shelter, though badly damaged by historic and modern graffiti, were executed using red and black pigments to create non-representational geometric designs, anthropomorphic figures, and zoomorphs. The style of these pictographs is suggestive of Mogollon or Hohokam cultural traditions (Schaafsma 1980; Burton 1988), but definitive cultural identifications cannot be made (See Meighan Part 1 of this report).

Preliminary examination of this site failed to indicate the presence of abundant subsurface deposits. The soil is thin and rocky and did not appear to contain buried features or cultural strata. Artifacts collected from the surface, however, indicated that at least limited occupation did occur. During the installation of a protective fence in front of the site in early 1991 (see Cotrell, Preface to this report), a large calcium carbonate-encrusted ungulate tooth was retrieved from one of the post holes. Mr. George Jones and Ms. Cathy Black, the workers who installed the fence, indicated that the tooth came from a depth of approximately 1 meter below the surface. In addition, burned corn cobs were found by Mr. Ernest Victor, Jr. of the San Carlos Apache Tribal Council. Although several of the cobs were associated with a modern packrat midden in the shelter, and several others were found on or near the surface, their association with a prehistoric occupation could not be securely identified. Despite the problematic provenience of the artifacts, their presence led us to suspect a Formative period occupation at AZ EE:11:30.

Between July 10 and 19, 1991 test excavations were conducted by a crew of four; this section of this report details the results of the excavations and analyses conducted at the two rockshelters. Chapter 2 briefly reviews various aspects of the project area including its environmental and cultural historical settings. Chapter 3 describes the research design and goals of the project. The fourth chapter describes the field methods and results of the testing at the Garden Canyon Pictograph Site; Chapter 5 performs the same function for the Rappell Cliffs Rockshelter. The report closes in Chapter 6 with a summary and integration of the results into a regional perspective.

CHAPTER 2

ENVIRONMENTAL BACKGROUND AND CULTURAL SETTING

The project area is located in southeastern Arizona just north of the international border with Mexico. This area, including the San Pedro River Valley and Huachuca Mountains has a rich geologic and cultural history. In many respects, it is a unique and relatively unexplored part of the American Southwest. It is also an area that has played an important role in Arizona both historically and prehistorically. It contains some of the earliest and most significant archaeological sites in North America and has contributed to the development of archaeology as a field of inquiry in several ways. This chapter briefly reviews the environment and culture history of the area and places the current research in a regional and temporal perspective. A more comprehensive overview of the regional environment and previous research in the area is presented in Altschul and Jones (1990).

REGIONAL ENVIRONMENT

The Huachuca Mountains and San Pedro River Valley of southeastern Arizona are part of the Basin and Range geologic province (Chronic 1983). This province is characterized by north-south trending mountain ranges separated by broad alluvial valleys. Erosion from the mountain ranges usually forms alluvial fans, terraces, and bajadas adjacent to the valley floors. In the Huachucas, these fans have been dissected by several mountain streams that form steep-sided canyons. These canyons, including Ramsey Canyon, Miller Canyon, and Garden Canyon, supplied water to several large prehistoric village sites at their mouths. Altschul and Jones (1990) have partitioned the region into four broad topographic zones: the Huachuca Mountains, the mountain canyon mouths, the bajada, and the floodplain of the San Pedro River. The area of major concern to this project, the Huachuca Mountains, has received little attention either geologically or archaeologically. Most research projects and the majority of large archaeological sites are documented near the canyon mouths and along the San Pedro floodplain.

Geologically, the Huachuca Mountains are a relatively old mountain range. The mountains are comprised of Precambrian granite overlain by Cretaceous shale, limestone, and sandstone and are the highest mountain range in southeast Arizona. The Huachucas offer little high quality lithic raw materials for flaked stone implements, but flakeable stone is available. The area also provides sandstone and limestone for the manufacture of ground stone tools. Soils in the canyon mouths and bajada are generally well-developed, but within the canyons, soils are comprised mainly of gravels.

Climatically, the Huachuca Mountains are an oasis in the middle of the desert of southeastern Arizona. They are generally much wetter and cooler than the surrounding river valleys. Whereas highs in the lower elevation floodplains routinely attain 100 degrees Farenheit during the summer months, temperatures in the mountains rarely reach above 90 degrees. Precipitation falls mostly as intense summer monsoon thunderstorms or winter snowfall. Due to the rocky nature of the soils in the mountains and canyons, most of this water drains onto the canyon mouth alluvial fans and eventually into the San Pedro River.

Southeastern Arizona lies near the boundary of the Sonoran and Chihuahuan biogeographic provinces and is dominated by various desert plant species. Because moisture is the most important factor determining the location and density of many plants and animals, rainfall and soil moisture are critical factors in their distribution. The Huachuca Mountains, due to their elevation and abundant moisture, contain many species of flora and fauna not found in the surrounding low elevation deserts.

The mountains are not, however, a broad range; bajada and valley resources are usually available within a few kilometers.

The Huachuca Mountains have been classified as part of the northern-most region of the Madrean biotic community (Brown 1982). Long days, abundant moisture, and low rates of evaporation and transpiration provide ideal growing conditions for a wide variety of plants. The arboreal component of the environment consists of evergreen species such as one-seed juniper (*Juniperus monosperma*), Douglas fir (*Pseudotsuga taxifolia*), various pines (*Pinus sp.*), and deciduous species such as Emory oak (*Quercus emoryi*), Mexican blue oak (*Q. oblongifolia*), and Arizona madrone (*Arbutus arizonica*). Understory shrubs and bushes present in the area include Arizona cypress (*Cupressus arizonica*), mesquite (*Prosopsis sp.*), mountain mahogany (*Cercocarpus montanus*), cat-claw (*Mimosa biuncifera*), and skunkbush sumac (*Rhus trilobata*). Riparian species present in Garden Canyon include smooth sumac (*Rhus glabra*), currant (*Rhibes sp.*), snowberry (*Symphoricarpus sp.*), aspen and willow (*Populus sp.*), and yarrow (*Anchilla sp.*). A wide variety of cacti are present in the area, many of which were economically useful to the prehistoric peoples of the region. Some of the more abundant species include agave (*Agave sp.*), yucca (*Yucca sp.*), prickly pear (*Opuntia sp.*), cane cholla (*Opuntia spinosior*), barrel cactus (*Ferocactus wislizenii*), and hedgehog cactus (*Echinocereus ledingii*). Grasses that may have been economically important include sideoats grama (*Bouteloua curtipendula*), bush muhly (*Muhlenbergia torreyi*), cane bluestem (*Bothriochloa barbinodis*), and various buckwheats (*Erogonum sp.*) (Brown 1982; Axelrod 1979).

Faunal resources in the Huachuca Mountains may have been an important source of protein for prehistoric peoples, especially as a supplement to an agricultural diet during the Formative period. Fauna present in the area include coati (*Nasua nasua*), whitetailed deer (*Odocoileus virginianus*), mule deer (*O. hemionus*), javelina (*Pecari*), mountain lion (*Felis concolor*), cottontail (*Sylvilagus sp.*), and various ground dwelling rodents and bats. Avifauna in the area include golden eagle (*Aquila chrysaetos*), wild turkey (*Meleagris gallopavo*), Montezuma quail (*Crytonyz montezumae*), scailed quail (*Callipepla squamata*), and various other smaller birds. Reptiles and amphibians are plentiful in the canyons of the Huachuca Mountains and include the western rattlesnake (*Crotalus viridis*), rock rattlesnake (*Crotalus lepidis*), hognose snake (*Heterodon nasicus*), gopher snake (*Pituophis melanoleucus*), canyon treefrog (*Hyla arenicolor*), green toad (*Bufo debilis*), bullfrog (*Rana catesbeiana*), and Sonoran mud turtle (*Kinosternon sonoriense*) (MacMahon 1985).

CULTURE HISTORY

Southeastern Arizona contains one of the longest, best documented spans of human occupation in the United States. Archaeological sites dating to the Paleo-Indian, Archaic, Formative, Protohistoric, and Historic periods abound in the region. The San Pedro River Valley has contributed substantially to the archaeology of the New World and Arizona in particular.

The San Pedro River Valley can be divided into three sections: upper, middle, and lower. The upper San Pedro reaches from the river's headwaters near Cananea, Sonora to the International Border and has been little studied archaeologically. The middle San Pedro begins at the International Border and ends near Benson, Arizona. This section of the river has received abundant attention from archaeologists, primarily on the very early (Paleo-Indian) and late (Early Historic) time periods. The lower San Pedro Valley is defined as the area from Benson to the confluence of the San Pedro and Gila Rivers near Winkleman, Arizona. The lower stretch of the river has contributed substantial information to our knowledge of prehistoric agricultural communities, especially those occupied during the Late Classic period (A.D. 1200-1450). The richness and diversity of natural resources in the San Pedro Valley and adjacent uplands stimulated cultural development throughout the known occupation

span of the western hemisphere. The following section briefly describes the culture history and previous archaeological research in the area.

Paleo-Indian Period

The earliest documented cultures in the New World are known as Paleo-Indian. The term refers to those people and their descendants who first entered the New World from Asia shortly after the end of the last glacial maximum approximately 12,000 years ago. Paleo-Indian archaeological sites are typically locations where large game was killed and are characterized by large, lanceolate projectile points. The earliest of the Paleo-Indian cultures, the Clovis culture, was first identified in eastern New Mexico and is represented in the San Pedro River Valley by two of the most extensively studied Paleo-Indian sites in the New World: the Lehner and Murray Springs Clovis Sites (Haynes 1987). Clovis period peoples, and to some extent later Paleo-Indian peoples, used large fluted projectile points to hunt large, now extinct megafauna such as mammoth, camelid, horse, and tapirs. Other important Clovis sites in southeastern Arizona include the Naco Site and the Escapule Mammoth Site (Hemmings 1970; Bronitsky and Merritt 1986). Individual Clovis points have been recovered as isolated surface finds (Ayres 1970; Betancourt 1978; Di Peso 1953; Huckell 1984) in southeast Arizona and Sonora demonstrating that Clovis people exploited much of the southwest.

Clovis people were highly mobile big game hunters who left little in the way of domestic artifacts. Because most Clovis sites are kill sites, we have abundant information on Clovis lithic technology and raw material procurement strategies (Young and Bonnichson 1985; Goodyear 1979). Activities not related to hunting, however, are virtually unknown. One of the few known Clovis campsites was identified at Murray Springs and has provided *in situ* charcoal important for refining the temporal range of the Clovis occupation (Haynes 1987).

By Folsom and Plano times much of the megafauna had already become extinct. These later Paleo-Indian groups relied more on a large form of bison (*Bison antiquus*) that later became extinct as well (Wilmsen 1974). Remains of these groups are relatively rare in Arizona. The cultural chronology of southeastern Arizona is interesting in that the culture immediately after Clovis is not another big-game hunting society, such as Folsom, but is instead a culture that utilized grinding tools, presumably to exploit plant resources.

Archaic Period

The next period of occupation in southeastern Arizona is termed the Cochise Archaic (Sayles and Antevs 1941). This period extended from approximately 10,000 to 1800 years ago and is characterized by a mixed economy of hunting and gathering. Grinding stones of several varieties and flaked stone tools indicate a reliance on both wild animal and plant resources. The Archaic period shows remarkable cultural stability through time and across space. Indeed, similar adaptations throughout the southwestern United States and northern Mexico suggest a "pan-Archaic" culture based upon the hunting of small and medium-sized game and the exploitation of wild plant resources (Huckell 1988; Irwin-Williams 1979; Sayles 1983). The long period of time encompassed by the Archaic has been divided into several stages, including Sulphur Springs (10,000-8000 B.P.), Cazador (9000-8000 B.P), Chiricahua (8000-5000 B.P.), and San Pedro (5000-1800 B.P.).

Sulphur Springs Stage 10,000-8000 B.P.

The Sulphur Springs stage of the Cochise culture was originally defined based on work at Double Adobe (AZ FF:10:1, ASM) and several other sites on Whitewater Draw in southeastern Arizona (Sayles 1941). Once thought to be contemporary with Clovis, recent research has demonstrated that the Sulphur Springs stage is a later adaptation to increasingly drier conditions in the area (Waters 1986; Waters and Woosley 1990). Artifacts characteristic of the stage include flat milling stones and hand stones; percussion flaked tools are rare and no projectile points or blades were found at the type site. Animal bones were present, but hunting was thought to be of little importance in the economy. A single, possibly flexed, Sulphur Springs burial has been excavated (Waters 1986), but no grave goods were associated with the remains. Subsistence strategies during the Sulphur Springs stage of the Cochise culture were originally thought to emphasize food gathering, but recent research on the Cazador stage indicates a hunting aspect as well.

Cazador Stage

The Cazador stage of the Cochise culture was defined by Sayles (1983:90) based on later work at Double Adobe. At first, Sayles believed the Cazador stage represented an intermediate step between the Sulphur Springs and later Chiricahua. Chipped stone tools, including bifaces, projectile points, flake knives, choppers, and scrapers provided the first indication of hunting as part of the Cochise development. Ground stone tools, although present, were not as numerous as at Sulphur Springs sites. The concept of the Cazador stage has been challenged due to uncertain dating of the geologic deposits, the similarity of Cazador and Sulphur Springs artifact types, and the lack of any single component Cazador stage site (Whalen 1971; Whittlesey et al. 1990). Recent work by Waters (1986) indicates that the Cazador stage is neither temporally nor culturally differentiated from the Sulphur Springs stage. He supports Whalen's interpretation that the Cazador is not a valid stage, but instead represents a functional variant of Sulphur Springs, namely the hunting component of the economy.

Chiricahua Stage 8000-3500 B.P.

The Chiricahua stage was defined by Sayles and Antevs (1941) on the basis of five sites in the San Pedro Valley including the type site Chiricahua 3:16 recorded by Gila Pueblo (GP) near Portal. Stratigraphic and topological comparisons suggested placement between the Cazador and San Pedro stages and Antevs (1941) original age estimate was between 10,000 and 5000 years ago. Whalen (1971) suggested a revised temporal range of 5500 to 3500 years ago based on additional work in the San Pedro Valley. Recently, Waters (1986) has reviewed the geologic and radiocarbon dating of the stage and suggests a time range of approximately 8000 to 3500 years ago. The artifact assemblage of Chiricahua stage sites is generally much larger and more diverse than earlier sites. Ground stone artifacts include shallow and deep basin milling stones, handstones of various shapes, proto-mortars, mauls, and possibly pestles. Chipped stone artifacts include cores, bifaces, scrapers, blades, knives, a variety of projectile point forms, and denticulates (Sayles 1983). Microblade tools reported at one site in the middle San Pedro (AZ EE:7:46, ASM)) may be associated with the Chiricahua stage (Altschul and Jones 1990:222-223). This middle Archaic stage may represent the quintessential "broad spectrum adaptation" that characterizes much of the post-Pleistocene Southwest (Irwin-Williams 1979), that of exploiting a wide variety of plants and animals in different topographic settings.

San Pedro Stage 3500-2000 B.P.

The final stage of the Cochise culture was defined by Sayles (1941) based upon work at a series of sites along the San Pedro river, including the type site Benson 5:10 (GP) near Fairbank. Antevs (1941:55), using geological criteria, originally dated the San Pedro stage between 5000 and 2500 years ago. Subsequent revisions by Sayles (1983) suggested a time range of 3500 to 2000 B.P. that is generally accepted today. This period exhibits several major changes in artifact inventories and settlement and subsistence patterns that distinguish it from earlier stages. The artifact inventory includes pressure-flaked bifaces, a variety of stemmed and side-notched projectile points, knives, scrapers, and cores. Ground stone items were less abundant than flaked stone, but included deep, oval-basin milling stones, large convex handstones, mortars, and cylindrical pestles. Perhaps the most important change ascribed to the San Pedro stage was the advent of permanent residence areas. Houses, storage pits, and large sites with deep middens indicate a shift from high mobility hunting and gathering to a more settled existence. Shallow, ovoid houses often contained internal fire pits, internal storage pits, and wall-step entryways (Sayles 1945; Eddy and Cooley 1983). Burials have been recovered from San Pedro sites and are generally flexed inhumations with few grave goods.

The size and permanence of many San Pedro stage sites suggest a fundamental change in the way people adapted to the arid environment of southeastern Arizona. While hunting and gathering were undoubtedly still mainstays of the subsistence base, cultigens were certainly a part of that base as well. Corn pollen and carbonized corn have been recovered from San Pedro sites in the Cienega Valley (Huckell 1990; Sayles 1983) suggesting a shift to agriculture prior to the manufacture of pottery. Although the timing and mechanisms of the introduction of cultigens into the southwest remains an area of debate (Wills 1988), the broadening of the subsistence base during San Pedro Cochise times set the stage for more fundamental changes to come in the succeeding Formative period.

Formative Period

The time period from the end of the Archaic until European contact, approximately A.D. 1 to A.D. 1540, is known in American archaeology as the Formative period (Willey and Phillips 1958). It is characterized by the introduction or invention of three important traits: ceramics, agriculture, and sedentary villages. Although there is some debate over the timing and processes involved (Wills 1988), the adoption of all three of these traits marked a dramatic change in lifeways from the earlier Archaic period. Population levels increased and by the middle of the period more differentiation of cultural groups began to emerge. Regional cultures, such as the Hohokam, Mogollon, Mimbres, Trincheras, Chihuahuan, and Salado developed in the areas adjacent to southeastern Arizona and exerted influence over events and peoples in the San Pedro Valley.

Southeastern Arizona was an area of cultural overlap during prehistoric times. Hohokam, Mogollon, and Mexican influences were felt in the San Pedro Valley throughout much of the Formative period, either directly through immigration or indirectly through trade. Di Peso (1979) argued for an *in situ* development of cultures in the area out of a Cochise tradition Archaic base, a position supported by Wilcox (1979), Hayden (1970), and Doyel (1977). Di Peso termed this development O'otam and viewed it as a cultural adaptation that lasted until historic times. In contrast, Haury (1976) suggested that an immigration of people from the south displaced the original inhabitants of southern Arizona and developed the irrigation-based society known as the Hohokam. Because the San Pedro area is not clearly associated with the Hohokam heartland to the north and west or with the central Mogollon area to the north and east, the phylogenic relationships of the people of the San Pedro area with these areas have not been determined. One solution to this problem was the establishment of a local tradition termed the Dragoon (Tuthill 1947). Unfortunately, the attributes of this complex were vague, with

many items not meeting the criteria for other cultural traditions, such as Mogollon or Hohokam, simply being placed into the Dragoon complex. The complex does not represent a workable cultural entity, but rather an archaeological convenience. Research in the middle San Pedro Valley may help answer some of the questions concerning cultural affiliation and interaction during the Formative period: questions that have plagued the archaeology of southeastern Arizona for decades.

The history of the cultural development in the San Pedro Valley is anything but clear-cut. For the purposes of this report, the Formative is divided into three temporal categories: the Early Formative, Preclassic, and Classic periods. Within these temporal divisions, cultural developments and outside events can be discussed without implying specific relationships or cultural trajectories. Not all of the proposed cultural chronologies of the area use this division (Figure 2.6), but it does have several advantages over other schemes. In the early part of the sequence, no assumptions about cultural affiliation are made. Common terms, such as Hohokam or Mogollon, are consciously avoided because such relationships cannot be demonstrated. When such divisions become apparent in the archaeological record, during the Preclassic, they are used as applicable, although for the most part, the culture areas are peripheral to the San Pedro River Valley. Finally, the dramatic cultural changes that occurred in the Southwest during the Classic period are mirrored in the middle San Pedro Valley, but our knowledge of these event should not be viewed through a Hohokam or Mogollon filter.

Early Formative Period A.D. 1-450

The early part of the Formative period, approximately A.D. 1 to A.D. 450, was a time of transition from an Archaic lifeway to a more sedentary, agriculturally based existence. The production of brown ware pottery appears over a broad area of the southwest at this time and it has been suggested (Deaver and Ciolek-Torrello 1991) that this time period be called the Plain ware horizon. Undecorated, locally produced brown wares dating to this period have been found on the Colorado Plateau, in the Phoenix Basin (Cable and Doyel 1987), the Tucson Basin (Deaver and Ciolek-Torrello 1991; Fish et al. 1987), the Mogollon mountains (Haury 1936), and in southeastern Arizona (Gilman 1989; Sayles 1945). Both paddle-and-anvil and coil-and-scrape methods were used to produce a simple inventory of vessel forms. As suggested by the horizon designation, differentiation into distinct cultural entities, such as Mogollon and Hohokam, is not apparent. The adaptation appears to be a generic one across the Southwest with the adoption of pit house architecture, maize agriculture, and brown ware ceramic production taking on local variations unconsolidated into areal traditions.

Toward the end of the Early Formative period painted ceramics are added to the Plain ware horizon. Red-slipped pottery appears at approximately A.D. 450 in both the Sonoran desert and Mogollon mountain areas. Again, similarities in red wares suggest a broad areal tradition and some researchers (Deaver 1989; Huckell 1988) question whether the Mogollon and Hohokam can be distinguished from each other at this early date. The end of the period is marked by different phase designations in different areas. The end of the Sweetwater phase and beginning of the Snaketown phase signals the transition in the Tucson and Phoenix Basins. Closer to the San Pedro Valley, the San Simon Branch is divided into the Penasco, Dos Cabezas, and Pinaleno phases in the Early Formative period (Bronitsky and Merritt 1986:321). Commencing with the Snaketown phase of the Hohokam tradition (A.D. 650-900), distinct regional ceramic styles, and presumably other adaptations as well, emerged to form archaeologically distinct cultural groups.

	DATES (A.D.)	HOHOKAM (Dean 1991)		TUCSON BASIN (Dean 1991)		SAN PEDRO (Franklin 1980)		SAN SIMON (Franklin 1980)
	1500	-------						
	1400					GILA POLYCHROME		?
		CIVANO		------				
	1300					TANQUE VERDE R/B		?
	1200							
	1100	SOHO		TANQUE VERDE				
SEDENTARY PERIOD						DRAGOON R/B		ENCINAS R/B
	1000			RINCON		TRES ALAMOS R/W		
		SACATON						

	900							
COLONIAL PERIOD					----			
		SANTA CRUZ						
	800					CASCABEL R/B		CERROS R/W
		GILA BUTTE						

	700	SNAKETOWN		RILLITO	CANADA DEL ORO			
PIONEER PERIOD								
	600	SWEETWATER						GALLIURO R/B
		ESTRELLA						
	500							
		VAHKI						
	400							PINALENO R/B
	300	RED MOUNTAIN						DOS CABEZAS R/B

Figure 2.6. Formative period developmental stages in southern Arizona.

Preclassic Period A.D. 450-1200

The Preclassic period, approximately A.D. 450 to A.D. 1200, was a time of increasing cultural differentiation throughout the Southwest. Regional cultural groups, such as the Hohokam and Mogollon, began to produce distinctive pottery styles and show marked differences in their adaptation to an arid environment. By the end of the period, the Hohokam developed large communities based on floodwater and irrigation agriculture, produced red-on-buff ceramics, established a communication network associated with the ballcourt complex, and had extensive contacts with cultures to the south. The Mogollon, likewise, developed large communities and used floodwater farming, but also exploited a wide range of wild resources available in the mountains. Differences in ceramic styles, architecture, burial practices and other aspects of material culture distinguish the two cultures in the archaeological record.

Hohokam

The Hohokam heartland in the Salt-Gila drainage is one of the most intensively studied areas in North America. Research over the past sixty years, from Haury's (1936) initial work at Snaketown to recent cultural syntheses (Gumerman 1991), has provided a wealth of information about Hohokam

artifacts and technology, site structure, community organization, and regional interaction. Unfortunately, one topic of disagreement among Hohokam archaeologists is still the dating of various phases of Hohokam development (Schiffer 1982; Dean 1991). Although the sequence of phases, based on stratigraphic relationships, is agreed upon, the absolute dating of individual phases is not. Preclassic phases in the Phoenix Basin are, from earliest to latest, Snaketown, Gila Butte, Santa Cruz, and Sacaton (Bronitsky and Merritt 1986:321).

Preclassic development in the Hohokam area shows a trend toward increasing assemblage diversity in ceramic and shell artifacts, increasing population size and nucleation of communities, and increasing reliance on irrigation agriculture. Burial was by cremation and the ballcourt was introduced. The latter trait had its origins in Mesoamerica and has played an important role in theories concerning Mesoamerican origins of the Hohokam. This period represents the maximum expansion of the Hohokam range.

Hohokam sites in southeastern Arizona representing the early Preclassic are generally restricted to the lower San Pedro Valley below Benson. According to Dean (1991), the early Preclassic Pioneer period (A.D. 450-750) has been documented only at a one multi-component site, the Big Ditch Site near Aravaipa Creek (Masse 1980). Other Pioneer period sites probably exist in the lower San Pedro, but none have been excavated. The later Preclassic Colonial period (A.D. 750-975) was a time of village consolidation and regional expansion (Dean 1991). A ballcourt was added to the Big Ditch Site at this time and other villages along the San Pedro, such as Redington Village and Sosa Wash Ruin, were founded. The late Preclassic Sedentary period (A.D. 975-1150) marks the greatest expansion of the Hohokam range. In addition to major communities in the Salt-Gila and Santa Cruz Valleys, large Hohokam settlements were located in the San Pedro and San Simon areas (Altschul and Jones 1990:21). Ballcourts were constructed at Tres Alamos, San Simon Village, and AZ BB:23:5, (ASM) near Benson. Social stratification within Hohokam communities, evidenced by the differential distribution of grave goods, may have developed at this time (Bronitsky and Merritt 1986:143-144). Although most Hohokam sites are confined to the lower San Pedro Valley, Altschul and Jones (1990:225-226) and Vanderpot (personal communication 1992) report the presence of three small Hohokam habitation sites (AZ EE:7:161, (ASM), AZ EE:11:163, (ASM), and a recently discovered site) within the boundaries of Fort Huachuca. These sites, dominated by Rincon Red-on-brown ceramics, are in stark contrast to the non-Hohokam nature of other sites recorded in the region.

Mogollon

The concept of the Mogollon culture developed by Haury (1936) was one of the most controversial ideas in Southwestern archaeology for much of this century (Reid 1986). Although the concept is commonly accepted today, a Mogollon culture sequence for southeastern Arizona remains undefined because "a commonly shared definition of Mogollon is unavailable" (Reid 1989:65).

Two different cultural sequences exist for the Mogollon in southeastern Arizona. The San Simon series was defined by Sayles (1945) based on work at Cave Creek and San Simon Village. The second sequence, the Dragoon complex, was derived from excavations at Tres Alamos, Texas Canyon, and Gleeson (Fulton 1938; Tuthill 1947). Most researchers now consider the two sequences identical (Whittlesey et al. 1990:71). The Mogollon manifestation in the San Pedro area is known as the San Simon Branch, although Gladwin and Gladwin (1935) were initially reluctant to equate the San Simon with Mogollon. Various researchers have referred to the San Simon as: (a) Hohokam with a strong Mogollon influence (Fulton 1938; Tuthill 1950), (b) Mogollon with a strong Hohokam veneer (Sayles 1945; Wheat 1955), and (c) indigenous O'otam (Di Peso 1979).

Mogollon cultural development in the San Pedro during the Preclassic is divided into the Galiuro, Cerros, and Encinas phases. The Galiuro phase is characterized by rectangular pit houses, flexed inhumations, and Galiuro Red-on-brown ceramics that show evidence of Hohokam influence in design motifs. The morphology and manufacturing techniques of Galiuro ceramics, however, are Mogollon in origin (Franklin 1978:198). This phase is near the end of the Mogollon Initiation period (Reid 1989:70) in the mountains and the Early Pithouse period (Whittlesey et al. 1990:71) in southeastern Arizona. It is approximately contemporaneous with the Snaketown phase of the Hohokam sequence.

The succeeding Cerros phase is part of the Late Pithouse period of Whittlesey et al. (1990:72) and the Mogollon Expansion and Differentiation period of Reid (1989:71). Cerros Red-on-white is the dominant ceramic style and was used along with existing red-on-brown pottery. Cerros Red-on-white shows Hohokam-influenced curvilinear designs and paddle-and-anvil manufacturing techniques. Pit structures are slightly larger and more rectangular than during the previous Galiuro phase. Flexed inhumation continues to be the preferred method of burial. This phase is approximately contemporary with the Hohokam Colonial period.

The last Mogollon phase of the Preclassic period in the San Simon area is the Encinas phase. It is approximately contemporary with the Hohokam Sedentary period and the end of the Mogollon Expansion and Differentiation period. The Encinas phase is characterized by Encinas Red-on-brown ceramics, rectangular pithouses with stepped entryways, and variable patterns of disposal of the dead, including flexed inhumation and cremation in covered vessels. The production of black-on-white pottery, common in the Mimbres area to the east, is lacking in southeastern Arizona at this time. This marks the first divergence between the two areas in the archaeological record.

Altschul and Jones (1990) found six sites with Mogollon ceramics dated to the Preclassic and Classic periods. Two of the sites also contained Hohokam sherds typed as red-on-brown; one site contained Trincheras ceramics; and one site contained Salado Polychromes. Without excavation it is difficult to asses whether Mogollon influence in the San Pedro was due to incidental trade or stronger cultural relations between the two areas.

Classic Period A.D. 1200-1450

The Classic time period is one of tremendous change throughout the Southwest, and the San Pedro Valley is no exception. Several events mark the transition from Preclassic to Classic times in the San Pedro Valley: the contraction of the Hohokam into the Salt-Gila drainage; the development of the Salado phenomenon in the Globe area; and the rise of Paquime as a regional power in the south. These trends are undoubtedly related, but as yet there has not been enough research in critical areas to determine how they interconnect.

The Hohokam had largely abandoned the lower San Pedro by the beginning of the Classic period. Although some sites, such as Second Canyon Ruin, contain Classic period ceramics (Tanque Verde Red-on-brown) and architecture (Franklin 1978), they are few in number. Hohokam sites elsewhere are clustered along major drainages in both the Tucson and Phoenix Basins. Abandonment of the San Pedro Valley may have been due to climatic variability and unstable farming conditions (Masse 1980), but other factors may have been at work as well.

The term Salado refers to a constellation of attributes occurring over a broad area of south-central and southeastern Arizona. These traits include surface compound architecture, inhumation burial, and distinctive ceramic types, most notably Gila Polychrome. The concept of Salado has generated controversy among archaeologist since its inception, in part because "few other topics in Southwestern archaeology remain more tenuous and confused than that of Salado identity"

(Whittlesey et al. 1990:114). The Salado have been alternatively viewed as (a) a blend of Anasazi and Mogollon; (b) an independent cultural entity; (c) a derivative of the Mogollon (Pilles 1976); (d) an expression of Classic period Hohokam (Wood and McAllister 1982); (e) a variant of Chihuahuan culture produced by the Casas Grandes interaction sphere (LeBlanc 1989); and (f) a "cultural horizon expressed in a form reminiscent of a mortuary cult" (Ciolek-Torrello 1987:368). Whittlesey et al. (1990:118) suggest that the Salado do not represent a single cultural manifestation, but diverse adaptations to a wide variety of environments, both natural and cultural.

Salado sites in the San Pedro Valley occur from Benson north to the confluence with the Gila. The sites are typically single-story room blocks organized around a central plaza. Boulder and adobe construction, circular hearths, and clay-lined features are present at most sites. Salado ceramics, including Pinto and Gila Polychromes, are mixed with a variety of other Classic period styles such as Tanque Verde Red-on-brown, Gila Black-on-red, and San Carlos Red-on-brown (Altschul and Jones 1990:22). Many of the sites are located in defensive locations or have defensive features. The Salado sites in the San Pedro Valley appear to have been abandoned shortly after A.D. 1400, possibly due to deteriorating climatic and social conditions.

The third factor affecting the middle San Pedro during the Classic period was the rise of Paquime in Chihuahua as a regional power. Paquime, located at Casas Grandes approximately 300 kilometers southeast of Fort Huachuca, was the largest, most complex site in the southwest during this time period (Wilcox 1988). Excavated by Di Peso (1974), it had a population of 3000 to 5000 individuals, covered an estimated 4.7 square kilometers, contained over 2300 rooms, and had numerous platform mounds, ballcourts, plazas, and waterworks. The artifact assemblage included large quantities of shell, pottery, turquoise, copper, macaws, turkeys, and minerals. Evidence of craft specialization, human sacrifice, and social stratification indicate a level of social complexity rare north of the Valley of Mexico. Indeed, Di Peso suggests that Paquime derived much of its power and organization from connections with Mesoamerican cultures.

Altschul and Jones (1990:228-236) suggest that the middle San Pedro Valley was under the influence of Paquime during the Classic period. They see a sharp geographic division between sites dominated by Salado ceramics north of Benson and those with predominately Chihuahuan-inspired Babocomari ceramics to the south. Intensive research in the area has been relatively rare; test excavations at the Ramsey Canyon Site (AZ EE:11:16, ASM) and the Garden Canyon Site (AZ EE:11:13) (Young 1964) have been limited in scope. Intensive excavations were conducted at Babocomari Village (AZ EE:7:1, ASM) (DiPeso 1951) and provide much of the data for interpretations of the Classic period in the middle San Pedro Valley.

Babocomari Village was a small hamlet occupied throughout the Classic period. It was a small dispersed settlement that probably never had a population greater than 40 people. The site is not nucleated and shows no defensive attributes, either in site location or architecture (Wilcox 1988). The ceramic assemblage is comprised of locally produced wares, especially Babocomari Plain and Babocomari Polychrome, that show similarities to Chihuahuan styles. This ceramic assemblage is typical of other Classic period sites recorded during the Fort Huachuca survey (Altschul and Jones 1990:337). Such assemblages and site structure are in stark contrast to the nucleated, defensive Salado Polychrome-dominated sites downstream.

Altschul and Jones (1990:232) suggest that the focal point of the middle San Pedro Classic period community organization was a site located at the confluence of the San Pedro and Ramsey Canyon Wash. This site, never fully mapped or recorded, served as a local center and as the regional node in the Paquime system. Because of its central location for both local and regional trade routes, the Ramsey Canyon Complex was able to draw upon its connections with Paquime to enhance its position within the local economy. Altschul and Jones suggest that the site should contain evidence of status differentiation in mortuary practices, room size, and greater assemblage diversity and quantity of exotic

materials and goods. The decline of Paquime during the late Classic period (Babocomari phase) meant a decline in influence of the Ramsey Canyon Complex as well and a corresponding increase in local autonomy at sites such as Babocomari Village. Additional archaeological research, especially excavation, is need to test this model of Classic period interaction in the middle San Pedro Valley (see Altschul 1991).

The Classic period ended in the San Pedro Valley sometime between A.D. 1400 and A.D. 1450. No sites have been securely dated between the end of the Classic period and the arrival of the Spanish Entrada in 1539. This gap of almost 100 years in the archaeological record is mirrored throughout the Southwest and is one of the most troubling and persistent problems faced by Southwestern archaeologists. As is discussed below, this time period, known as the Protohistoric, holds the keys to several major questions linking the ethnographic record with the prehistoric past.

Protohistoric and Early Historic Period A.D. 1450-1700

The period from A.D. 1450 to A.D. 1700 is critical for understanding both the Late Formative (Classic) period and the later Historic period. This temporal span encompasses two time periods that are difficult to separate archaeologically, the Protohistoric (A.D. 1450-1539) and the Early Historic (A.D. 1539-1700) (Ravesloot and Whittlesey 1987).

Protohistoric Period

The prehistoric period in the North American Southwest ended abruptly in the 16th century. The Spanish Entrada of Fray Marcos de Niza in 1539 and Francisco de Coronado in 1540 forever changed the native cultures of the area. Observations made by members of these expeditions, though rare and of uneven quality, provide the first written accounts of the cultures of southern Arizona. The ninety years between the end of the Classic period and the arrival of the Spanish are critical for understanding two issues: the fate of the Salado, Hohokam and other Classic period cultures and the origin of the ethnographically documented Sobaipuri people. Unfortunately, identifying sites in this narrow temporal range is difficult for several reasons. Chronometrically, the degree of resolution of radiocarbon dating is not fine enough to discern such a small temporal division; tree ring dating would be very helpful, but the lack of datable species precludes its application at this time. In the realm of material culture, decorated ceramics cease to be made after the Classic period; there is no ceramic continuity upon which to build a seriation of archaeological sites or complexes. Finally, few sites have been identified that belong to this time period, the most notable exception being Babocomari Village (Di Peso 1951). Several researchers, however, question whether it was occupied into the Historic period (Wilcox 1988).

Early Historic Period

The Early Historic period (A.D. 1540-1700) is important because of the possibility of tremendous cultural and demographic change among native populations in the Southwest. De Niza and Coronado probably passed through the San Pedro Valley (Walker and Bufkin 1986), but their focus was on the supposed riches of the Hopi and Zuni, not on the relatively poor Indians of southern Arizona. Most of the early documentary information about southern Arizona groups comes from the work of the Jesuit priest, Father Eusebio Kino, in the late 17th century. Kino and his military Escort, Captain Juan Mateo Manje, described peaceful, relatively numerous and prosperous farmers in the San Pedro area.

These accounts, and others throughout the Southwest, are the basis for many of the ethnographically based assumptions about native cultures used by archaeologists. It has been suggested, however, that the descriptions written at the end of the 17th century describe cultures that had been decimated by disease, reconfigured by European slavery and world economics, and whose settlement and subsistence systems had been fundamentally changed by the introduction of new cultigens and domestic stock (Dobyns 1963; Ramenofsky 1987; Reff 1987; Upham 1986, 1987). Without additional research on archaeological sites dating to the Protohistoric and Early Historic periods our understanding of these dramatic cultural events will remain murky.

Native American Groups in the Middle San Pedro Valley

Sobaipuri

When Kino and Manje visited the middle San Pedro Valley in the 1690s, they encountered a Piman-speaking people known as the Sobaipuri. This group was linguistically and culturally related to the Soba and Himeri of northern Sonora, the Papago of the Papagueria, and the Lower Pima of the Gila River area (Masse 1981). The Spaniards visited at least two Sobaipuri villages, Quiburi and Santa Cruz de Gaybanipitea, and estimated that more than 2,000 people lived along the San Pedro (Bolton 1948:171). Quiburi is described as a village of one hundred houses and five hundred people overlooking the river valley. Santa Cruz de Gaybanipitea was smaller, approximately twenty-five houses and one hundred souls; it was surrounded by good agricultural land and extensive irrigation ditches (Burrus 1971). Both settlements were abandoned or moved shortly after the Spanish visit probably due to attacks by the Apache and their allies.

Such large, historically documented settlements would seem ideal for examining questions concerning the Protohistoric and Early Historic periods, a task undertaken by Charles Di Peso in the 1950s. In a series of excavations, Di Peso claimed to have found several historic period villages identified on Kino's maps, including Quiburi, Santa Cruz de Gaybanipitea, Cusac (Reeve Ranch Ruin), and San Salvador de Baicatan (Solas Ranch Ruin) (Di Peso 1953:54, 133-135; 1958: 164-175). The work at these sites led Di Peso to conclude that the Sobaipuri were descendants of the preceramic O'otam with a mixture of Salado influences who practiced a bilocal residence pattern of summer rancherias and winter compound villages. Thus, in Di Peso's view, the culture history of southeastern Arizona can be seen as an extremely long period of cultural continuity extending from the Archaic all the way to the Historic Pima groups.

Such a view of cultural continuity is not shared by all researchers. Based on work at Alder Wash Ruin, which he identifies as the village of Cusac, Masse (1981) sees a profound cultural change during the Protohistoric period. Differences between the Sobaipuri and Classic period peoples in ceramic technology, architecture, projectile points, burial customs, and marine shell usage indicate a sharp cultural discontinuity. The dominant Sobaipuri ceramic types, Whetstone Plain and Babocomari Plain, show little similarity to Salado ceramics either in terms of manufacturing technology or surface treatment. Masse (1981:34-40) suggests that the Sobaipuri were neither O'otam nor Hohokam, but a recent (protohistoric) immigrant group from northern Sonora. Pressure from groups farther south, ultimately tied to the Spanish disruptions in the Valley of Mexico, pressured the Sobaipuri to move into the San Pedro Valley sometime in the 16th or early 17th century.

One source of the dispute over Sobaipuri origins lies in the identification of historic village sites. For example, both Di Peso (1958:164-165) and Masse (1981:31) claim to have excavated the village of Cusac at two different locations. Seymour's (1989) recent work in the San Pedro Valley may contribute to a resolution of the problem. She indicates that, at least in the Early Historic period, villages

frequently were moved and may or may not have retained the same name. Quiburi, for example, was moved at least twice, and possibly six times (Seymour 1989:218), in a period of just a few years. Such short occupation spans for large sites, especially if this was a cultural practice of some antiquity, may make the identification of a single site spanning the entire Protohistoric and Early Historic periods impossible.

Seymour (1989:219) also suggests that the aggregation into larger villages may be a recent phenomenon. Larger villages may have been the result of Spanish goals and policies. Larger, more aggregated groups would have made missionary work, intensive agriculture, and stock herding easier to facilitate. Aggregation into larger villages may also have been a response to increased Apache attacks. Both Quiburi and Santa Cruz de Gaybanipitea were abandoned by 1698 due to Apache hostilities. Similar attacks on other Piman groups in the Santa Cruz Valley stimulated population aggregation in the 18th and 19th centuries. Indeed, the San Pedro Valley was abandoned in 1762 due to these attacks (Bronitsky and Merritt 1986:319).

The Apache

The Apache are one of two Athabaskan-speaking peoples in the southwest (Hoijer 1971). They are closely related linguistically and culturally to the Navajo of northern Arizona and New Mexico. The nearest linguistic relatives of the Navajo and Apache reside in west-central Canada (Sapir 1915) over 2,000 miles to the north. The Athabaskans are relatively recent immigrants to the Southwest who probably arrived at about the same time as the Spanish Entrada (Wilcox 1981). Several different routes and arrival times have been proposed for the Athabaskans, including a Late Prehistoric high plains route (Hester 1962; D. Gunnerson 1956; C. Schaafsma 1979) and an earlier Rocky Mountain route (Perry 1982). Recent research in northwestern New Mexico (Hogan 1989) casts doubt on the later high plains hypothesis and may necessitate a reformulation of the entire question concerning Athabaskan entry into the Southwest.

Spanish references to the Apache are rare prior to the Pueblo Revolt of A.D. 1680. Nomadic groups in New Mexico, known as Teyas and Querechos, were seen by early explorers such as Coronado, Espejo, and Onate (Hammond and Rey 1940, 1953; Schroeder 1974), but their ethnic identity is still a matter of speculation. In Arizona, the Apache probably were not living south of the Mogollon Rim prior to the 17th century (Goodwin 1942). Despite several Spanish expeditions into the area, no inhabitants were described as living between the Salt River and the Zuni country north of the Mogollon Rim. By the end of the 18th century, however, the Apache were the sole occupants of the San Pedro Valley (Bronitsky and Merritt 1986:257).

Two major Apache groups occupied eastern and southern Arizona, the Western Apache and the Chiricahua. Each group had its own language, social organization, and material culture, and each considered itself a separate entity (Hoijer 1938). Subgroups within the major divisions were generally identified with a specific geographic area and, in turn, considered themselves distinct. The group known to occupy the middle San Pedro Valley during the 19th century was the Chiricahua Central Band (Goodwin 1935).

Detailed knowledge of Apache settlement patterns and subsistence practices should provide valuable information for identifying Apachean archaeological sites. Unfortunately, much of the Apache lifeway either left little material evidence or is indistinguishable from that of other hunter-gatherer groups. Hunting, gathering, raiding, and some form of agriculture were the major components of Apachean subsistence prior to their confinement on reservations. The Western Apache practiced a mixed horticultural economy, the primary crops being maize and cucurbits (Welch 1991). Cultigens comprised only about 25 percent of the Western Apache subsistence, the only group for

which there are adequate data, and the Chiricahua may not have practiced agriculture at all (Goodwin 1942:7). Hunting was a predominately male activity conducted in the late fall and winter; game animals included deer, javelina, and various small mammals if larger ones could not be found. Gathering wild plant foods usually fell to the women and included a wide variety of foodstuffs taken from several biotic provinces during a seasonal round. Various cacti were gathered in the early summer at low elevations followed by acorns and mesquite in August and pinyon nuts and juniper berries in the fall at higher elevations (Basso 1970). Raiding supplemented other subsistence activities and may have accounted for a substantial portion of a particular family's economy. Raiding was conducted for two reasons: to exact revenge and to gain booty. Desired items of booty included horses and other livestock, guns, and wheat (Opler 1973). Revenge raids were undertaken to avenge the death of a relative, but material gain was often a factor in these raids as well.

Due to the highly mobile nature of Apache settlement and subsistence, Apachean archaeological sites have been difficult to identify. Ethnographic accounts indicate the use of two types of wickiups, sweatlodges, roasting pits, ramadas, and water control devices for irrigation. There are no ethnographic references to Apache use of caves or rockshelters. Some informants indicate that caves were to be avoided as residences due to the presence of *gan* spirits, tabooed animal species, and human burials (Donaldson and Welch 1991:101 Note 1). Apachean ceramics are not well documented, especially in southern Arizona, but include undecorated, thin-walled, pointed-bottom vessels with surface striations. The lithic technology of the early Apache is virtually unknown. Given the perishable nature of Apachean structures and the lack of systematic study of their material culture remains, few Apachean sites have been identified archaeologically (Donaldson and Welch 1991).

The identification of Apachean sites has generally depended on historic or ethnographic evidence (Vivian 1970; Longacre and Ayres 1968). Content and style of pictographs have been used to identify Apachean special use sites such as Malpais Hill, Circle I Hills (Schaafsma and Vivian 1974:6), AZ EE:9:49 (ASM) (Danson 1946:8), and the Garden Canyon Pictograph Site. The only documented site with large raptor pictographs similar to the Garden Canyon Pictograph Site is located in the Tularosa River Valley of New Mexico (Hough 1907). The lack of detailed knowledge of early Apache archaeological sites was one of the most exciting and challenging aspects of the Garden Canyon Project. We had the opportunity to identify and define an assemblage associated with known Apache pictographs. Not only did we anticipate acquiring datable materials relative to the pictographs, but felt we could define what comprised an early Apache assemblage.

Spanish Colonial Period

The exploratory expeditions of De Niza and Coronado marked the beginning of the Spanish Colonial period. Intensive settlement and exploitation of southern Arizona, however, did not begin until the end of the 17th century. The establishment of missions and visitas throughout southern Arizona and northern Sonora by Father Kino brought the beginning of fundamental changes in the economic, social, and religious life of Native Americans. Southeastern Arizona became not only an area for converts, but also the "jumping off" point for the colonization of Alta California, part of the presidio systems that subdued the Apaches, and a major way station on the southern route to the gold fields of California (Whittlesey et al. 1990:240).

Prior to his death in 1711, Kino established a chain of missions and visitas across the Southwest, including those at San Gabriel de Guevavi, San Xavier del Bac, and San Cayetano in the Santa Cruz Valley and at Quiburi in the San Pedro Valley. These establishments were not merely religious in nature, they were also economic and social focal points. The introduction of Old World cultigens and domestic stock changed the local economies in several important ways. The production of winter wheat, a frost-resistant crop, meant that the Pimans could produce nearly twice as much food with the

same amount of land (Sheridan 1988). Domestic stock, especially horses and cattle, were incorporated into the Piman economic system and provided more efficient means of transportation and a ready supply of meat. The addition of these new foodstuffs reduced the necessity of a seasonal round in search of specific wild foods. With these economic changes also came the ability to live in larger, more aggregated groups--a result desired by the Spanish who wanted to catechize and control the native people.

Population growth was slow during the Spanish Colonial period due a lack of sustained immigration by the Spanish and devastating epidemics that ravaged the native populations. The discovery of silver in 1736 sparked a minor boom, but the interest, like the silver, was short-lived. Increasing demands on Indian labor by the Spanish military and colonial populations led to a Piman revolt in Sonora in 1751. The leaders of this ill-fated effort surrendered near Tucson in 1752. As a consequence, the Spanish established the presidio at Tubac to defend the missionaries against their potential converts (Whittlesey et al. 1990:251). With the Spanish occupied in the Santa Cruz Valley, Apache hostilities continued unabated in the San Pedro Valley and surrounding mountains. The Sobaipuri abandonment of the area in 1762 was an attempt to minimize losses of people and goods. The result had the opposite effect, however. The Santa Cruz Valley with its much larger population and greater store of goods now became the target of Apache raiding.

The presidio at Tubac was moved to present-day Tucson in 1776 not to protect against Apache raiding, but to provide assistance in the effort to settle California. It was only after the Yuman Indians of the Lower Colorado River area killed missionaries and colonists that the Spanish abandoned their attempt to maintain land-based ties between Sonora and California. The decline of the Tucson presidio as a way station for California meant attention could be turned toward subduing the Apache (Barnes 1984:216). The Spanish policy of forced relocation, gifts, and alcohol distribution created a period of relative peace in southern Arizona that lasted until the beginning of the Mexican period in 1820.

Archaeological sites of the Spanish Colonial period reflect the influence of Spanish policies on settlement and the lack of support from the central government for the far-flung outposts. Sites dating to this period are concentrated around missions and visitas. The material culture is dominated by Piman utility wares associated with small numbers of lead-based maiolica wares produced in Mexico. In the San Pedro Valley, the site of Santa Cruz de Terrenate dates from this time period. It was excavated by Di Peso in the early 1950s.

Mexican Period A.D. 1821-1856

The Mexican War for Independence culminated in 1821 with a Mexican victory and declaration of sovereignty. The events in the south had little impact on the residents of Arizona, but set the stage for slow cumulative changes in the following decades.

The most immediate impact in southern Arizona was the transfer of troops stationed at the Tucson presidio to points further south. The resulting lack of military presence meant that the Apache were essentially unchecked throughout the region. Apache raiding and warfare killed more than 2,000 people during the 1820s (Spicer 1962); fear and uncertainty about the Apache threat caused population growth to be relatively slow throughout the Mexican period.

The second direct impact of the war was felt in the mission system. The missionary at San Xavier del Bac refused to declare allegiance to Mexico in 1821. As a result, the Mexican congress expelled all foreign missionaries in 1827 (Faulk 1970:54) and secularized all missions in 1834. The removal of both

the soldiers and missionaries increased the Apache domination of the area until the only operating mission was San Xavier del Bac near Tucson (Hard and Doelle 1978:10).

Economically, the impacts of the war were slow in coming and related more to expansion of the United States than to the new political structure in Mexico City. Like the Spanish Crown previously, the Mexican government practiced exclusionary trade policies to support Mexican industries and keep profits, and prices, high. The Mexican government, however, lacked the ability to enforce such policies. Evidence from excavations near the Tucson presidio demonstrates that local Piman populations were supplying many of the utilitarian vessels, and presumably other products, needed by the resident Spanish population (Barnes 1984). Westward expansion of the United States frontier and the opening of the Santa Fe Trail in 1821 provided closer access to markets and goods than central Mexico. Thus, at the same time the Mexican government was supporting artificially high prices for Mexican goods, newly opened transportation routes allowed cheaper goods to enter southern Arizona from the east.

Anglo-American trappers began to exploit the beaver and muskrat resources on the Salt-Gila River system in the 1820s. Bounty hunters, enticed by rewards for Apache scalps, entered Arizona about the same time. These initially minor Anglo-American influences became a torrent with the mad rush to the California gold fields at mid-century. Increasing conflicts between the resident Hispanics and Anglos led to the Mexican-American War in the 1840s and the beginning of the Anglo-American Territorial period.

Anglo-American Territorial Period A.D. 1854-1912

The United States' victory in the Mexican-American War (1846-1848) brought much of the southwest under direct American control for the first time. Desire for a more southerly route to California led to the Gadsden Purchase of 1854, an event that completed the expansion of the continental United States. In southern Arizona, the Anglo-American period is a political division that has little to do with ethnicity; the majority of people in the area remained Hispanic or Indian (Ayres 1984). Two interconnected themes pervade this time period, subjugation of the Apache and settlement of the area by outsiders.

After the war, Mexican troops remained in Tucson until 1856, providing some measure of protection for the local populace. When the Mexican troops left, they were not immediately replaced by U.S. forces and, once again, the Apache became the dominant military power in the region. The Civil War required the attention of U.S. authorities and the "Apache problem" was not addressed until the mid-1860s. In 1865, a military district was established specifically to deal with the Apache. Camp Whalen was founded on the Babocomari River, renamed Fort Whalen in 1866, and abandoned in 1867 due to excessive Apache attacks.

The military began to have some success against the Apache in the late 1860s and negotiated a reduction in hostilities and the creation of the Chiricahua reservation in 1872. Two events, the Camp Grant Massacre (Hastings 1959) and the closure of the Chiricahua reservation prompted a resumption of hostilities. The Apache, led by Geronimo and Victorio, again took to raiding settlements, attacking stage lines, and disrupting communication networks.

As a result of increased Apache hostilities, Captain S.M. Whitside founded Camp Huachuca on the eastern flank of the Huachuca mountains in 1877. The camp was greatly expanded and renamed Fort Huachuca in 1872 (Smith 1981). The ineffective General Crook was replaced as commander by General Nelson A. Miles in 1886. Miles instituted a search and destroy strategy against the Apache and used the creation of a heliograph system to communicate over large areas of the southwest

(Walker and Bufkin 1979). The result was the defeat of Geronimo in 1886 and the end of the Apache Wars in Arizona.

While the military was busy fighting the Apache, surveyors, miners, farmers, and ranchers were bringing southern Arizona into the mainstream of the United States. Routes were surveyed, first for stage lines such as the Butterfield Overland mail route between San Antonio and San Diego, and later for the railroads. Attracted by the mineral potential, prospectors began searching for gold, silver and other precious metals. Impetus for much of the exploration came in 1877 when Ed Schiefflin found a lode of silver in the San Pedro Valley (Whittlesey et al. 1990). Schiefflin founded the town of Tombstone, and several other small communities including Charleston, Patagonia, Galeyville, and Contention City, sprang up as the mining boom accelerated. Such a boom in population led to the founding of Cochise County with Tombstone as the county seat in 1881. As was so often the case in the west, the boom was short-lived. Flooding of several mine shafts began in the late 1880s and hastened the decline of mining as the dominant industry in the valley (Canty and Greeley 1987).

The increased population, both military and civilian stimulated a need for food, clothing, lumber products and other goods and services. As early as the 1870s, Mormon settlers in the San Pedro Valley were supplying foodstuffs to local military garrisons. Communities were established at St. David and Pomerene to supply both the military and mining populations with agricultural products.

Ranching had been practiced by the Spanish and Pimans since the introduction of cattle by Father Kino's missions. The defeat and containment of the Apache revived the industry. Several former Spanish and Mexican land grants, including San Ignacio del Babocomari, San Rafael del Valle, and Las Boquilas ranchos produced large amounts of beef for local markets. The industry grew to its peak in 1891 with 721,000 head of cattle grazing over 174,000 acres in the middle San Pedro Valley alone. Such intensive use, however, quickly exhausted the fragile range (Wagoner 1970) and the industry began to decline.

Military activities, transportation and communication services, mining, farming, and ranching all contributed to bringing the middle San Pedro Valley into the American orbit by the early 20th century. The initial success of these ventures, however, was followed by a period of relative decline at the turn of the century. True, the Apache were no longer a threat, but a decline in metal prices, the destruction of range land, and lack of a defined military mission left the area on the brink of collapse in the first decade of the 20th century. Two events, Arizona statehood and World War I, stimulated the economy and insured stability and growth in the next few decades.

Arizona Statehood A.D. 1912-Present

Arizona's admission to the United States helped integrate the San Pedro Valley into the national economy. More importantly, political and economic events on a national and international scale now impacted the area relatively quickly.

The Mexican Revolution (1910-1917) and mining riots at Cananea (1906) renewed U.S. interest in Fort Huachuca as a military outpost. Although no direct encounters with Mexican troops occurred, Pancho Villa's raid on Columbus, New Mexico in 1916 reinforced Fort Huachuca's role as a border surveillance and protection post. The entry of the U.S. into World War I contributed to the growth in troop strength at the fort. In addition, it also stimulated the need for precious metals, farm products, and beef--all industries vital to the southern Arizona economy.

The years between the world wars were uncertain ones for the middle San Pedro Valley. The Great Depression left the mining and agriculture industries in bad shape and Fort Huachuca was

considered for deactivation. Like other areas of the country, the San Pedro was revived by the U.S. entry into World War II. Fort Huachuca began a period of rapid expansion, both in terms of population and size. An influx of 30,000 troops, construction of barracks and training facilities, and the acquisition of much of the East Range made the military a driving force in the local and state economy. Concomitantly, the growth of the local community first named Garden Canyon, then Fry, and finally Sierra Vista paralleled the increase in activity at Fort Huachuca.

After the war, the arrival of the 505th Signal Group in 1954 transformed Fort Huachuca into an Intelligence and Communications Center. Additional units at the fort, such as the Strategic Communications Command (STRATCOM), U.S. Army Electronic Warfare School (USAEWS), the U.S. Army Communications Management Information Systems Activity (USACOMISA), and the recently established U.S. Air Force Aerostat facility have all contributed to the growth and stability of the fort (Altschul and Jones 1990). Likewise, Sierra Vista has kept pace to provide housing and goods and services to both military and non-military personnel.

CHAPTER 3

THEORETICAL APPROACH AND PROJECT OBJECTIVES

The test excavations at the Garden Canyon Pictographs and Rappell Cliffs sites were considered exploratory. Because both sites are listed on the NRHP, our goals were to determine the nature of rockshelter use without destroying the rockshelter deposits. A limit of 4 square meters of excavation in each rockshelter was agreed upon by Fort Huachuca and the Arizona SHPO. Our task was to identify and characterize the occupations, while disturbing the deposits as little as possible.

THEORETICAL APPROACH

Rockshelters and caves throughout the western United States have provided a wealth of information about prehistoric peoples. Excavations at cave sites have confirmed and refined cultural sequences partially identified at open air sites. For example, the presence of a long, stratified sequence of cultural adaptations in a single location at Ventana Cave solidified perceptions of the Cochise and Formative period cultural traditions (Haury 1975). In addition, the excellent preservation at rockshelter sites in the arid west provides us with aspects of material culture not normally present at other site types (Jennings 1978). Many of these perishable materials can be used to provide direct radiocarbon dating of artifacts (Bryan 1979), thereby eliminating problems of association and cultural affiliation.

Rockshelter deposits are typically very complex. Because of their location within a rock formation, rockshelter deposits are subject to a variety of natural and cultural formation processes unlike those at other sites. Sediments can be derived from endogenous and exogenous sources (Farrand 1985) and may be influenced by human, animal, or geological forces. Internal sources of sediment include roof fall, dissolution precipitates, and weathering of bedrock, whereas sediments derived from outside the shelter can be anthropogenic, fluvial, alluvial, or aeolian in origin. All of these sources of sediment may contribute to the deposits simultaneously and can present a confusing picture of what actually occurred inside the shelter. Rockshelters serve as "highly efficient sediment traps" (Colcutt 1979:290). Stratigraphy in such sites is generally complex and often must be described in detail on a small scale. An individual stratum rarely encompasses the entire site; separate strata must be related to the internal configuration of the shelter and to each other through careful excavation and recording of sediment type, color, boundaries, and content. Such attention to detail is the only means of correlating occupations in one area of a rockshelter with those only a meter or two away.

Like other archaeological sites, the excavation of rockshelters may be approached in several different ways. Removal of all sediments provides a complete inventory of items and features; at the same time, however, all of the spatial relationships between them are destroyed. This was not a feasible strategy for the Garden Canyon Project, given the emphasis on preservation of the cultural resources. Excavation of trenches extending from inside a rockshelter to outside the drip line is a common strategy for identifying the relationships between natural and cultural strata (Aikens 1970; Thomas 1983) and for correlating deposits within a rockshelter with those outside for purposes of environmental reconstruction (Rice 1972). Again, because the Garden Canyon sites are small and we were limited to a relatively small excavation area, trenches for stratigraphic purposes were deemed an unprofitable use of time and resources. Instead, we chose a strategy of spatially segregated test pits that would enable us to define the stratigraphic relationships between features, recover a sample of artifacts and ecofacts necessary to answer specific research questions, and was within the guidelines set forth by Fort Huachuca and the Arizona SHPO.

RESEARCH GOALS

Excavations in the two rockshelters were designed to answer several questions concerning the use of upper elevation sites by both prehistoric and historic groups. In short, we wanted to answer the who, what, when, and why questions about the rockshelters. Who used the sites? When were they used? What were they used for? And why were they used at particular times and not at others? Answers to these questions would enable us to place the use of Garden Canyon into a regional context and contribute to an understanding of cultural dynamics in the middle San Pedro Valley during both the prehistoric and historic periods.

Questions of Integrity

The first goal at each rockshelter was to determine if intact subsurface deposits were present. All subsequent research questions revolved around the presence or absence of such deposits. If subsurface deposits were present, it was critical to determine their extent both vertically and horizontally. In addition, the integrity of the deposits had to be assessed. In other words, were they intact as left by the occupants of the shelters or had they been modified by natural or cultural formation processes?

To accomplish the initial research goals, a database large enough to assess the deposits, but still within the agreed upon 4 square meter limit, had to be established. Sufficient information had to be extracted from our limited horizontal exposure of the deposits to determine (a) how much of each shelter was occupied, and (b) to determine the location of intact subsurface deposits. Vertical exposure was necessary to assess the depth of the deposits and to identify stratigraphically discrete units indicative of different occupations and intact deposits.

These initial goals were accomplished by excavating small, 50 centimeter by 50 centimeter, test pits scattered throughout the rockshelters. In this way, areas with intact cultural deposits were identified quickly and efficiently with as little disturbance as possible. If no cultural deposits were encountered, these small units were abandoned and work was begun in another area. When cultural deposits were located, the small test pits were expanded to delineate the boundaries of cultural strata or features. This plan was modified somewhat in the Rappell Cliffs Rockshelter. The presence of large boulders throughout much of that shelter severely restricted the areas within that rockshelter suitable for locating excavation units of any kind. The methods adopted there are described in detail in Chapter 5.

Chronology Building

Once subsurface deposits were identified, the next task was to determine when those deposits were laid down; we wanted to determine if there was more than one occupation and, if so, what time periods were represented. We knew from the pictographs that AZ EE:11:15 was used by the Apache, probably in the 18th century, and possibly by earlier Formative groups as well. We suspected that the Rappell Cliffs Rockshelter was utilized during the Formative period and possibly earlier. The excavations were conducted to determine what other occupations were represented by either historic or prehistoric period deposits.

Data required to address this question consist of two types: relative dates of the strata and artifacts and independent dates. Relative dating techniques include stratigraphic position of occupation levels, ceramic cross-dating, and lithic technological cross-dating. Stratigraphic position of occupation

levels is indicative of the relative age of each level, but does not provide information relating a particular level to events outside the rockshelter. Stratigraphic position is helpful, however, when assessing the validity of dates derived from other techniques. Ceramic cross-dating provides clues as to the age of a particular deposit in relation to cultural phenomena within the region of southeastern Arizona. To fully utilize ceramic cross-dating, however, a large sample of sherds is needed, especially those that have time-diagnostic attributes. Lithic artifacts may also be useful for cross-dating, particularly time-diagnostic projectile points and technologies. In general, however, cross-dating with lithic artifacts does not provide as fine a degree of resolution in southern Arizona as does the use of ceramics. Furthermore, to use lithic materials for cross-dating, a large sample of artifacts is also needed. The only independent dating technique used during the project was radiocarbon dating. This technique provides dates relative to the Christian calendar and can be used as an independent check on the cross-dating of lithics and ceramics. The radiocarbon dates are reported in two ways, as uncalibrated, corrected dates and as calibrated dates. Uncalibrated, corrected dates have been corrected for the effects of fractionation, but have not been calibrated in terrestrial years. Calibrated dates have been corrected for fractionation and calibrated in terrestrial years using the tree-ring method described by Struiver and Becker (1988). Due to the cost of obtaining such dates, however, samples for dating were selected carefully, focusing on those that would provide unambiguous dates pertaining to specific events.

Methodologically, it was important to insure that each of the dating methods was applicable to the event of interest (Dean 1978). For example, a radiocarbon date on charcoal from a particular level provides information only on the probable time range for the death of the burned wood specimen. It is an archaeological problem to associate that biological event with the cultural events of interest. For this reason, we attempted to point-provenience all artifacts, particularly those with attributes thought to be temporally sensitive. Sherds and projectile points were located *in situ*, if possible, to relate them to stratigraphic layers and features. Small (1/8-inch) mesh was used during the excavation in an attempt to recover small materials, particularly lithic artifacts. Such small flakes may be useful in differentiating cultural groups from one another (Kahlin 1982): in this case, Apache from Formative period groups. Finally, charcoal was collected from each level and feature. Samples submitted for radiocarbon analysis were those thought to be from the "strongest" contexts (Schiffer 1982): features and, when possible, samples that had been point-provenienced during the excavation. This collection strategy insures that the independent dates derived from those samples provided chronometric information concerning specific, short-lived events in the site history, such as the use of an individual feature.

Subsistence

The question concerning what people were doing in the rockshelters can be partially addressed by examining subsistence data. We know people used the rockshelters to create rock art, but is that all they did there? Were the sites used for other purposes such as hunting camps, storage locations, caches, or burial grounds? If the sites were used for any of these purposes, several other questions needed to be addressed. What were the site occupants eating? Were those foods available close to the sites or were they brought to the sites from somewhere outside Garden Canyon? What strategies were used to acquire foods and how were those foods processed at the rockshelters? Given these research questions, it was important to identify plants and animals thought to be economically important to the site occupants. Ethnographic and archaeological data provide some information on resource use, but interpretations concerning these two sites must be based on data recovered during the excavations.

The data required to answer these questions can be divided into two broad categories, plant remains and animal remains. The first task necessary to address these questions is to characterize the modern plant and animal resources available in the local area. Current literature on the flora and

fauna coupled with observations made during the fieldwork phase of the project were sufficient to accomplish this task. Pollen samples collected outside the rockshelters were also used to characterize the modern environment. To identify economically important plants, analyses of pollen and plant macrofossil remains recovered from archaeological contexts were conducted. Faunal analysis of all bones recovered during the excavation, as well as those collected prior to the project, was done to identify animal species exploited by the rockshelter occupants.

Each of the floral and faunal analysis techniques required specific methods to recover information relevant to the research questions. Pollen and plant macrofossil analyses were used to characterize the archaeological remains from specific areas of the sites, primarily features. Appropriate samples were collected from every level and every feature, though not all samples were submitted for analysis. Pollen samples were collected in 100 gram units and submitted to Ms. Kate Rylander of Tucson for analysis. Extraction and counting was done using standard techniques described in later sections of the report. Plant macrofossil samples were collected in 1 liter samples. Flotation of these samples was done by personnel at Statistical Research and the remaining light fraction was submitted to Ms. Rylander. Identifications of the remains were made by comparison to the reference collections at the University of Arizona and the professional expertise of Ms. Rylander.

Faunal remains were collected during the excavation and separated from other artifacts in the laboratory to prevent breakage. The use of 1/8-inch mesh during the excavation insured the recovery of diagnostic pieces of bone (Grayson 1984; Shaffer 1992). The faunal analysis was conducted by Ms. Kelly Cairns through use of the comparative collection at the Zooarchaeological Laboratory at the Arizona State Museum, Tucson. The initial goal of the faunal analysis was to identify each bone element and species of each bone. This goal was compromised somewhat by the fragmentary nature of the assemblage; in reality, it was conducted using a taxonomic hierarchy. Bones were identified to the lowest taxonomic level possible. Pieces of bone tentatively identified as human were taken to Dr. Lynne Schepartz of the University of Arizona, a physical anthropologist who specializes in archaeological human remains.

Cultural Affiliation

Who used the site? Identifying the cultural affiliation of the site occupants is critical if we are to relate a site occupation to the creation of the pictographs. Although the ethnicity of the white pictograph makers at AZ EE:11:15 is probably Apache, the identity of the artisans responsible for the red, some black, and the polychrome art at the site is unknown. The cultural affiliation of the artisans at AZ EE:11:30 also is unknown. By identifying the groups responsible for the rock art in each shelter, we hoped to elaborate on the settlement and subsistence patterns of those groups.

The data required to make such identifications fall into two groups, both of which require certain assumptions about our knowledge of the past. The first data set necessary to address the question of who used the rockshelters is ceramics. A large sample of sherds with attributes diagnostic of specific types is needed to relate these two rockshelters to other sites in southeastern Arizona, southwestern New Mexico, and northern Sonora. Ceramics in themselves, however, cannot tell us about any genetic relationships between the users of our sites and other sites in the area. Attributes, particularly on painted ceramics, can provide insight into social and cultural interaction and may provide clues to the identity of the potters. Indeed, much of southwestern archaeology has been based on the assumption that shared ideas and cultural norms are expressed in ceramic production and design styles.

A second data set commonly used to identify cultural groups is lithic artifacts, particularly projectile points. A large sample of projectile points would have allowed comparisons with other sites and areas. Unfortunately, our sample is very small (n=4) and all the points are fragmentary. Lithic

technology may also be used to indicate similarities and differences over a broad area (Parry and Kelly 1987), but such studies are still in their infancy. Even so, our method of lithic analysis will provide comparative data for future researchers.

Regional Synthesis

The final objective of the excavations was to characterize any occupations of the rockshelters and place them within broader settlement and subsistence patterns of the Huachuca Mountains and San Pedro Valley (Altschul 1991; Altschul and Jones 1990). By examining the cultural affiliation, temporal range, and subsistence base of the site occupants, we hoped to relate the use of Garden Canyon to broader developments in the region. Certainly, we wanted to determine if these sites contained intact deposits. Beyond that narrow focus, however, we hoped to learn why the area was used at particular times by specific groups and not at other times by different groups. We felt it was important to identify and characterize an assemblage associated with a known Apache special use site, something that has not been accomplished previously. It is only by test excavations at such upper elevation sites that we will be able to understand the exploitation of diverse environments by earlier populations in southeastern Arizona.

Data required for the synthetic goals were derived not only from the test excavations at these two rockshelters, but from a variety of other sources as well. We felt that the scope of this objective required an integration of data from other rockshelters in southern Arizona as well as a more detailed examination of the culture history of the middle San Pedro Valley. By placing these small sites in such a broad perspective, we hope to contribute to an understanding of prehistoric use of special sites at higher elevations and to posit questions concerning the cultural dynamics of a little known region of southeastern Arizona.

CHAPTER 4
GARDEN CANYON PICTOGRAPH SITE
(AZ EE:11:15)

The Garden Canyon Pictograph Site (AZ EE:11:15) is located in the upper section of Garden Canyon at an elevation of approximately 6100 feet (1884 meters) (Figure 2.7). Two loci, defined by the presence of pictograph concentrations, comprise the site boundaries. Locus 1 is a large east-facing rockshelter and is the main area of pictograph concentration. Locus 2 is much smaller and contains three pictographs in a confined area approximately 20 meters north of Locus 1. The site was formed by the erosion and undercutting of jointed limestone bedrock. Garden Canyon creek, a perennial stream, is located approximately 19 meters southeast of Locus 1 and may have provided water to the site occupants on a year-round basis.

Fractures in the limestone bedrock have formed an irregular, but relatively large rockshelter at Locus 1 (Figure 2.8). It is approximately 18 meters southwest-northeast, 4 to 5 meters high, and 3.5 meters deep at its most expansive. Height of the ceiling and depth of the walls vary within the rockshelter, but the central area is adequate for human activities conducted in small groups. Surface area within Locus 1 totals approximately 40 m^2. A joint in the limestone forms a shelf in the rockshelter that ranges from 1 meter above the ground in the northern end of the shelter to almost 2 meters high in the center. This shelf varies in width throughout the shelter, but would have provided an excellent platform on which to stand while painting the pictographs or as a storage area. Large limestone boulders from major roof fall events are located under or near the drip line and provide some measure of protection from the wind. It is highly likely that there are buried cultural deposits beneath at least two of these boulders near the center of the rockshelter. A chain-link fence erected in 1969 encloses the central area of Locus 1 and has protected the pictographs from vandalism. The location, size, and aspect of the rockshelter are ideal for human use; indeed, a crew of four conducted the test excavations under a variety of weather conditions and remained perfectly dry and comfortable. The summer heat of the Sonoran desert is ameliorated at the rockshelter due to the relatively high elevation. During the test excavations, the July sunshine warmed the shelter until about 11:00 A.M., when the roof began to cast shadows over the central area. Afternoon rainfall increased the humidity, but the interior of the shelter remained dry even during prolonged downpours.

The joint in the limestone that forms the shelf in Locus 1 slopes downward toward the north and is also the bedrock beneath the small overhang at Locus 2 (Figure 2.9). This locus is small, approximately 3 meters north-south, 1.5 meters east-west, and 1 meter high. It contains a white pictograph identified as a "Crown Dancer" by San Carlos Apache Councilman Ernest Victor, Jr. Locus 2 can only be examined from a supine position and offers protection from the elements only at the expense of being able to stand.

A total of eight excavation units representing slightly more than 4.25 m^2 of surface area were excavated in the two loci (see Figures 2.8 and 2.9). Five of the test pits were placed within the main confines of Locus 1 in an attempt to define and characterize the occupation of the rockshelter. Two test pits were placed outside the drip line of Locus 1 to identify potential downslope midden areas. A single excavation unit was excavated at Locus 2 to determine if any cultural materials were present.

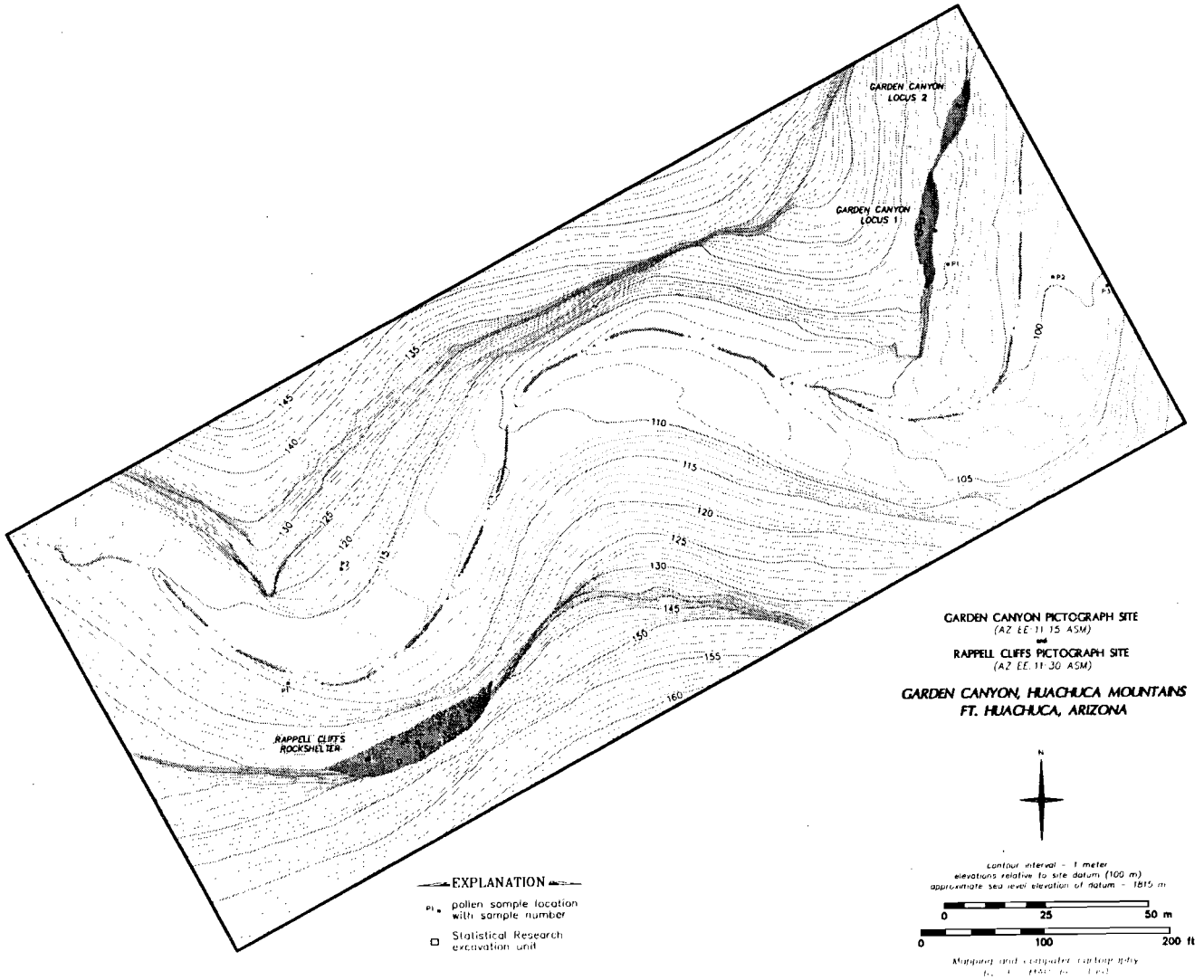

Figure 2.7. Contour map of the upper Garden Canyon area.

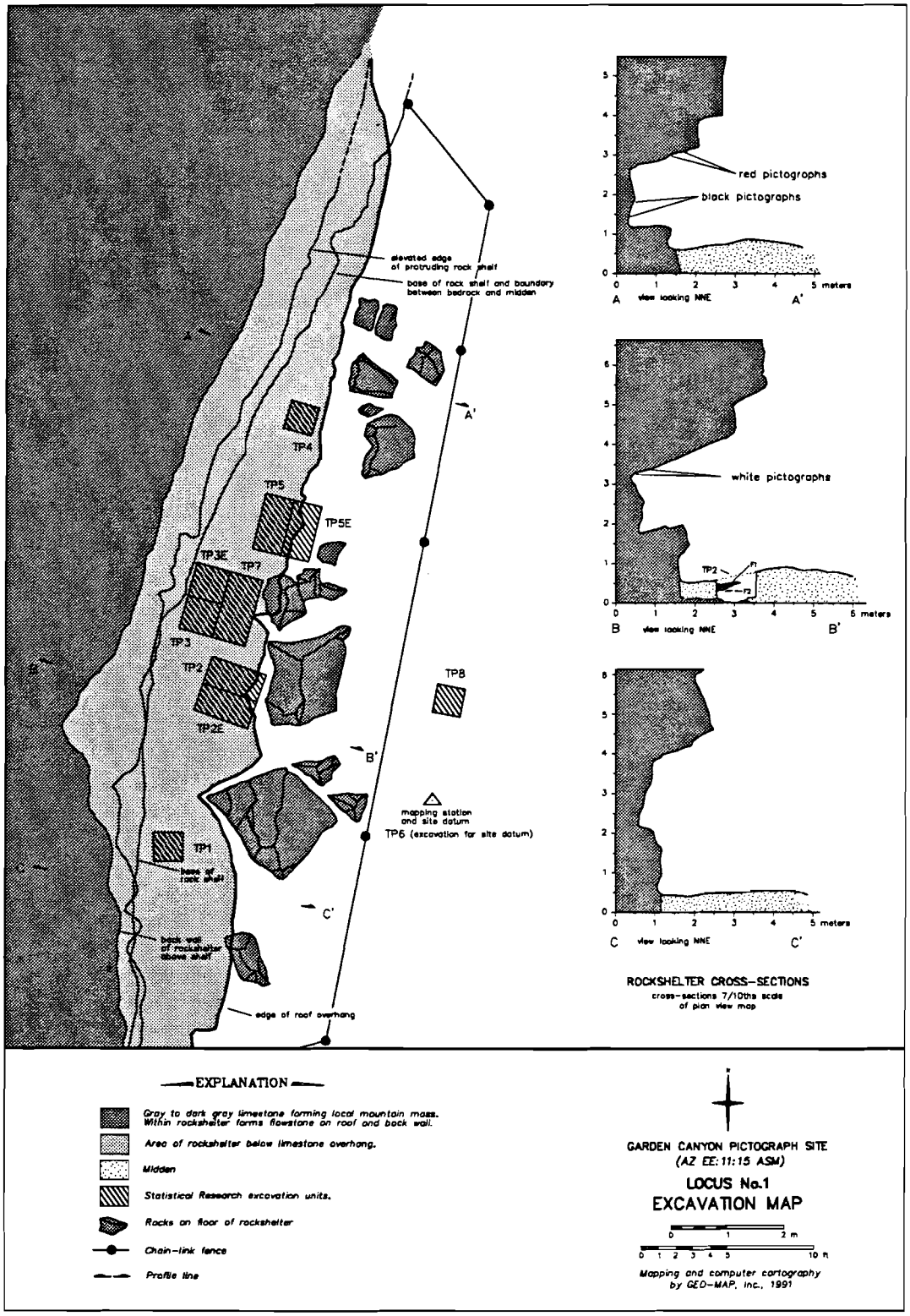

Figure 2.8. Plan and cross-section maps of Locus 1, AZ EE:11:15.

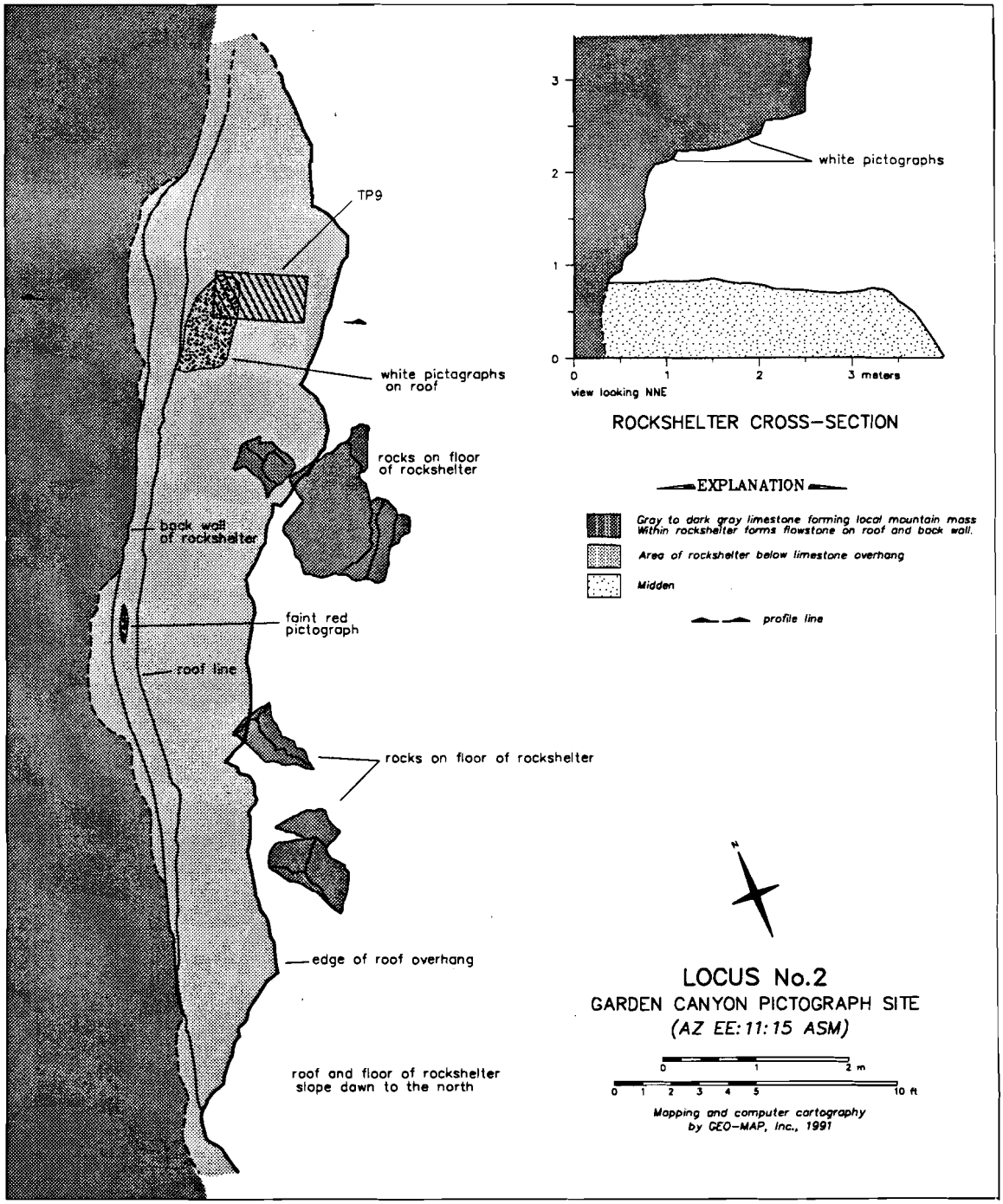

Figure 2.9. Plan and cross-section maps of Locus 2, AZ EE:11:15.

FIELD METHODS

Test excavations in this rockshelter were conducted to address the research questions outlined in Chapter 3. Field methods were designed for maximum flexibility during the excavation and, at the same time, to recover the greatest amount of information possible. One goal of the excavation was to define the spatial extent of any occupation. Excavation units were judgmentally placed in those areas thought to contain intact subsurface materials, as well as in less probable areas. The size of any particular test pit was variable and was adjusted according to the information gained during the excavation. Because we were limited to the excavation of no more than 4 square meters within Locus 1, the work began by excavating four small 50 centimeter by 50 centimeter test pits (numbers 1-4) dispersed throughout the shelter. Those test pits that contained cultural strata or features were expanded into larger units. Test pits outside the dripline of the shelter (Test Pits 6 and 8) and in Locus 2 (Test Pit 9) were excavated to determine if cultural remains were present in areas outside the main rockshelter and were not expanded beyond their original boundaries. By excavating small test pits in these other areas of the site, we were able to define the spatial parameters of the rockshelter occupation relatively quickly and concentrate our efforts on those areas known to contain intact cultural deposits. Within Locus 1, Test Pits 1 and 4 (see Figure 2.8) contained few artifacts and no cultural strata and were not expanded into larger units. Test Pit 2 was expanded into a 1 meter by 50 centimeter unit immediately due to the presence of a feature and a cultural stratum. It was excavated to bedrock and then expanded into a 1 meter by 1 meter unit. Test Pit 3 was excavated to bedrock, expanded to a 1 meter by 50 centimeter unit, and finally expanded to a 1 meter by 1 meter unit. The eastern one half of this test pit (a 1 meter by 50 centimeter unit) was given a new designation, Test Pit 7 in order to assure that provenience information was not confused with the western half of the unit. Test Pit 5 was begun after the general parameters of the cultural strata were identified in an attempt to delineate the boundaries of a thin layer of material, cultural stratum 2A. It was started as a 1 meter by 50 centimeter unit and expanded to a 1 meter by 1 meter unit.

All excavation began using shovels and arbitrary 10 centimeter vertical levels. When cultural strata were encountered, excavation was conducted by cultural strata using a hand trowel. All excavated material was screened through 1/8-inch hardware cloth. Whenever possible artifacts were point provenienced and mapped in the ground. Due to the shallow and disturbed nature of the deposits, most artifacts could not be correlated with a specific cultural stratum and are provenienced only to an artificial depth below surface. A soil sample was taken from every level and every feature; these soil samples were used for both pollen and macrofossil analyses. Only 21 of these samples were analyzed due to budgetary constraints, but they are curated with the artifacts and are available for future study. Likewise, charcoal was collected whenever appropriate, although only 4 samples were submitted for radiocarbon dating.

LOCUS 1 STRATIGRAPHY

The stratigraphy in rockshelters is subject to many processes of formation and disturbance not commonly found at other archaeological sites. Roof fall, rodent activity, repeated human use and re-use, and other biological and geological processes all impact the sediments prior to their excavation by archaeologists. Before interpreting past use of the site, all of these post-depositional processes must be considered. Each stratum must be correlated with all of the others and with events relevant to the human occupation of the rockshelter. Such a detailed examination of the stratigraphy is particularly important at AZ EE:11:15 as very few artifacts were recovered. The majority of information about past human activities in the shelter, therefore, is contained in the stratigraphy.

Descriptions of the strata present in the rockshelter are presented in Table 2.1. Figure 2.10 represents a proposed north-south cross-section of the rockshelter area of Locus 1. Not all strata shown in this cross-section appear in the profile diagrams of individual test pits because some strata were present only in the middle of test pits or in the north or south profiles. Test pits were given designations in the order of excavation and, therefore, the numerical sequence does not follow a geographic sequence. The proposed cross-section is a composite of all strata within Locus 1 and presents stratigraphic relationships in unexcavated areas as hypotheses to be tested.

The surface of Locus 1 is covered by a loose silty sand of aeolian deposition (Stratum 1A). This stratum is a natural deposit but may contain small numbers of modern artifacts deposited by visitors to the site and a few prehistoric artifacts carried up from lower strata by rodents. Strata 1B and 1C are more compact variants of Stratum 1A that occur in different areas of the site. Stratum 1B is located in the northern and southern areas of the rockshelter. Stratum 1C is located in the central area and overlies cultural strata in Test Pits 3 and 5. Strata 2A and 2B are associated with each other and comprise a cultural layer that is stratigraphically the most recent in the site history. These strata and hearth features in Test Pits 2 and 7 are probably of similar age even if direct association cannot be demonstrated. Strata 3A, 3B, and 3C comprise the cultural components of Feature 1, a hearth located in Test Pit 2/2 extension. This hearth was excavated into earlier hearths and is directly overlain by Stratum 2A in Test Pit 2 extension. Four strata comprise Feature 2, a hearth in Test Pit 2. Strata 4A and 4Ab are the fill of this hearth, Stratum 4B is the burned basal layer of the hearth and Stratum 4Ac is a rodent-mixed portion of the upper fill documented only in the north profile of Test Pit 2. Stratum 5 is the only layer associated with Feature 4, another hearth. Strata 4Ba and 6 are both associated with Feature 5, the lowest hearth in Test Pit 2/2 extension. Strata 7A and 7B represent the only hearth feature not in Test Pit 2/2 extension. This feature in Test Pit 5/5 extension is contemporary with the other hearths (based on radiocarbon dates) and may be associated with Strata 2A and 2B. Strata 8A and 8B are the basal layers in the rockshelter and result from aeolian deposition and roof fall.

The stratigraphy of Locus 1 reveals several interesting patterns. First, almost all activities were carried out in an area approximately 9 meters north-south by 2.5 meters east-west. Not coincidentally, this area is behind the large boulders and probably offered the best protection from canyon winds. Indeed, the most heavily utilized area of the rockshelter is near Test Pit 2, directly behind the two largest roof fall boulders. The sloping nature of the rockshelter surface and bedrock should be noted in the composite diagram. While the surface of the rockshelter slopes downward from north to south, Stratum 2A is relatively level. This stratum was near the surface in Test Pit 2 extension but is almost 40 centimeters below the surface in Test Pit 5 extension. The composite shows that whereas Stratum 2A is the latest cultural layer in the rockshelter, it is probably a part of the same occupation span as the other cultural strata. Finally, the composite diagram should be used to guide any future excavations at the site. The areas near Test Pit 1 and Test Pit 4 do not contain cultural strata and would be unproductive areas to excavate. Those areas where additional information remains in the ground include the area just south of Test Pit 2, between Test Pits 2 extension and 3, between Test Pits 7 and 5, and possibly beneath the large boulders east of the current test pits.

Table 2.1. Descriptions of Strata Present at AZ EE:11:15.

Stratum 1A: Surface layer; loose, fine, aeolian silty sand with small pebbles and pieces of roof fall; some organic materials present; generally dark gray (10 YR 4/1) to dark grayish brown (10 YR 4/2).

Stratum 1B: Similar to surface Stratum 1A; compacted, fine, aeolian silty sand with small gravels present; high organic content; gray (10 YR 6/1) to light gray (10 YR 7/2).

Stratum 1C: Similar to Strata 1A and 1B; compact, very fine, gravelly silty sand with a small clay fraction; charcoal flecks throughout; gray (10 YR 5/1) to dark gray (10 YR 4/1).

Stratum 2A: Cultural layer possibly associated with Feature 3; very compact, very high organic content, silty sand; burned; very dark brown (10 YR 2/2) to black (10 YR 2/1).

Stratum 2B: Cultural layer below Stratum 2A, possibly associated with Feature 3; very fine, hard, clayey, silty sand; oxidized; light brownish gray (10 YR 6/2) to yellowish brown (10 YR 5/4) but appears "orange" to the naked eye; probably associated with the burning of Stratum 2A.

Stratum 3A: Cultural stratum; part of Feature 1, the uppermost hearth in Test Pit 2; Stratum 1A is part of feature fill; very fine ashy silt with charcoal flecks throughout; light gray (10 YR 7/1); probably a mixture of Strata 1A and 3B.

Stratum 3B: Cultural stratum; part of Feature 1, the uppermost hearth in Test Pit 2; very fine, ashy silt with charcoal flecks throughout; almost pure white ash (10 YR 8/1).

Stratum 3C: Cultural stratum; part of Feature 1, the uppermost hearth in Test Pit 2; Stratum 3C is the basal stratum of the feature; compact, oxidized, very fine, silty sand with a small clay fraction; light brownish gray (10 YR 6/2) which appears orange to the naked eye; oxidation a result of heat from fire in hearth above (Feature 1).

Stratum 4A: Cultural stratum; part of Feature 2, the second of four superimposed hearths in Test Pit 2; fine silty sand, mottled, mixed with ash; light brownish gray (10 YR 6/2) to dark gray (10 YR 4/1).

Stratum 4Ab: Part of the feature fill of Feature 2 hearth; very fine silty ash with some charcoal flecks; white (10 YR 8/1).

Stratum 4Ac: Mixture of Strata 4A and 3B; documented in north profile of Test Pit 2 only; probably a result of rodent disturbance.

Stratum 4B: The base stratum of Feature 2 hearth; compact, fine clayey sandy silt with some charcoal flecks; oxidized; light brownish gray (10 YR 6/2) but appears orange to the naked eye; oxidation a result of the fire in Feature 2 hearth.

Table 2.1. Descriptions of Strata Present at AZ EE:11:15. (cont.)

Stratum 4Ba: Small, discontinuous stratum probably the result of rodent activity; very fine silty ash with large pieces of charcoal; sample taken directly from profile yielded uncalibrated, corrected date of 720 ± 100 B.P. (TX-7421); pure white ash (10 YR 8/1); probably associated with Feature 5 hearth.

Stratum 5: Cultural stratum associated with Feature 4 hearth. fine clayey silt mixed with ash and charcoal flecks; light gray (10 YR 7/1) to white (10 YR 8/1).

Stratum 6: Cultural stratum associated with Feature 5, the lowest hearth in Test Pit 2; very fine clayey silt mixed with ash and charcoal flecks; light gray (10 YR 6/2) to light brownish gray (10 YR 7/1).

Stratum 7A: Cultural stratum associated with Feature 3 hearth in Test Pit 5 extension; very fine sandy silt with abundant charcoal flecks and small pieces; base and feature fill of hearth; *in situ* charcoal samples from Feature 3 yielded uncalibrated, corrected dates of 850 ± 60 B.P. (TX-7418) and 780 ± 80 B.P. (TX-7420); very dark gray (10 YR 3/1) to black (10 YR 3/1);

Stratum 7B: Cultural stratum associated with Feature 3 hearth in Test Pit 5 extension; stratum is the basal unit of the hearth; compact, oxidized, fine sandy silt with charcoal flecks; light brownish gray (19 YR 6/2) but appears orange to the naked eye; oxidation a result of fire in Feature 3.

Stratum 8A: Gravelly, fine sandy silt with irregularly shaped limestone cobbles throughout; probably aeolian deposition mixed with roof fall; basal unit of rockshelter in some test pits; culturally sterile; yellowish brown (10 YR 5/4).

Stratum 8B: Gravelly, fine sandy silt with irregularly shaped limestone cobbles throughout; contains a higher proportion of angular cobbles than Stratum 8A; probably aeolian deposition mixed with roof fall; basal unit throughout rockshelter, overlies limestone bedrock; culturally sterile; yellowish brown (10 YR 4/2).

Results

Test Pit 1

Test Pit 1 is the southernmost unit excavated in the rockshelter. It is 50 centimeters by 50 centimeters and was excavated to bedrock which was reached at a depth of 40 centimeters below the ground surface. The surface of this unit contained a portion of a modern hearth in the southwest quadrant. This surface disturbance probably occurred prior to the installation of the protective fence in 1969.

Three strata are present in this unit (Figure 2.11): 1A, 1B, and 8A. All these strata are natural and occur elsewhere in the shelter. Stratum 1A, the loose surface material that occurs throughout the rockshelter, varies from 3 to 18 centimeters thick in Test Pit 1. Stratum 1B, a compacted version of

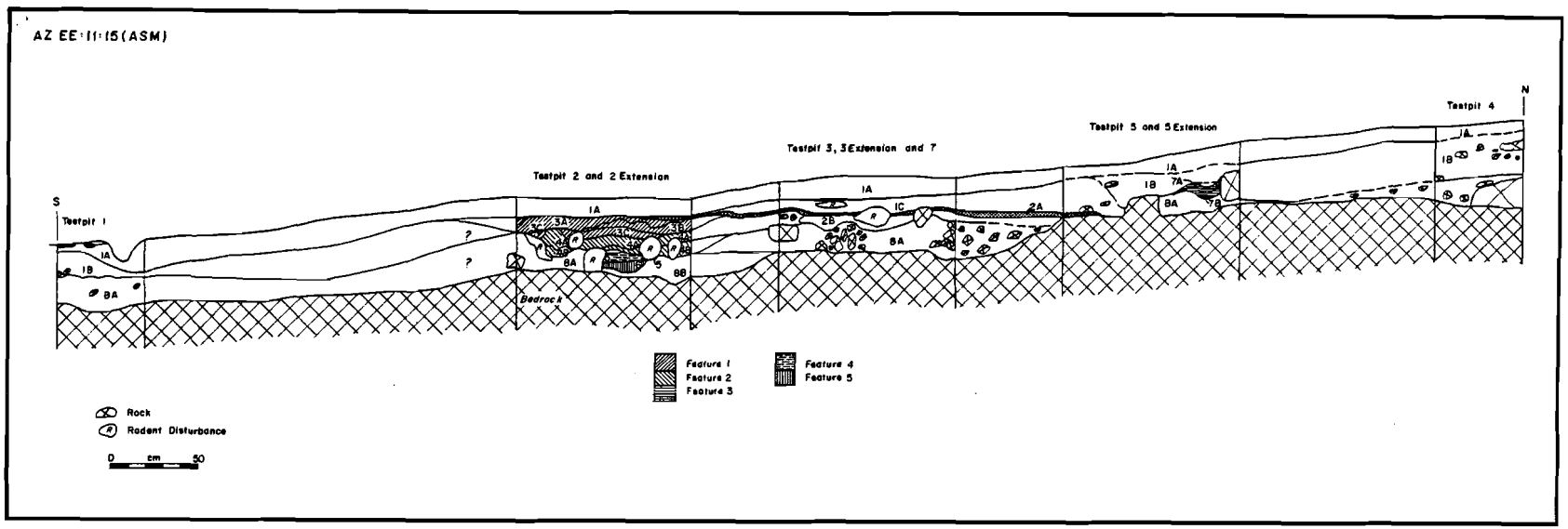

Figure 2.10. Proposed stratigraphic cross-section of Locus 1, AZ EE:11:15.

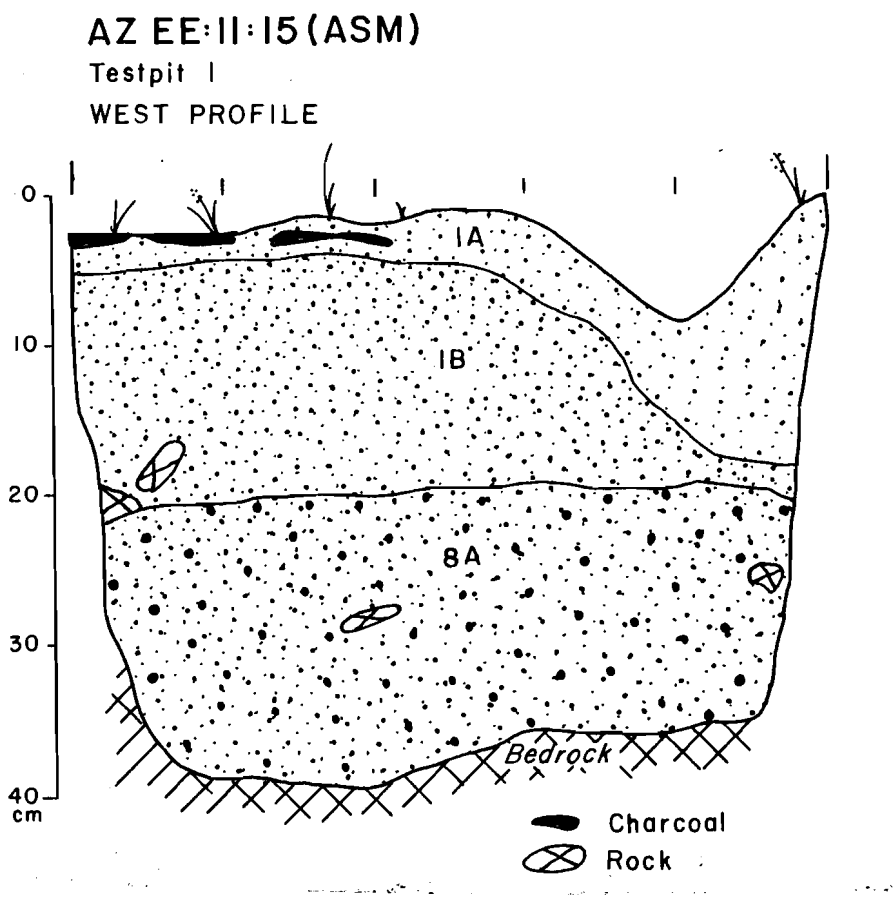

Figure 2.11. West profile of Test Pit 1, Locus 1 AZ EE:11:15.

Stratum 1A, varies from 3 to 15 centimeters thick in this unit. Stratum 8A is one of the basal strata in the rockshelter and generally overlies limestone bedrock. It is approximately 20 centimeters thick in this unit and contains several small angular limestone cobbles indicative of roof fall.

Test Pit 1 was excavated in arbitrary 10 centimeter vertical levels. Five artifacts were collected during the excavation of this test pit: one piece of glass and a burned bone from level 1; two pieces of chipped stone and a single sherd from level 2. All of the artifacts are probably intrusive, the result of modern human and rodent activity. The sherd is a small plain ware body sherd of unknown cultural and temporal origin. Excavation of this test pit indicated that the cultural strata did not extend into the southern end of the rockshelter.

Test Pit 2/2 extension

Test Pit 2/2 extension is a 1 meter by 1 meter unit located in the southern portion of the rockshelter; it was excavated in two separate 1 meter by 50 centimeter portions. Test Pit 2 is the western half of the unit and Test Pit 2 extension comprises the eastern half. Test Pit 2 was excavated to bedrock prior to the excavation of Test Pit 2 extension. The 1 meter by 1 meter unit contained four cultural features, 14 strata, and 169 artifacts.

Test Pit 2/2 extension was excavated in both arbitrary and cultural levels to bedrock at a depth of approximately 50 centimeters below ground surface. The 14 strata present (Figures 2.12 and 2.13) include natural units, Strata 1A, 8A, and 8B and cultural units, Strata 2A, 3A, 3B, 3C, 4A, 4Ab,4Ac, 4B, 4Ba, 5, and 6. The natural strata are present throughout the rockshelter and are described in Table 1, cultural strata are discussed below.

Stratum 2A, a cultural surface, is a compact, very dark, organic rich silty sand that has been burned. It extends from the northwest corner of Test Pit 2 northward into Test Pit 3/3 extension and Test Pit 5. In contrast to the other units, Stratum 2A in Test Pit 2/2 extension is not underlain by Stratum 2B, an oxidized layer. The absence of Stratum 2B may indicate that the sediment was not hot at the time Stratum 2A was deposited in Test Pit 2 and may have been dispersed after it was burned in the area of Test Pits 3/3 extension and 5. There is no direct stratigraphic correlation of this stratum with any of the features on the site. It is possible, however, that Stratum 2A is associated with Feature 3, a hearth in Test Pit 5/5 extension.

Stratum 3A is associated with a hearth, designated Feature 1, that is described in more detail below. Stratum 3A is comprised of light gray silty ash and is probably a mixture of Strata 1A and 3B. It is the uppermost of the three strata that comprise Feature 1. Stratum 3B, the main feature fill of Feature 1, is a very fine white ash with abundant charcoal flecks that is present in the northern half of Test Pit 2. Stratum 3C is a compact, light brownish gray clayey silt that appears orange to the naked eye. It is the basal stratum of the Feature 1 hearth and is oxidized as a result of the fire in that feature.

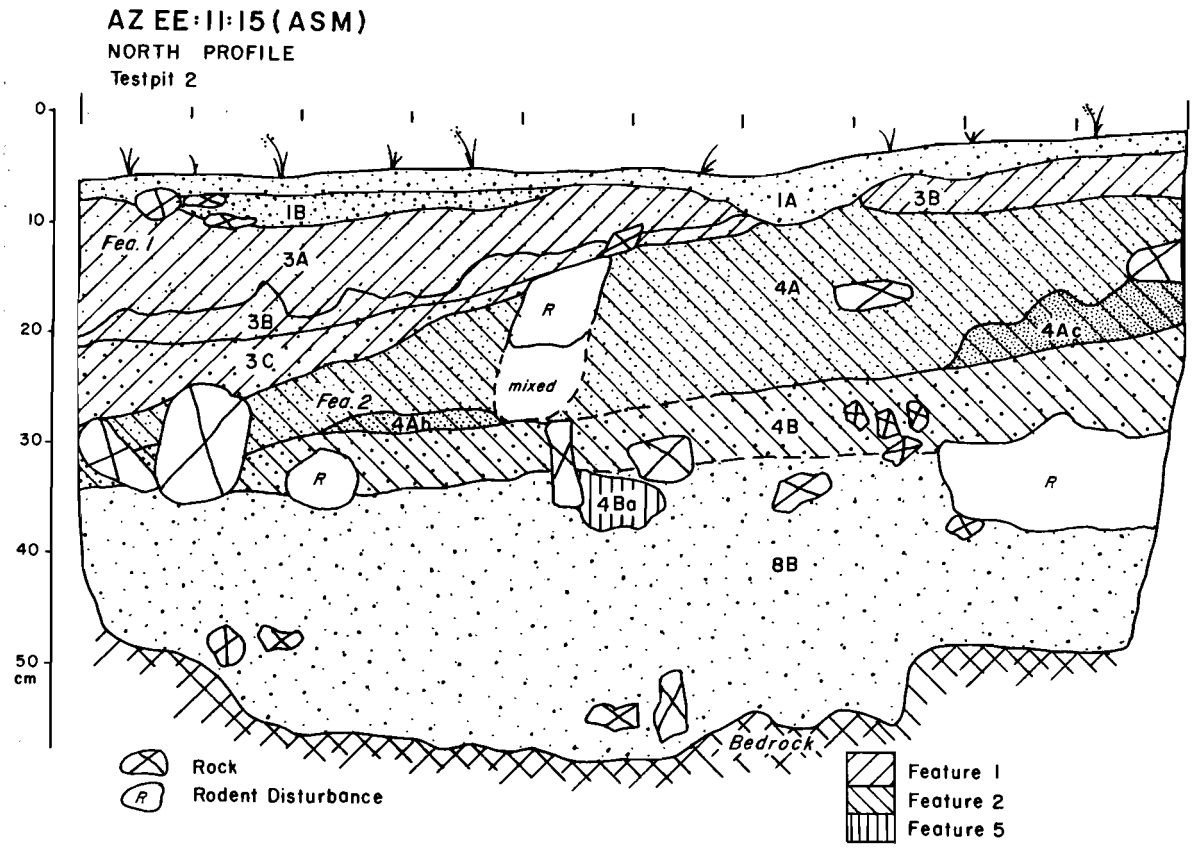

Figure 2.12. North profile of Test Pit 2, Locus 1 AZ EE:11:15

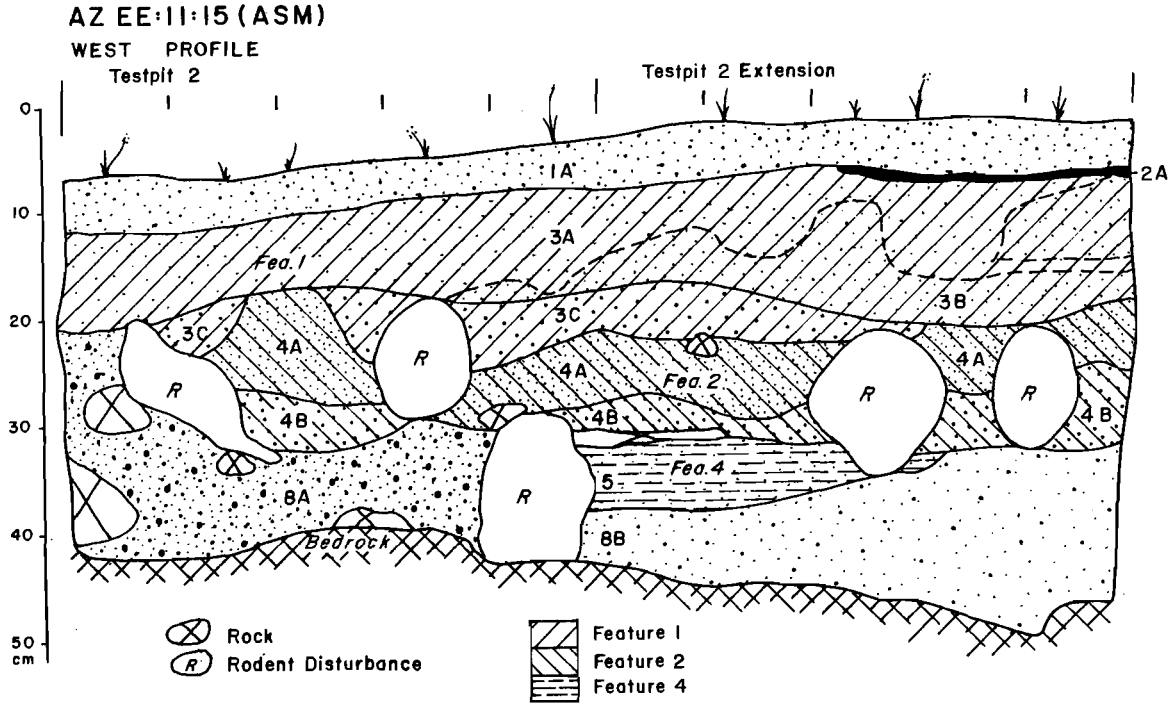

Figure 2.13. West profile of Test Pit 2, Locus 1 AZ EE:11:15.

Four strata comprise the second hearth in Test Pit 2, Feature 2. Stratum 4A is a mottled layer of silty sand mixed with a small amount of whitish ash and charcoal flecks. It is the uppermost stratum in Feature 2. Stratum 4Ab is a very fine whitish silty ash with some charcoal flecks that is part of the feature fill of the hearth. Stratum 4Ac is a mixture of Strata 4A and 3B that was documented only in the north profile of this test pit. It is probably a result of rodent activity. Stratum 4B is a compact, light brownish gray silty clay with some charcoal flecks that appears orange to the naked eye. It is the basal stratum of Feature 2 and was oxidized as a result of the fire in the hearth.

Two layers, Stratum 4Ba and Stratum 6 comprise the lowest hearth (Feature 5) in Test Pit 2/2 extension. Stratum 4Ba is a small, discontinuous stratum of very fine, whitish silty ash with large charcoal pieces in it. It is probably a result of rodent activity and may be associated with Feature 5. Although this stratum was excavated separately, it was not recognized as feature fill until after the unit was completed. Thus, its stratigraphic designation is not consistent with other strata in this unit. Stratum 6 is a fine grayish clayey silt mixed with ash and charcoal flecks that is associated with Feature 5. It is the main feature fill of the hearth.

Stratum 5 is a fine grayish white silty clay mixed with ash and charcoal flecks. It is the feature fill of the third hearth in this test pit, Feature 4, and is the only stratum associated with it.

All of these cultural strata are the direct or indirect results of activities performed around a series of four superimposed hearths. Each of the hearths in this test pit was assigned a feature number and mapped in both plan view and profile if possible. Feature 1 is located in the western one half of the test pit and extends out of the unit into both the north and west walls. A small portion of this feature, therefore, is extant in the rockshelter. Feature 1 appears to be an oval or circular hearth approximately 85 centimeters north-south, 55 centimeters west-east, and 18 centimeters deep (Figure 2.14). The top

of the feature is approximately 15 centimeters below the ground surface. Included within Feature 1 are Stratum 3A, the grayish mixed silty ash, Stratum 3B, the fine white silty ash, and Stratum 3C, the compact oxidized silty clay. Artifacts from the feature include one piece of debitage, two plain ware sherds, a bone bead, and a piece of burned bone.

Feature 2 is the second hearth encountered in this test pit. It was located in the southwest corner of the test pit at a depth of approximately 25 centimeters below the ground surface. The hearth was circular, approximately 35 centimeters in diameter, and had a maximum depth of 18 centimeters (Figure 2.15). Feature 2 contained Strata 4A, a mottled silty sand, 4Ab, a white silty ash, 4Ac, a rodent mixture of Strata 4A and 3B, and Strata 4B, a compact, oxidized silty clay. A thin, vertical, hard-packed surface was located on the western edge of the feature between the white ash fill and the oxidized compact silty clay. This surface was designated Feature 2.01 (see Figure 2.11). It appears to have been the fired outline of a tool used to excavated into Stratum 4B, possibly indicating reuse of this feature. No charcoal or different sediments were identified with Feature 2.01. The only artifact directly within Feature 2 was a single piece of chipped stone debitage.

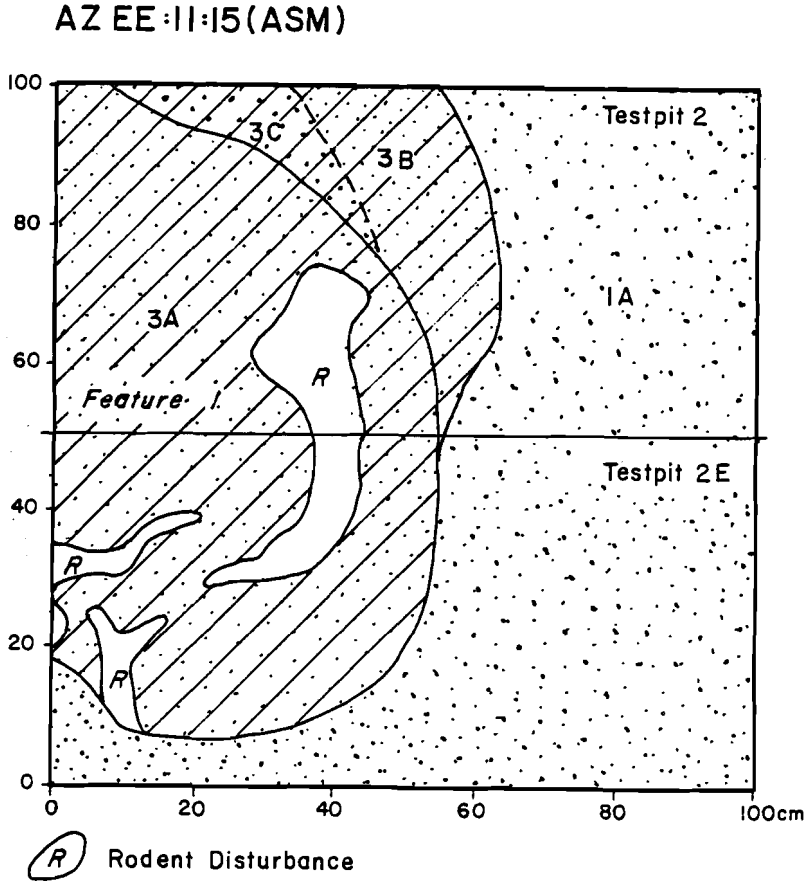

Figure 2.14. Plan map of Feature 1 hearth.

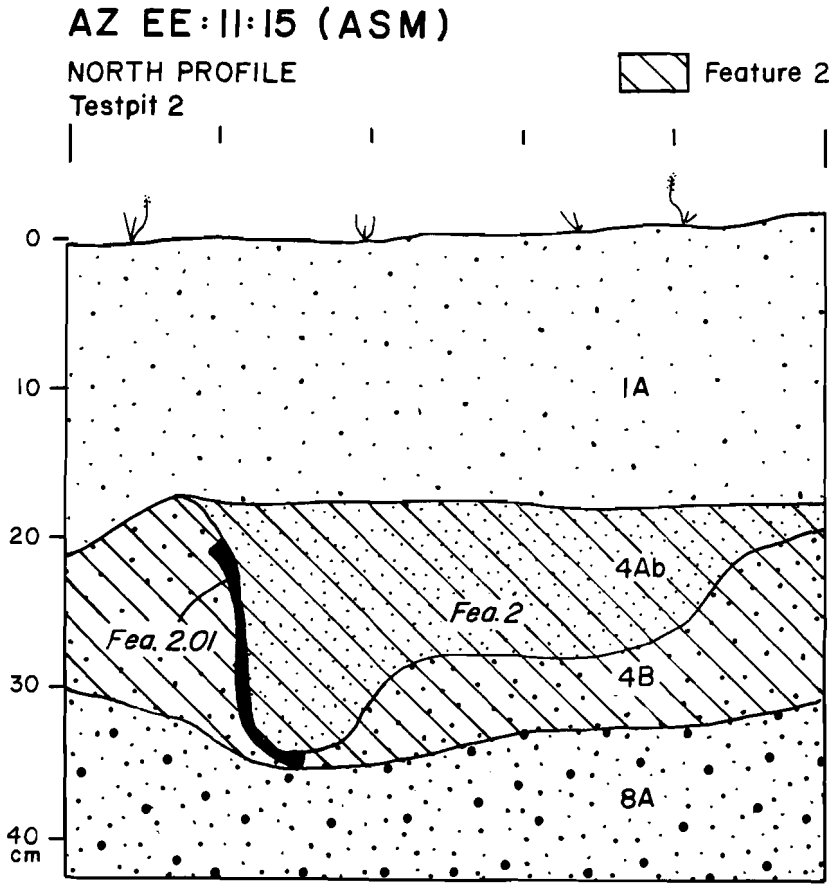

Figure 2.15. Cross-sectional view of Features 2 and 2.01.

Feature 4 is the third hearth encountered in this test pit. It was located in the middle of Test Pit 2/2 extension and extended into and beyond the north wall of the unit. An unknown portion of this feature remains unexcavated in the rockshelter. The top of the feature was approximately 21 centimeters below the ground surface, but extensive rodent disturbance made delineation of this feature difficult. The hearth was probably oval or circular, approximately 50 centimeters east-west and at least as large north-south (Figure 2.16). The hearth was approximately 14 centimeters deep and contained a white ash fill (Stratum 5). The only artifacts within Feature 4 were 2 pieces of debitage and a ground stone "shaft straightener" (see below). Charcoal collected from the screen during the excavation of this feature is not an in situ sample; it yielded a corrected, uncalibrated date of 760 ± 90 B.P. (cal. A.D. 1263) (TX-7422).

Feature 5 is the lowest of the four superimposed hearths in this test pit. It is located almost directly below Feature 4 in Test Pit 2/2 extension. A small portion of this feature was excavated in Test Pit 2, but was rodent disturbed and was not given a feature designation at the time. The remainder of Feature 5 was oval in shape, approximately 40 centimeters east-west and at least as large north-south (Figure 2.17). The top of the feature began at approximately 36 centimeters below the ground surface and it was approximately 9 centimeters deep. The feature fill (Stratum 6) was a light gray clayey silt which had been disturbed by rodent activity. A small area of pure white ash (Stratum 4Ba) that was probably associated with Feature 5 was documented in the north wall of the excavation unit. An *in situ* sample of charcoal collected from this white ash yielded a corrected, uncalibrated date of 720 ± 100 B. P. (cal. A.D. 1279) (TX-7421). No artifacts were directly associated with this feature.

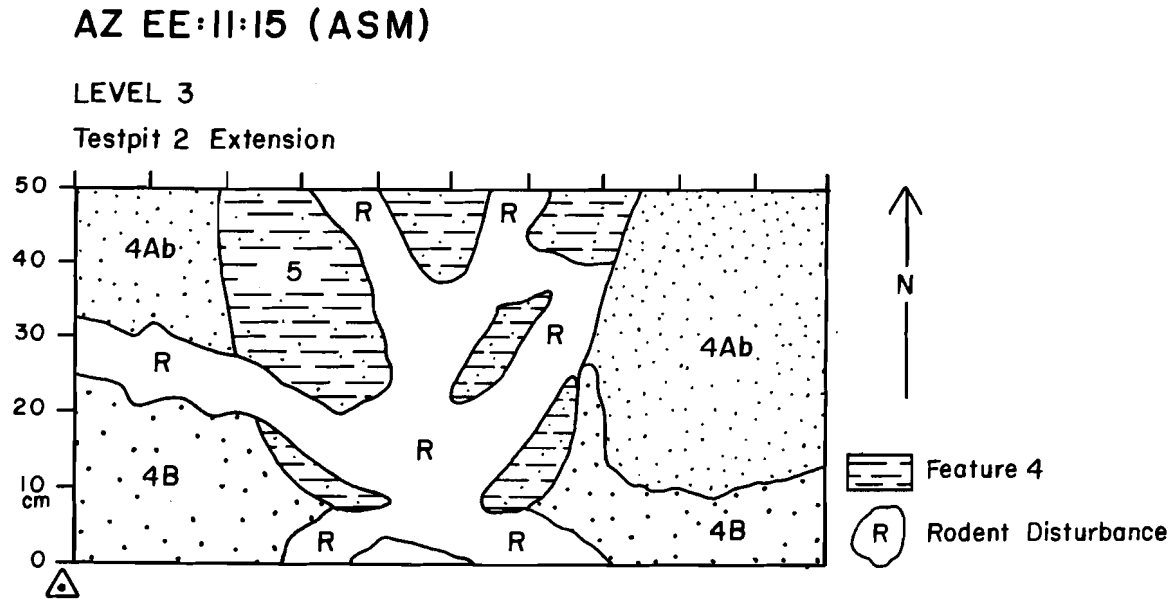

Figure 2.16. Plan map of Feature 4 hearth.

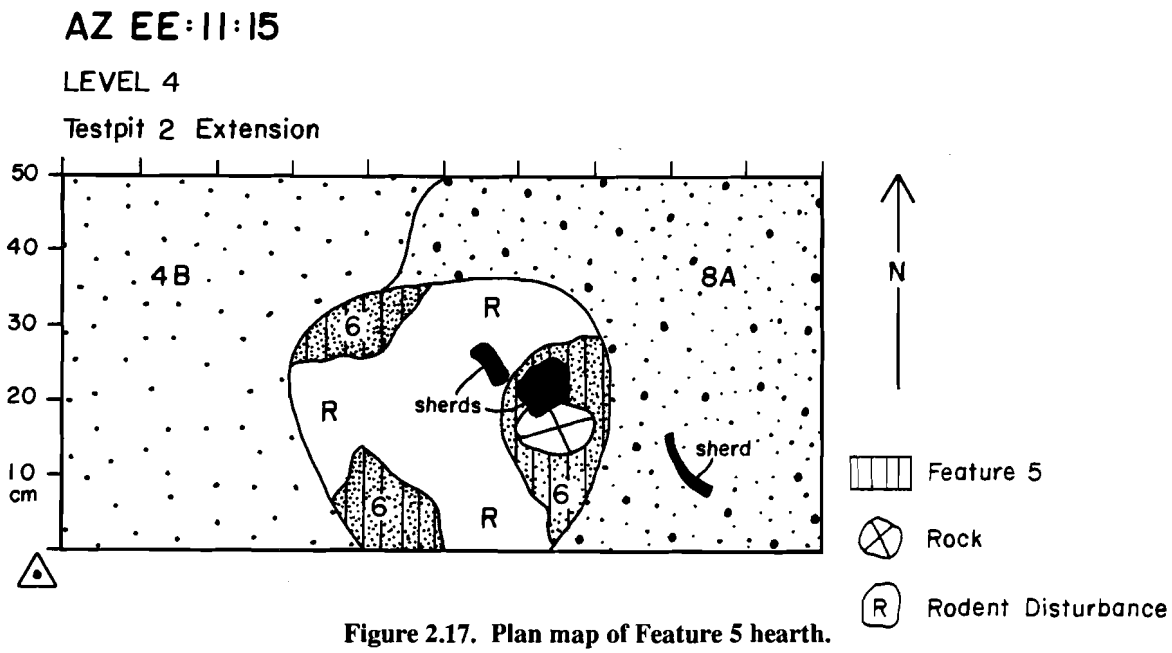

Figure 2.17. Plan map of Feature 5 hearth.

Artifacts recovered from this test pit include 24 sherds, 50 flaked stone artifacts, 8 ground stone artifacts, and 87 pieces of bone. The ceramics include 15 plain brown ware sherds, seven painted wares, and two red wares. The painted sherds include an indeterminate red-on-brown bowl rim from Level 1, 3 indented red-on-brown sherds and a Sedentary style red-on-brown sherd from Level 2, a Sedentary style red-on-brown sherd from Level 3, and a Babocomari Red-on-brown sherd from Level 4. All of these ceramics are Sedentary or Classic period types and fit quite well within the temporal range provided by the radiocarbon dates (see Chapter 6).

The lithic artifacts include 48 pieces of debitage, one multi-directional flake core, one projectile point fragment, and eight ground stone items. The debitage and core indicate the utilization of an expedient flake-core technology typical of sedentary agriculturalists throughout the Southwest. The projectile point fragment is a small, triangular, indented base type. This test pit contained all of the ground stone artifacts found *in situ* in the rockshelter. Six items were classified as manos and two were classified as pestles, although these identifications should be considered tentative as explained in detail in the lithic analysis section of this chapter. The only ground stone item not classified as a mano is a small piece of limestone with a beveled hole in it that was found in Feature 4 and which resembles a shaft straightener.

Faunal remains recovered from this test pit consist of 73 pieces of mammal bone, 10 pieces of intrusive rodent bone, three intrusive snail shells, and one bone bead. The mammal bone consists mostly of small, unidentifiable fragments, although three fragments are larger than 5 centimeters. All but one of the mammal bones (n=72) are burned. The bead cannot be identified as to bone type.

Test Pit 2/2 extension was the most stratigraphically complex test pit in the project and, as a consequence, provided the most information about prehistoric use of the rockshelter. The four superimposed hearths provided information not only about activities in this specific area, but relative and absolute chronometric control of the entire site as well. The hearths were probably all used by the same group or related groups during a relatively short span of time in the early Classic period (A.D. 1200-1300). The presence of ground stone artifacts in this test pit, and nowhere else in the rockshelter, may indicate the exploitation of native floral resources in addition to mammal procurement. It is probable that additional hearths and artifacts are present both to the south and north of this test pit.

Test Pit 3/3 extension/7

Test Pit 3/3 extension/7 is a 1 meter by 1 meter unit located in the center of the rockshelter. The test pit was excavated in three separate units. Test Pit 3 is a 50 centimeter by 50 centimeter unit which forms the southwest corner of the 1 meter by 1 meter unit. This small unit was excavated to bedrock and then expanded to the north into a 1 meter by 50 centimeter unit (Test Pit 3 extension). Finally, the 1 meter by 50 centimeter unit was expanded eastward to its final configuration. The eastern one-half of the unit was designated Test Pit 7. All three excavation units are considered together for ease of presentation. No cultural features were found in this test pit, but cultural strata were encountered.

The test pit was excavated in both arbitrary and cultural stratigraphic layers to bedrock at a depth of approximately 50 centimeters below ground surface. Five strata are present in this test pit: 1A, 1C, 2A, 2B, and 8A (Figure 2.18). Stratum 1A is the loose, gravelly silty sand which covers the entire rockshelter; in this test pit it is 4 to 12 centimeters thick. Stratum 1C is compact, gravelly silty sand with some charcoal flecks which is 10 to 15 centimeters thick in this test pit. Stratum 2A is a cultural layer which extends northeastward into Test Pit 5 and southward into Test Pit 2 extension. This stratum is a compact sandy silt with a very high organic content. It was burned either during or shortly after deposition. Stratum 2A does not contain the fine white ash associated with hearth features, but is instead a thin (ca. 5 centimeters), hard layer of burned fibrous material. It may be associated with a hearth in either Test Pit 2 or Test Pit 5 extension, but the stratigraphic correlation is not direct. Stratum 2B directly underlies 2A in most of this test pit and is directly related to it. Stratum 2B is a hard, very fine silty clay which has been oxidized due to the burning of Stratum 2A. It is not present in the extreme southwest corner and appears irregular in shape throughout much of the unit. Stratum 8A is the basal stratum in this area of the rockshelter. It is a mixed aeolian silty sand with angular limestone cobbles that overlies limestone bedrock. The angular cobbles probably represent a roof fall event.

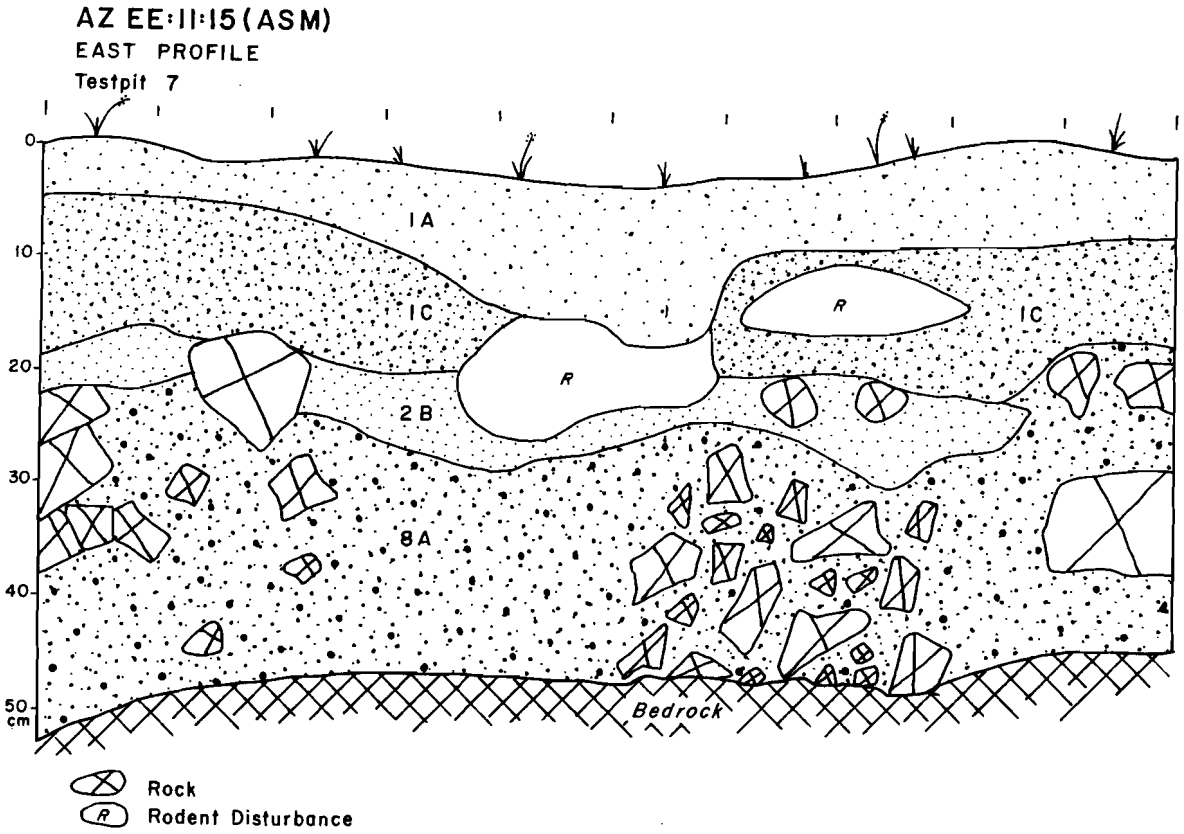

Figure 2.18. Test Pit 7 east profile, Locus 1 AZ EE:11:15.

Artifacts recovered from this test pit include 18 sherds, 19 lithic artifacts, and four pieces of bone. The sherds include three plain wares, one red ware, four eroded unidentifiable sherds, and 10 painted wares. Level 1 painted wares include two indeterminate red-on-brown sherds, three Sedentary style Red-on-brown sherds all from the same bowl, one indeterminate red-on-brown with a white slip, and one red-on-brown of Late Sedentary affiliation. The painted wares from Level 2 include one Babocomari Red-on-brown, one Sedentary style, and one thin-lined red-on-brown of unknown cultural affiliation.

Lithic artifacts recovered from this test pit include 17 pieces of debitage and two projectile points. All the debitage is the result of a simple flake-core reduction technology typical of sedentary agriculturalists. Level 1 contained 10 pieces of debitage and one small triangular projectile point of unknown cultural or temporal affiliation. Level 2 contained only five pieces of debitage. Level 3 contained two pieces of debitage and the base of a projectile point that was probably a corner-notched variety.

The faunal remains from this test pit consist of four small pieces of burned mammal bone, probably from a medium sized animal. All of the bone fragments are less than 2 centimeters long.

The excavation of Test Pit 3/3 extension/7 confirmed the presence of cultural Strata 2A and 2B over a portion of the site larger than one test pit. This confirmation is important to understanding the use of the rockshelter and the activity areas within it. The artifacts recovered indicate a Late Sedentary-Early Classic period occupation of all levels and cultural strata.

Test Pit 4

Test Pit 4 is the northernmost unit excavated within the confines of the rockshelter. It is a 50 centimeter by 50 centimeter unit and was excavated to a depth of 50 centimeters below the surface. Like Test Pit 1, this unit contains three natural strata: 1A, 1B, and 8A (Figure 2.19). Stratum 1A is a loose, aeolian silty sand layer approximately 10 to 15 centimeters thick. Stratum 1B is compacted silty sand similar to Stratum 1A and is approximately 20 to 25 centimeters thick. This stratum also contains a layer of angular limestone cobbles at approximately 15 to 20 centimeters below the surface. This rock layer is probably a minor roof fall event that is not duplicated elsewhere in the rockshelter. Stratum 8A is one of the basal strata in the rockshelter and overlies limestone bedrock. It is 3 to 13 centimeters thick in this test pit.

This test pit was excavated in arbitrary 10 centimeter vertical levels. Artifacts recovered include 2 pieces of debitage, one plainware sherd, two pieces of burned mammal bone, and a single snail shell, all of which were found in Level 2, Stratum 1B. The lack of cultural strata in this test pit indicate that the artifacts are all intrusive. Excavation of this test pit demonstrated that the cultural strata did not extend into the northern end of Locus 1.

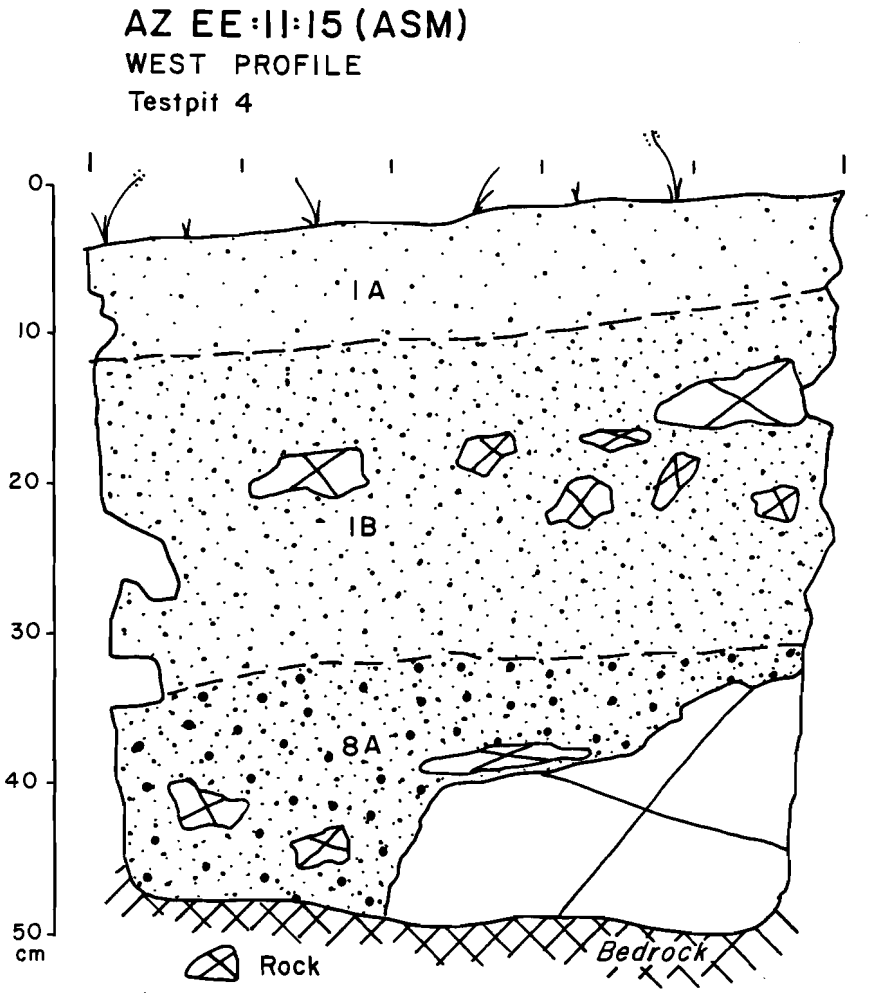

Figure 2.19. Test Pit 4 west profile, Locus 1 AZ EE:11:15.

Test Pit 5/5 Extension

Test Pit 5/5 extension is a 1 meter by 1 meter unit located in the northern half of the rockshelter straddling the drip line. It was excavated in two 1 meter by 50 centimeter sections. The western 1 meter by 50 centimeters (Test Pit 5) was excavated to bedrock prior to the excavation of the eastern half (Test Pit 5 extension). Test Pit 5 extension contained a buried hearth, Feature 3. Both sections of the test pit are considered together for ease of presentation.

This test pit was excavated in both arbitrary 10 centimeter levels and cultural stratigraphic layers to a depth of 45 centimeters below ground surface. Seven natural and cultural strata are present in this test pit (Figure 2.20). The upper levels of this test pit contain Strata 1A, 1B, and 1C. Stratum 1A is the loose surface layer and Stratum 1B is a compacted variant of Stratum 1A. Stratum 1C is a compact gravelly silty sand similar to Strata 1A and 1B except that it contains a higher clay fraction than the other two strata. It has been disturbed by rodent activity and contains small charcoal flecks. It is not considered a cultural stratum, but may contain organic and artifactual materials incorporated in its matrix as a result of bioturbation.

Stratum 2A is a cultural layer that extends into Test Pits 2 and 3/3 extension/7. This layer is a very compact layer of organic material that has been burned, probably at the time of its deposition or slightly later. The layer does not contain the fine white ash associated with hearths, but instead appears as a thin (ca. 5 centimeters thick), hard layer of black, fibrous material. It may be associated with the hearth in Test Pit 5/5 extension, but stratigraphic correlation of the two is not direct.

Stratum 7A is a cultural layer associated with a hearth, termed Feature 3 (see below). It is a very fine sandy silt with abundant flecks and larger pieces of charcoal. It is very dark in color and comprises the fill of Feature 3. Stratum 7B directly underlies Stratum 7A and was produced as a result of the burning in the hearth. It is compact sandy silt with some charcoal flecks and has been oxidized by heat from the fire.

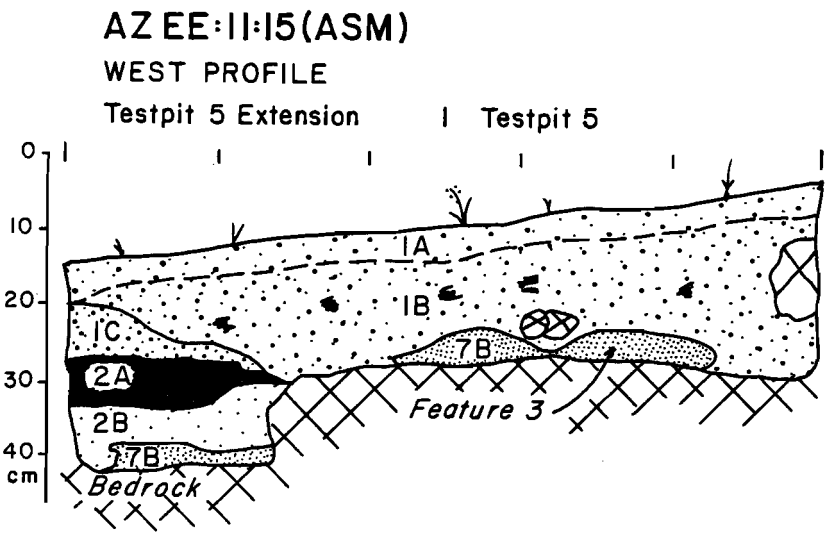

Figure 2.20. Test Pit 5/5 extension, Locus 1 AZ EE:11:15.

Stratum 8A is a natural layer which underlies many of the other deposits in the rockshelter. It is a gravelly sandy silt with large limestone cobbles that overlies bedrock in some areas. The limestone cobbles are irregular in shape and represent roof fall events.

One cultural feature was excavated in Test Pit 5 extension. Feature 3 is a small hearth located in the northwest corner of the unit. It is a circular pit, approximately 28 centimeters east-west, 23 centimeters north-south, and 13 centimeters deep (Figure 2.21). Angular limestone cobbles are present near the east and south side of the pit, but the hearth does not appear to have been lined with rock. The feature fill (stratum 7A) was very dark to black and contained abundant amounts of charcoal. Two *in situ* samples of charcoal from this feature yielded statistically identical uncalibrated, corrected dates of 780 ± 80 B.P. (cal. A.D. 1259) (TX-7420) from Level 3 and 850 ± 60 B.P. (cal. A.D. 1212) (TX-7418) from Level 4. These dates are in general agreement with the temporal range of the ceramics found in this test pit.

Seventeen artifacts were recovered from the 1 meter by 1 meter test pit, 13 pieces of debitage and four sherds. Interestingly, no faunal remains were recovered from this test pit. All the debitage was produced by a simple flake-core reduction technique typical of sedentary agriculturalists. The sherds are three plain brown wares and one painted ware that was tentatively identified as Babocomari Polychrome, a Classic period pottery type. There does not appear to be any vertical or horizontal patterning to this small sample of artifacts; eight pieces of debitage and one sherd were found in the top 10 centimeter level, four pieces of debitage and three sherds were found in Level 2, and one utilized flake was found in Level 3 inside Feature 3.

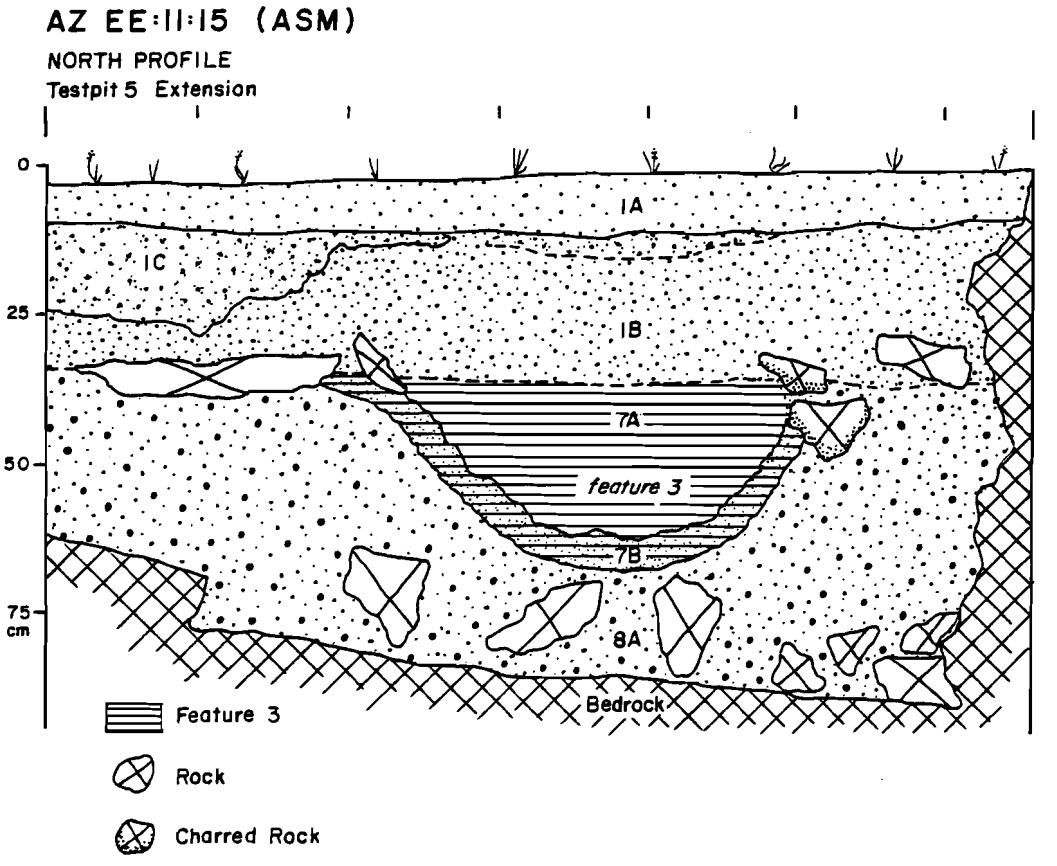

Figure 2.21. Cross-sectional view of Feature 3 hearth.

The excavation of Test Pit 5/5 extension helped to define the spatial parameters of the rockshelter occupation and provided *in situ* charcoal for two radiocarbon samples. The hearth in Test Pit 5 extension is the northernmost feature in the rockshelter but appears, on the basis of stratigraphy and radiocarbon dates, to be contemporaneous with the use of other hearth features. It is unlikely that cultural materials are present in the unexcavated area between this unit and Test Pit 4, but they are almost certainly present south of this unit underneath the large boulder.

Test Pit 6

Test pit 6 is the designation given to the shovel hole excavated in front of the rockshelter by the mapping team prior to setting a cemented brass cap as a site datum. No artifacts were recovered from this shovel hole and no cultural stratigraphy was present. The test pit is irregular in shape and approximately 20 centimeters in diameter and 40 centimeters deep. Stratum 8A is the only layer present and it overlies limestone bedrock.

Test Pit 8

Test Pit 8 is a 50 centimeter by 50 centimeter unit excavated on the slope east of the rockshelter to determine if cultural materials and strata were present as a midden deposit outside the drip line of the rockshelter. Although a few artifacts were recovered (n=4), no cultural strata were encountered and the artifacts recovered are probably the result of slope wash. The test pit was excavated to a depth of 53 centimeters below surface. The entire unit was comprised of Stratum 1A mixed with angular colluvial cobbles on top of limestone bedrock. No cultural features were identified and rodent disturbance was evident throughout the unit. The artifacts recovered include two plain brown ware sherds, one red ware sherd, and one small painted ware sherd that may be a Babocomari type. Faunal remains recovered from this test pit consist of 10 pieces of unburned rodent bone, probably from a single individual. The excavation of Test Pit 8 demonstrated that cultural deposits do not extend down the slope and probably are confined to the interior of the rockshelter.

Test Pit 9

Test Pit 9 is a 1 meter by 50 centimeter unit located approximately 20 meters north of the main rockshelter in the area designated Locus 2 (see Figure 2.8). Because a "Crown Dancer" white-on-black pictograph was discovered on the roof of a small overhang, we wanted to test the possibility that cultural deposits were associated with the pictograph. The test pit was excavated to a depth of 70 cm. No artifacts were recovered and no cultural strata were encountered. The western one-half of the test pit is underlain by sloping limestone bedrock beginning at approximately 5 centimeters below the surface. Bedrock was encountered in the eastern one-half of the test pit at approximately 70 centimeters below the surface. The sloping bedrock forms a shelf which widens as one moves south toward the main rockshelter. Indeed, this same joint in the limestone forms the shelf at head height in Locus 1. The only strata present in this test pit were strata 1A, 1B and 8A (Figure 2.22). Apparently, the creation of the pictograph on the ceiling of this overhang left no other material remains.

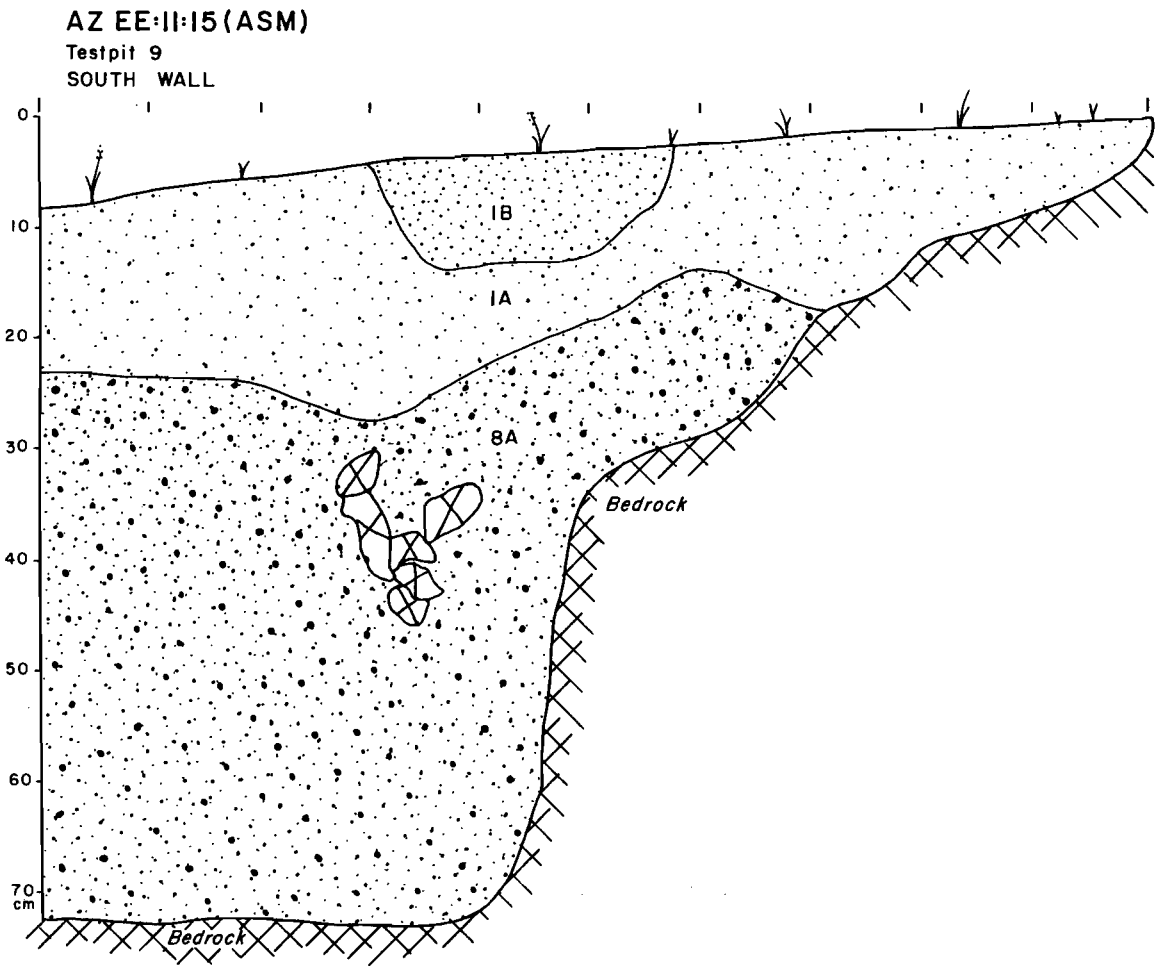

Figure 2.22. Test Pit 9 south profile, Locus 2 AZ EE:11:15.

Shelf Provenience 66

The shelf in Locus 1 formed by a joint in the limestone was also examined as part of the testing program. Although no excavations were conducted here due to the shallow (less than 3 cm) nature of the sediments, the area was cleaned of leaf litter and dust and all material was screened. The purpose of cleaning the shelf was to inspect the area for any bedrock features, stains, or deposits that may have been associated with the painting of the pictographs. No such features were identified. Artifacts recovered from the shelf consist solely of bone. In all, 42 pieces of bone were recovered. All these bones were fragmentary mammal bones, probably from medium sized animals. The fragmentary nature of the assemblage prevented the identification of specific bone elements in all but a few cases. Several of the bone fragments resembled human bone and were taken to a physical anthropologist. A single element, tentatively identified as a cervical vertebra, was identified as possibly human (Schepartz 1992). Given the fact that no human bone was found in excavated contexts and this single specimen came from the shelf area, it is unlikely that any burials are present in the rockshelter. How this single element came to be on the shelf remains problematic. Although many of the animal bones are burned, we suspect that they were burned in front of the shelf and transported onto the shelf by scavenging animals such as rodents or large birds.

ARTIFACT ANALYSES

Ceramic Analysis

William L. Deaver and Ronald H. Towner

Fifty-three sherds were recovered from the Garden Canyon Pictograph Site (AZ EE:11:15), all within the main excavation area of Locus 1. The sherds recovered during the excavation comprise three groups: plain wares (N=25), painted wares (N=19), and red wares (N=4). Table 2.2 shows the vertical and horizontal provenience of all sherds recovered during the testing of AZ EE:11:15.

Table 2.2. Spatial Distribution of Sherds from Locus 1.

Item Number	Provenience	Plain Ware	Painted Ware	Red ware	Unidentified Eroded	Total
1	Surface				1	1
18	T.P. 1 Level 2	1				1
187	T.P. 2 Level 1	3	1			4
120	T.P.2 Level 2	1	1			2
49	T.P. 2 Level 1	1				1
144	T.P. 2 Level 4		1	1		2
209	T.P. 2 Ext Level 2 FE 1	2				2
203	T.P. 2 Ext Level 2	2	3			5
234	T.P. 2 Ext Level 5	2				2
229	T.P. 2 Ext Level	3		1		4
216	T.P. 2 Ext Level 3	1	1			2
11	T.P. 3 Level 1	1	1		1	3
24	T.P. 3 Level 2	1	1		2	4
36	T.P. 3 Level 3			1		1
68	T.P. 3 Ext Level 1	1	1		1	3
32	T.P. 4 Level 2	1				1
60	T.P. 5 Level 1		1			1
138	T.P. 5 Ext Level 2	3				3
96	T.P. 7 Level 1		5			5
112	T.P. 7 Level 2		2			2
164	T.P. 8 Level 1			1		1
167	T.P. 8 Level 1		1			1
211	T.P. 8 Level 2	2				2
	Total	25	19	4	5	53

The goal of the ceramic analysis was to identify possible cultural affinities of the site occupants and to contribute to the site chronology. Analysis was conducted by visual examination of the sherds; no microscopic or petrographic analyses were performed. Documenting who made the pottery and when they made it is normally achieved using a typological analysis. Southwestern pottery types are defined with these questions in mind.

The cultural pattern and the associated pottery tradition of the middle San Pedro River Valley are often called Dragoon (Fulton 1934, 1938; Fulton and Tuthill 1940). Conceptually, the Dragoon complex represents an indigenous people influenced by both the Mogollon to the north and east and the Hohokam to the north and west. Unfortunately, neither the Dragoon culture nor the Dragoon pottery series is well defined. The Dragoon pottery series, based on the work of Fulton (1934a, 1934b, 1938) and Tuthill (Fulton and Tuthill 1940), has become a catchall category for all red-on-brown pottery found in the area and probably includes types that were made in the San Simon and Tucson Basin areas, as well as types locally produced in the middle and upper San Pedro (Masse 1980; Deaver 1984).

The pottery traditions of the surrounding areas are somewhat better understood and the typological categories are better defined. Because the pottery from the middle San Pedro area Site resembles that of two of the surrounding traditions, there is a tendency for archaeologists to dispense with the Dragoon concept and use typological schemes developed for neighboring traditions. The red-on-brown sherds at the Garden Canyon Pictograph Site, for example, could be typed according to the Tucson Basin Red-on-brown sequence. To do so, however, would imply that the ceramics were manufactured in the Tucson Basin and traded into the middle San Pedro. Brown wares, however, were not made exclusively in the Tucson Basin; many river valleys in southern Arizona probably hosted local brown ware traditions, all of which emulated styles developed elsewhere. The similarities between ceramics in these areas, therefore, are more likely to result from shared participation in broader cultural patterns than from a shared source of manufacture. The apparent similarity of the AZ EE:11:15 assemblage to both Hohokam and Mogollon ceramics, therefore, may represent simply another regional expression of the same process. For this reason the pottery from the site is not attributed to specific types but rather is sorted into descriptive categories.

Plain Wares

The majority of the sherds recovered are plain, sand-tempered brown wares with variable amounts of surface mica. None of these sherds shows the micaceous sheen typical of the Hohokam type known as Gila Plain, Gila variety which is tempered with a crushed micaceous schist. Neither do they resemble the later micaceous plain wares associated with Babocomari Polychrome. Surfaces are typically tool polished with the amount of polish ranging from a "slap-dash" use of the tool to a heavy application resulting in a lustrous, compact surface. Interior smudging (blackening over a polished surface) was observed on one sherd. One rim sherd from a seed jar differs from the remainder of the plain wares in that it is relatively thin, dark brown, and has a smoothed, but unpolished surface.

Painted Wares

All the painted ceramics recovered are brown wares that can be divided into two distinct groups. The majority are a "non-micaceous" brown ware with red-painted designs. They have few or no mica flecks visible on the surface. Visible mica is typically phlogopite with rare occurrences of muscovite. The other group of painted pottery consists of heavily micaceous sherds with abundant, large flecks of muscovite visible on the surface. These sherds often have a dark, reddish-brown paint. The abundance

of mica and pigment color are most similar to sherds of Babocomari Polychrome as defined at Babocomari Village (Di Peso 1958) and as is found at the Garden Canyon Site (AZ EE:11:13) near the mouth of Garden Canyon (Deaver n.d.). The sherds recovered from AZ EE:11:15, however, are too small to make positive identifications.

The non-micaceous red-on-brown ceramics exhibit design traits typical of other red-on-brown traditions in south-central and southeastern Arizona between about A.D. 850-1200. These traditions are coeval with the Colonial and Sedentary periods of the Hohokam Culture to the northwest and the Late Pithouse period of the Mogollon to the northeast. Most red-on-brown sherds found in the rockshelter exhibit curvilinear and rectilinear designs that are characteristic of the Hohokam Sedentary period style (circa A.D. 975-1200). Typologically these sherds are indistinguishable from early, middle, and late Sedentary period (Rincon?) Red-on-browns in the Tucson Basin (Deaver 1984; Wallace 1986). A single sherd has thin-lined designs suggestive of a Late Colonial age (circa A.D. 850-975). Like the dominant plain wares, the red-on-browns are stone polished and exhibit varying degrees of treatment. The potters polished over the red-painted designs, a trait considered characteristic of the Mogollon pottery tradition and foreign to the Gila Basin Hohokam pottery tradition. This trait, however, is sometimes seen on Tucson Basin Red-on-brown sherds.

Red Wares

Four red ware sherds were recovered from AZ EE:11:15. All are sand tempered and stone polished and show similarities to red wares of the San Simon series. They are also generically similar to Rincon Red from the Tucson Basin. The temper has opaque purplish-gray inclusions that may be quartzite, a characteristic that may be of potential use in determining the location of manufacture. It is not known at this time whether these sherds are locally produced or imported.

The Question of Cultural Affiliation

Pottery is one of the most abundant and readily identifiable artifact classes found on archaeological sites in the southwestern United States. Fortunately for the archaeologist, pottery is often culturally diagnostic. Similarities and differences in ceramic assemblages from different sites correlate with other aspects of material culture and create recognizable cultural patterns. The black-on-white pottery of the Anasazi, for example, is easily distinguished from the red-on-buff pottery of the Hohokam and red-on-brown pottery of the Mogollon. Ceramicists use these differences to set objective criteria for distinguishing between pottery types and, presumably, cultural groups.

The question of cultural identity in this context concerns whether the pottery from AZ EE:11:15 is more Mogollon-like, Hohokam-like, or like something entirely different. During the Preclassic (prior to about A.D. 1150) the pottery from the middle San Pedro seems to look much like the pottery from the Tucson Basin as well as somewhat like the pottery from the San Simon Valley to the east. During the Classic in the Hohokam core area there is a major reorganization of the cultural pattern. It is at this time that the direction of influences in the middle San Pedro appear to shift toward the south. Babocomari Polychrome is undoubtedly a local expression of the Chihuahuan Polychrome tradition and its manufacture in the middle San Pedro most likely marks a shift in cultural interaction as well (Altschul 1991). The emergence of Babocomari Polychrome appears to reflect a greater degree of influence from the Chihuahua area, an influence that is not seen as strongly in the Tucson Basin. Each of these traditions has been well defined and provides a good comparative baseline. Our conclusion, based on the surface characteristics of the pottery, is that the non-micaceous red-on-brown wares look Mogollon in some aspects and Hohokam in others. Some sherds look like the Tucson Basin

Red-on-brown series; yet, as stated above, we hesitate to say that they are in fact Tucson Basin Red-on-browns or even that the Tucson Basin Hohokam culture is the source of influences. Rather, we view both the Tucson Basin Red-on-brown sequence and the Garden Canyon sherds as products of interaction with the Gila Basin Hohokam culture (as expressed at the site of Snaketown). The indigenous peoples of both the Tucson Basin and middle San Pedro probably interacted with the Hohokam core area; it is these interactions that are reflected in the shared ceramic attributes.

In order to understand the development of a local pottery tradition in the middle San Pedro, we must have some knowledge of the development of traditions in adjacent areas. The following synopses of the how the Tucson Basin and San Simon pottery traditions emerged are intended as models for how the Preclassic brown ware tradition of the middle San Pedro may have developed. These two different models of how local populations interacted with their neighbors may help us interpret the non-micaceous red-on-brown sherds in the AZ EE:11:15 assemblage.

There is, in the study of the Tucson Basin pottery tradition, a debate over whether the pottery is Hohokam, Mogollon, or some hybridization of these two traditions (Kelly 1978; Deaver 1989). Recent research (Deaver and Ciolek-Torrello 1991) suggests that a generic brown ware pottery tradition similar to the early brown ware traditions of the Mogollon and Hohokam emerges in the Tucson Basin prior to about A.D. 500. This tradition may appear as early as 200 B.C. or as late as A.D. 200, but the preponderance of evidence suggests an emergence sometime just before A.D. 1. This early brown ware tradition has been called the plain ware horizon (Deaver and Ciolek-Torrello 1991) because only undecorated ceramics are made. This horizon is expressed in each area by locally described phases. Manufacturing methods include both coil-and-scrape and paddle-and-anvil technologies and the technologies do not correspond strictly to the Hohokam/Mogollon dichotomy as usually applied (see Mera 1939; Haury 1976). The similarities are manufacture of plain brown wares and a simple repertoire of vessel forms that emphasizes small seed jars and subhemispherical bowls.

The plain ware horizon ends somewhere between A.D. 400 and A.D. 500 with the appearance of red-slipped pottery. Again the appearance of red wares is more-or-less coeval among the Hohokam and Mogollon culture areas. Painted pottery first appears during the 6th century and again the Hohokam and Mogollon types are generically similar (Haury 1976). It is not until the appearance of Snaketown Red-on-buff with the characteristic hatchure style that the Hohokam and Mogollon pottery traditions take on identifiably distinct characteristics. It is during the Snaketown phase (circa A.D. 650-800) that the Gila Basin Hohokam exert influences on much of south-central Arizona and the Hohokam regional system (Wilcox 1979) emerges.

The Snaketown and later Gila Butte pottery styles and other associated material traits, such as the Hohokam ballcourt, spread well to the south of the Gila River along Santa Rosa Wash into the Papagueria, along the Santa Cruz to the Tucson Basin and farther south near Nogales, and along the lower San Pedro River. These areas are marked by two diagnostic material traits: the appearance of Snaketown and Gila Butte Red-on-buff intrusives and locally produced variants of these types. Currently no evidence of this expansion of the Gila Basin Hohokam culture has been found in the middle San Pedro River.

Sometime during the 6th and 7th centuries a few sherds appear in the Tucson Basin that are technologically and formally distinct from the local brown wares; these distinct sherds are probably intrusives from the Gila River (Deaver 1989; Heidke 1989) and are Hohokam. During the 8th century there is a local adoption of the Gila River technological, formal, and stylistic characteristics so that by the Colonial period, in the 9th century, the Tucson Basin pottery tradition has become a local expression of the Hohokam pottery tradition. The Gila Basin pottery tradition is not simply cloned in the Tucson Basin but is imprinted over an indigenous tradition which gives the Tucson Basin pottery sequence a distinctive character. This adoption of the Hohokam pottery tradition is probably related to the spread of the Hohokam ballcourt system throughout most of southern Arizona. At the end of the

10th century there is an apparent rejection of this Gila River-inspired technological tradition and a reversion to the earlier indigenous technological and formal traditions. New traits, such as the production of smudged types, black-pigmented types, and polychromes (Deaver 1984, 1989) are also added to the ceramics. The decorative style, however, is still similar to that of the Gila Basin Sedentary period pottery. The local Tucson Basin pattern established during the early Sedentary develops into the florescence of the Classic period style during the 13th, 14th, and 15th centuries.

The San Simon pottery series to the east shows a different pattern (Sayles 1945). Instead of exhibiting an imprinting of the Gila Basin Hohokam pottery tradition on the older brown ware tradition during the 8th century, the Mogollon pottery tradition of southwestern New Mexico is the source of influence. Even though the San Simon decorative sequence is similar to the Mogollon sequence to the east, the pottery is not simply a clone of the Mogollon tradition but differs in some characteristics. Sedentary period Hohokam influences, first seen on Encinas Red-on-brown, are also present and indicate a more complex type interaction than is seen in the Tucson Basin. The emergence of the red-on-brown tradition (Dragoon) in the middle San Pedro may be similar to the developmental history of the Tucson Basin and San Simon pottery traditions, but is not identical. The pottery tradition and cultural identity of the people who made the pottery should be viewed within larger regional phenomena.

Some of the pottery collected at the Garden Canyon Site (AZ EE:11:13) at the mouth of the canyon appears similar to the Mogollon styles of southwestern New Mexico and southeastern Arizona (Deaver n.d.). Sherds from the site were typologically identifiable as Mogollon Red-on-brown, Three Circle Red-on-white, Pinaleno Red-on-brown, Galiuro Red-on-brown, and Cerros Red-on-white: types within the Mimbres and San Simon pottery sequences. Hohokam influence also appears on the San Simon pottery tradition during the Sedentary period; the type Encinas Red-on-brown exhibits many characteristics of the Hohokam Sedentary period style. Presumably the pottery traditions of the middle San Pedro also are encompassed within this spread of the Sedentary style and the non-micaceous red-on-brown sherds at the Garden Canyon Pictograph Site are local expressions of this influence. The similarities with the Tucson Basin pottery traditions are then a result of influences from the Gila Basin or elsewhere rather than direct influences from the Tucson Basin.

Related to the question of cultural affiliation is cultural identity. The previous discussion illustrated that prehistoric cultural interaction may have shifted from one dominant political or ideological group to another. Cultural identity, however, would not have changed. The people occupying the middle San Pedro during the Preclassic probably viewed themselves as unique from the peoples in the Gila River, Tucson Basin, San Simon Valley, and elsewhere. Just as Tucson Basin Hohokam is characterized by the use of Phoenix Basin symbols on a local brown ware tradition, the Dragoon culture concept may be useful in designating the parallel local brown ware tradition that developed in the middle San Pedro during the Preclassic.

The onset of the Classic period witnessed a fundamental shift in cultural orientation. Local brownwares decrease in importance, being supplanted by ceramic types imitating Chihuahuan styles. Just as the Preclassic Dragoon imitated Phoenix Basin ceramics, local Classic period wares incorporate design elements and color schemes emanating from Paquime.

It appears now, with the limited data and bountiful speculation, that the peoples living in the area were at all times marginal to the major cultural traditions that emerged and that their cultural allegiances may have shifted over time. Gleaning this information out of the pottery tradition will require detailed petrographic and decorative analyses first to sort out which pottery is locally manufactured and thus representative of the local cultural values and which pottery is imported and reflective of other values. Once the local pottery can be identified it must be placed in a chronological framework that can then be related to the chronologies of the surrounding areas. Only after such work

has been completed can the local traditions be compared to the neighboring traditions and the patterns, directions, and degrees of cultural interaction be traced.

The Question of Chronology

The chronological information inherent in the pottery was presented above in the descriptive section. This section expands on this issue by presenting some of the underlying assumptions necessary to apply ceramic dating and by placing the ceramic and the radiocarbon dating evidence into the site context.

Implicit in ceramic dating is the assumption that the decorative style or other datable attributes are contemporaneous throughout their range of occurrence. If the Sedentary period style is, in fact, a horizon style as Deaver (1989) has indicated, then the appearance of this style on the sherds from the Garden Canyon Pictograph Site would indicate an age coeval with the appearance of the Sedentary style in the Gila and Tucson Basins, areas where the age of this style is better known. Dean (1991:88-90) suggests that there is a substantial overlap between the Rincon and Tanque Verde phases in the Tucson Basin. His analysis of 88 radiocarbon and archaeomagnetic dates indicates a range of A.D. 1050-1200 for the Rincon phase and a range of A.D. 1150-1300 for the Tanque Verde phase. Except for the radiocarbon dates from AZ EE:11:15, there are no independent chronometric data on these phases in the middle San Pedro Valley. The occurrence of Tanque Verde Red-on-brown at Babocomari Village (Di Peso 1951) and at other sites, however, would suggest that even in this area the Sedentary style is supplanted by the Tucson Basin Classic period style rather gradually beginning in the 12th century.

The fact remains that we have a few Sedentary style sherds in sediments that also contain Classic period style sherds and that have been radiometrically dated to the 12th and 13th centuries. There are two possible explanations for this apparent contradiction. First, the rockshelter may have been used on several occasions (at least five -- one for each hearth) during the transition between the Sedentary and Classic periods. If these different use episodes spanned a period of, say, 75 years from A.D. 1175 to A.D. 1250, we might expect to find Rincon style sherds in the lower hearths and Babocomari style sherds in the upper ones. Unfortunately, bioturbation has obscured stratigraphic patterns in artifact distributions. Rincon and Babocomari style sherds are found throughout the deposits and features. Whether this mixture represents contemporaneity in use or post-depositional mixture of the deposits is unclear. It is worthwhile to point out, however, that even with the post-depositional processes cited above we would expect that proportionally more Rincon style sherds would be found in the lower deposits and more Babocomari style sherds would be recovered near the top. But such is not the case. At this point we cannot rule out the other explanation, the use of both ceramic styles simultaneously. Indeed, with the present evidence, this interpretation is the most plausible.

Two hypotheses can be developed to account for the simultaneous use of both Sedentary and Classic period ceramic styles at the Garden Canyon Pictograph Site. It is possible that the Sedentary style ceramics were "heirlooms." Alternatively, ceramic cross-dating using typological sequences from the Tucson Basin and the Chihuahuan region may not apply to the middle San Pedro. The region is clearly on the periphery of both cultural systems, and it is possible that a "lag" period occurred between the use of Rincon style pottery in the Tucson Basin and its use in the middle San Pedro.

Regardless of the correct hypothesis, it is clear that the Garden Canyon Pictograph Site contains two ceramic styles exhibiting widely different technological attributes and cultural affiliations. Their presence suggests that the shift from northern (Hohokam) and eastern (Mogollon) influences that characterize the Preclassic in the middle San Pedro to the influences from the south and east (Chihuahuan) that characterize the Classic period was gradual and overlapped.

Flaked Stone Analysis

Ronald H. Towner

All flaked stone artifacts from AZ EE:11:15 were recovered from Locus 1. The flaked stone assemblage comprises 85 pieces of debitage, one core, and three projectile point fragments. Because debitage comprises the majority of the flaked stone assemblage the flaked stone analysis was conducted using both a technological approach (Crabtree 1972; Flenniken 1981; Towner 1992) and a "flake status" approach (Sullivan and Rosen 1985). Attributes recorded for each piece of debitage included raw material, cortex type and amount, flake status, size, platform type, and location of edge polish, if any.

Raw Materials

Lithic raw materials are an important part of any stone tool technology. Raw materials place constraints on the flintknapper and may provide clues as to the nature of lithic procurement and use. It is important to keep in mind, however, that it is the nature of the raw material and not its specific name or geologic definition that provides most of the information pertaining to prehistoric behavior. Differentiating lithic raw materials based on visual characteristics is often problematic (Ives 1984) and should be done with caution. Some metamorphic and sedimentary rocks, especially those that have been slightly metamorphosed, are difficult to distinguish even with the aid of a petrographic microscope. It is important, from an archaeological perspective, to identify the nature of lithic sources, although distinguishing between two locally available raw materials used in an expedient technology may be irrelevant in behavioral terms.

Nine different raw materials are present in the flaked stone artifacts including mudstone (n=45), chert (n=14), quartzite (n=9), argillite (n=9), chalcedony (n=5), silicified sandstone (n=5), jasper (n=3), basalt (n=1), and limestone (n=1). The definitions used to classify these materials are taken from Hamilton et. al. (1974), Crabtree (1967), and Hayes and Raup (1968). Most of these raw materials are available within the Huachuca Mountains and surrounding areas (Figure 2.23 and Table 2.3); others, however, are not listed in the geologic literature. Whether or not these materials are local cannot be discerned based on visual characteristics used to identify the rocks; their presence should not be taken as evidence of long distance trade or procurement strategies.

Geologically, the Huachuca Mountains are quite diverse; they contain usable lithic raw materials for flaked and ground stone manufacture, but most of those materials are of variable or poor quality. Mudstone, the most abundant material in the assemblage, is available in the immediate vicinity of the rockshelter from the Morita Formation, a grayish-red siltstone and limestone. Chert is locally abundant in the form of small nodules present in the Scherrer Formation upstream from the rockshelter, but the quality of the chert is highly variable. Quartzite is available less than 2 kilometers north of the rockshelter from the Bolsa quartzite. Argillite does not appear on the geologic map (Hayes and Raup 1968). The reddish, fine-grained nature of certain flakes at AZ EE:11:15 led to their identification as argillite, but they may be rhyolite welded tuff of the Canelo Hills volcanics that have been incorporated into the Glance Conglomerate located upstream from the rockshelter. Chalcedony does not appear to be locally available, but it is a common constituent in intrusive dikes and volcanic hydrothermal deposits, several of which are located in the Huachua Mountains. The chalcedony may be the only truly exotic raw material in the assemblage; sources are present in the Whetstone Mountains (B. Huckell, personal communication) north of the project area but the identification of specific sources is currently impossible. Jasper is defined as red chert (Crabtree 1967) and, although not specifically mentioned geologically, is probably local in nature. Basalt is rare in the Huachucas, but

not specifically mentioned geologically, is probably local in nature. Basalt is rare in the Huachucas, but does occur north of the rockshelter in the form of dikes in the Precambrian Granite. The single basalt flake identified in the assemblage may be any one of a number of dark, fine-grained meta-sedimentary rocks present in the area. Limestone is abundant in the area both below the rockshelter in the Martin, Abrigo, and Escabrosa formations and above the rockshelter in the Colina formation.

Technology

All of the debitage is indicative of an expedient lithic reduction technology typical of sedentary agriculturalists (Parry and Kelly 1987). This technology is characterized by the presence of significant amounts of cortex, a high proportion of broken flakes and shatter, and simple platform types. All these attributes characterize the AZ EE:11:15 flaked stone assemblage as a simple flake-core reduction technology. Cortex is present on 25 of the flakes (29%), cortical or single-facet striking platforms are present on 52 of the flakes and a single flake retains a bifacial striking platform. Broken flakes and shatter account for almost one-half (47%) of the assemblage. Table 2.4 shows the proportions of different attributes and variables in the assemblage from Locus 1. The spatial distribution of both flaked and ground stone items is presented in Table 2.5.

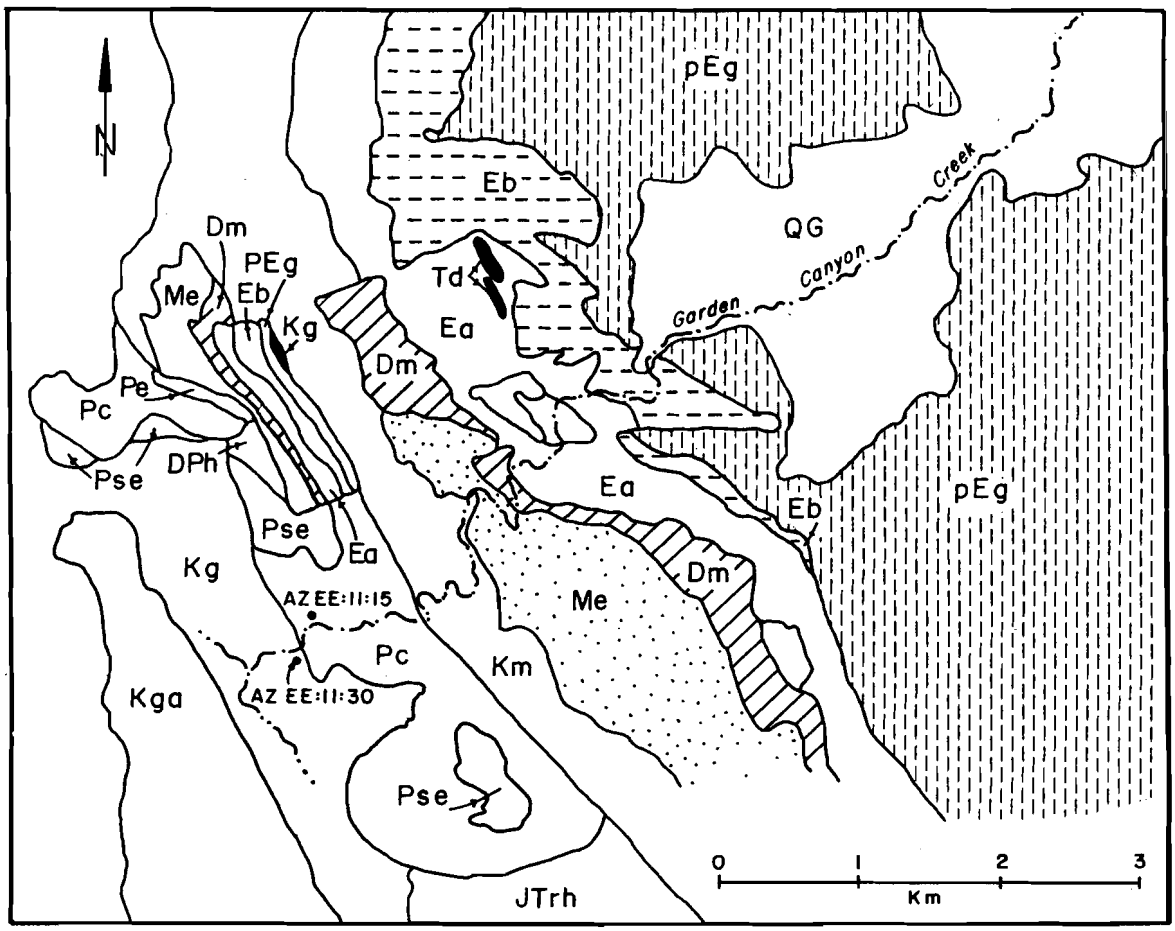

Figure 2.23. Geologic formations in the Garden Canyon area (after Hayes and Raup 1968).

Table 2.3. Descriptions of Geologic Formations in the Garden Canyon Area.

pEg: Precambrian granite; yellowish- to pinkish-gray coarse-grained porphoritic granite; includes some areas of unmapped fine-grained alaskite and thin basalt dikes.

Eb: Bolsa quartzite; resistant yellowish- to reddish-brown quartzite and weathering silicious sandstone.

Ea: Abrigo limestone; upper part medium-gray limestone containing numerous laminae of light-brown-weathering silty limestone; lower part yellowish-brown shale with lesser interbedded silty limestone and dolomite.

Dm: Martin limestone; medium- to dark-gray dolomite and sandy dolomite with a few thin beds of sandstone and siltstone.

Km: Morita Formation; grayish-red siltstone and mudstone and pinkish-gray feldspathic cross-laminated sandstone; minor pebble conglomerate in lower part.

Kg: Glance Conglomerate; Cobble and boulder conglomerate consisting of subangular detritus mostly from the Canelo Hills Volcanics, Naco Group, and Huachuca Quartz Monzonite set in a grayish-red matrix.

Kga: Glance Conglomerate member; grayish-red to grayish-purple andesitic lava.

Pc: Colina limestone; medium- to dark-gray limestone.

Pse: Scherrer Formation and Epitaph Dolomite undivided; Scherrer Formation is a variably resistant quartzose sandstone and medium-gray dolomite about 550 feet thick; middle member carbonate, large to medium-gray thin- to medium-bedded dolomite; quartz nodules common, chert nodules locally abundant.

Me: Escabrosa limestone: medium- to light-gray thick-bedded crinoidal limestone and subordinate medium- to dark-gray thin-bedded limestone.

Pcn: Concha limestone; light-gray relatively thick-bedded limestone with abundant chert nodules in many beds; several hundred feet thick in the Huachuca mountains.

JTr: Canelo Hills Volcanics including reddish rhyolite welded tuff and reddish rhyolite lava.

Table 2.4. Proportion and Frequency of Attributes used in the Flaked Stone Analysis.

Raw Material	Flake Status	Size Range (cm)
Mudstone n=38 (45%) Chert n=14 (16%) Quartzite n=9 (11%) Argillite n=9 (11%) Chalcedony n=5 (6%) Silicified Sandstone n=5 (6%) Jasper n=3 (4%) Basalt n=1 (1%) Limestone n=1 (1%)	Complete n=40 (47%) Proximal Fragment n=13 (15%) Split Flake n=5 (6%) Distal Fragment n=23 (27%) Shatter n=4 (5%)	0-1 cm n=8 (9%) 1-2 cm n=25 (29%) 2-3 cm n=22 (26%) 3-4 cm n=13 (15%) 4-5 cm n=7 (8%)
Cortex	Technology (flakes with platforms)	
Present n=25 (29%) Absent n=60 (71%)	Single-facet n=52 (98%) Bifacial n=1 (2%)	

Table 2.5. Spatial Distribution of Lithic Artifacts from Locus 1.

Item Number	Provenience	Debitage	Cores	Projectil Points	Manos	Other Groundston	Total
20	T.P. 1 Level 2	2					2
166	T.P. 2	1					1
57	T.P. 2 Level 1	1					1
121	T.P. 2 Level 2	6					6
86	T.P. 2 Level 2 FE 1	1					1
129	T.P. 2 Level 3 FE 2	1					1
127	T.P. 2 Level 3				1		1
	T.P. 2 Level 4				1		1
183	T.P. 2 Ext Level 1	5	1		1		7
202	T.P. 2 Ext Level 2	2		1			3
210	T.P. 2 Ext Level 2 FE 1	8					8
219/214	T.P. 2 Ext Level 3 FE 4	5				1	6
228	T.P. 2 Ext Level 4	6			3		9
235	T.P. 2 Ext Level 5	11			1		12
238	T.P. 2 Ext Level 6	2					2
12	T.P. 3 Level 1	3		1			4
26	T.P. 3 Level 2	1					1
35	T.P. 3 Level 3	2		1			3
66	T.P. 3 Ext Level 1	5					5
30	T.P. 4 Level 2	2					2
59	T.P. 5 Level 1	2					2
75	T.P. 5 Level 2	4					4
83	T.P. 5 Level 3	1					1
105	T.P. 5 Ext Level 1	6					6
178	T.P. 5 Ext Level 4 FE 3	1					1
95	T.P. 7 Level 1	2					2
	T.P. 7 Level 2	4					4
244	Off Site Collection				1		1
	Total	84	1	3	8	1	97

Flaked Stone Tools

Three projectile point fragments and one core were recovered from Locus 1. The projectile point fragments include one triangular chert point, one basal-notched chert point fragment, and one basal fragment of a probable corner-notched chert point (Figure 2.24). It may be significant that all of these projectile point fragments are made of chert, a raw material which comprises only 16 percent of the debitage assemblage. Although chert is present in the local area, it does not occur as high quality knappable stone; much better stone is available in the Whetstone mountains to the north (B. Huckell, personal communication, 1992), the Sierra San Jose to the south (J. Rosenthal, personal communication, 1992), and as lag gravels in the terraces of the San Pedro River Valley. Such non-local cherts would be more desirable for finely finished tools such as these projectile points. At this time, however, it is impossible chemically to characterize most cherts to a specific source and we cannot, therefore, identify the specific source exploited by the rockshelter inhabitants. These points appear to be curated items of personal gear (Binford 1979) that were made of high quality raw materials. The debitage in the shelter, on the other hand, appears to have been expediently produced in response to immediate needs. The projectile points, though fragmentary, may all be classified as types used during the Classic period (Franklin 1980; Di Peso 1951).

The single core in the assemblage (Figure 2.25) is a multi-directional, multi-platform flake core made of locally available mudstone. It exhibits more than 10 negative flakes scars and less than 25 percent cortex. It may be an example of an exhausted core and was probably intentionally discarded in the rockshelter because it was too small for further reduction. Mudstone is also plentiful in the immediate vicinity of the site and such a core would not have been a particularly valuable item. The only other flaked stone tool in the assemblage is a single utilized flake (Figure 2.26) that has been modified along one lateral edge. It was probably used in a cutting activity.

The debitage in the assemblage appears to have been produced from locally available raw material sources, but the projectile points may have been imported to the site from more distant areas. This interpretation is based upon several lines of evidence, but cannot be confirmed or refuted until chemical characterization of non-volcanic rocks becomes widely available. Geologically, most of the raw materials occur within a few kilometers of the site, but their suitability for tool making is somewhat questionable. The simple flake-core technology, however, does not require high quality raw material because the end-product is a usable flake. This technology was used to exploit local materials throughout much of the Formative period in the Southwest (Parry and Kelly 1987) and it seems unlikely that AZ EE:11:15 should be an exception to this trend. The presence of cortex on over one-fourth of the flakes also indicates a local source for the materials. Cortex usually represents less than 10 percent of the debitage on non-local or exotic materials (Green 1984). If the materials were non-local, we would also expect a higher proportion of broken flakes and shatter in the assemblage; complete flakes comprise almost one-half (47%) of the debitage assemblage. Finally, most of the flakes are in the 1-4 cm size range despite the use of 1/8-inch screen during the excavations; if the raw materials were from distant sources, we would expect a larger proportion of pressure and rejuvenation flakes less than 1 centimeter in size (Green 1984). All of the above data suggest that the raw materials were procured locally.

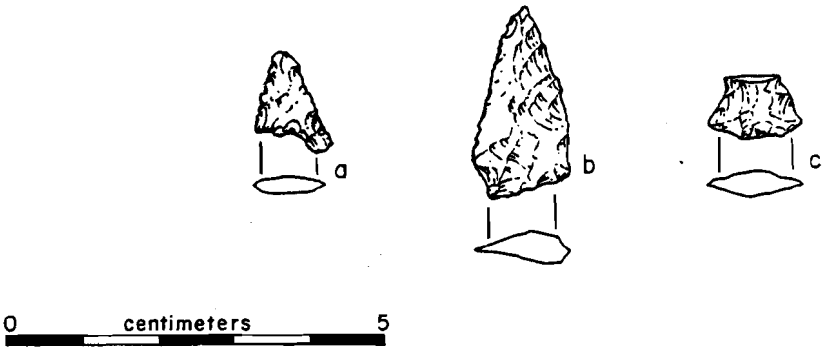

Figure 2.24. Projectile points recovered from Locus 1: a. triangular point, b. basal-notched point fragment, c. possible corner-notched variety base.

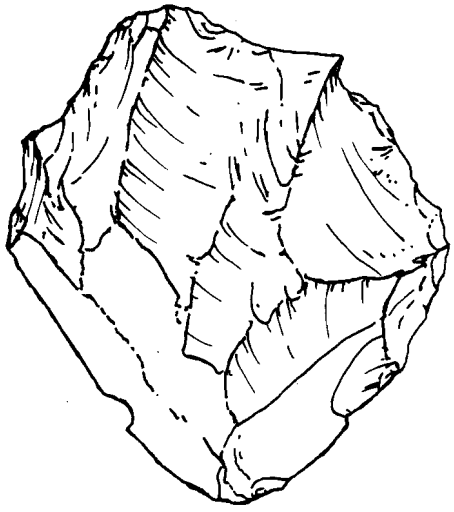

Figure 2.25. Multi-directional core from AZ EE:11:15.

Figure 2.26. Utilized flake from Locus 1.

Ground Stone Analysis

Ground stone artifacts recovered from AZ EE:11:15 include eight items recovered from Locus 1 and a single item collected from the bottom of the slope east of Locus 1. The items collected from within Locus 1 were all found beneath the surface and include five possible manos, two possible pestles, and a "shaft straightener." The manos are rounded cobbles of mudstone (n=2), rhyolite welded tuff (n=1), quartzite (n=1), and limestone (n=1). Only one of these items is complete, the remainder are broken pieces. The two possible pestles include a mudstone cobble and a basalt cobble. The identification of the manos and pestles as artifacts rests more on form and archaeological context than on definitive use-related attributes on the artifacts themselves. All the items are rounded cobbles that do not occur naturally in rockshelter sediments. Most are made of raw materials found locally, but not within the rockshelter bedrock. They were probably procured from the creek less than 50 meters east of the site. These items do not exhibit intentional shaping or use wear. It is important to note, however, that all of the items found *in situ* were located in Test Pit 2/2 extension near the series of superimposed hearths. Thus, the context of these items may indicate their use, however minimal, as vegetable or bone processing implements. The latter interpretation seems more tenable in light of the abundance of bone fragments and lack of economically important plant macrofossils in the area around the hearths. The single mano located outside Locus 1 was found on the slope east of the rockshelter and is made of argillite. It exhibits some intentional modification but has not been intentionally shaped.

To test the hypothesis that these items were used to process animal bone (and possibly small animals), three of the items were submitted for immunological analysis. Immunological analysis is a technique often applied to flaked lithic artifacts (Shafer and Holloway 1979) and recently refined to include ground stone artifacts (Yohe et al. 1991). Organic residues left on stone tools can be identified to at least the family level taxon and quite often to the genus or species level (Newman and Julig 1989).

The ground stone artifacts from the assemblage were tested for a variety of large and small mammals, avifauna, fish, and plant residues (Newman 1992). Two of the artifacts produced negative results. A single mano recovered from Test Pit 2 reacted with the human anti-serum indicating human use of the artifact. Newman (1992) indicates:

> A positive result to human anti-serum occurs only with humans and apes. Although prehistoric crime may account for this reaction, the most likely explanation is that it is the result of accidental cuts incurred during food processing or tool manufacture. It is also possible that perspiration or other traces of recent handling may be responsible. However, if all artifacts were handled to the same extent than positive results would be expected on all.
>
> The absence of identifiable proteins on other artifacts may be due to poor preservation of protein or that artifacts were used on species other than those covered by the anti-sera. It is also possible that the artifacts were not utilized.

The results of the analysis were somewhat disappointing. The artifacts were not cleaned prior to the analysis, so we interpret the single positive result as indicative of human use of the artifact, supporting our interpretation that these minimally ground and shaped rocks are indeed artifacts. Because a large number of species were tested for, we suspect that poor protein preservation in the rockshelter yielded the negative results. Although the analysis does not confirm that these tools were used for animal processing, neither does it refute the hypothesis.

The shaft straightener (Figure 2.27) was also found in Test Pit 2/2 extension. It is made of silicified sandstone, probably from the Bolsa Quartzite formation, and has a beveled hole in the center.

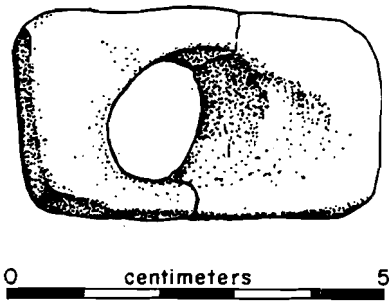

Figure 2.27. Possible shaft straightener from Locus 1.

Similar items found elsewhere have been interpreted as shaft straighteners or shaft wrenches (Haynes 1967), but the actual function of this item remains problematic. It is the only ground stone item not traditionally associated with food processing.

Faunal Analysis

Kellie M. Cairns

The faunal remains from AZ EE:11:15 represent one of the few data classes recovered during the excavations that provide direct evidence of subsistence activities. Although few in number, the bones provide insight into the possible use of the rockshelter by the aboriginal occupants and may provide some indication of the prehistoric environmental conditions in the area. The faunal analysis was designed to address four topics as an aid in determining site function:

1. The diversity of the faunal collection: We wanted to know the types of animals exploited, as well as their relative frequencies. This information can be used as a proxy measure of game preference in prehistoric diets. Remains of animals whose habitat is the lower elevation valley floor, for example, would indicate that the occupants brought meat with them; greater frequencies of higher elevation animals, on the other hand, could be taken as evidence of animal procurement in the vicinity of the site.

2. Cultural Modifications: If the site was used as a butchering camp we would expect to find certain modifications to the bone; thus, the bones were examined for cut and butcher marks as a key to site function. In addition, the bones were examined for evidence of burning. Burned bone, combined with the presence of hearths, might suggest that meat was consumed on-site.

3. Formation Processes: Burrowing animals can complicate the interpretation of faunal assemblages by disturbing stratigraphic relationships and by introducing remains that post-date the occupation(s). One goal of the faunal analysis was to assess the relative percentage of the assemblage that pertains to intrusive animals.

4. Inter-site comparison: We wanted to know how the assemblage from AZ EE:11:15 compares to the one at AZ EE:11:30 and to determine what the similarities and differences mean in terms of site function.

Analytical Methods

Laboratory analysis of the Fort Huachuca faunal assemblage began with a delicate dry brushing of the bones after which they were cataloged and boxed. The identifications were made possible through the use of the Zooarchaeology Laboratory at the Arizona State Museum. Each bone was identified to the most specific taxonomic level possible and an analysis form was used to record taxon, skeletal element, symmetry, portion of bone, the number of fragments, and modifications for each bone.

Species identification was assessed through diagnostic features of certain bones supplemented by mensural data. Unidentifiable fragments were assigned to small, medium, or large mammal or bird categories; indeterminate bone splinters were classified as unidentifiable. After the identification of the assemblage was complete, a computerized database was created with the assistance of Paradox, a Borland Inc., software program. The computerized files are archived at ASM and SRI.

The analysis was aided by the calculation of two measures: number of identified specimens (NISP) and minimum number of individuals (MNI). Absolute bone frequencies were included for each identified species as well as for less precise analytical categories such as large mammals. The NISP method allows additional numbers to be added to the original tally, but is sensitive to bone fragmentation (Grayson 1984). Because of such sensitivity, NISP should not be only method used; combining NISP with the minimum number of individuals method (MNI) yields a more reliable estimate of faunal exploitation. The MNIs were calculated using the minimum distinction techniques on a site specific basis (Grayson 1973). Using this technique the MNI within the assemblage was measured by calculating the most frequently repeated element for a given species. The bones were grouped by site and not by feature or stratigraphic unit because the assemblage is small and such divisions would be meaningless in behavioral terms. The goal of the analysis was to determine the species present and their relative abundance at the site. A reliable characteristic of the MNI is that it can provide an independent measure of species abundance.

AZ EE:11:15 Assemblage

The faunal assemblage recovered from AZ EE:11:15 consists of 152 pieces of bone that were divided into eleven categories. Two species and one genus were identified: Rock squirrel (*Spermophilus variegatus*), Botta's Pocket Gopher (*Thomomys bottae*), and deer (*Odocoileus sp.*); all were found within excavation units. Twelve bone elements represent these animals. The remainder of the bone (n=140 pieces) could not be identified to the genus or species level and is classified as small mammal (rodent-or rabbit-sized), medium mammal (carnivore-sized), large mammal (ungulate-sized), small bird, medium bird, indeterminate bird, or unidentifiable (Table 2.6). Faunal descriptions and modern animal distributions were assembled from several published sources, including Cockrum (1960), Olin (1982), Peterson (1990), Scott (1989), and Zeveloff (1988).

Rodents

Both Rock squirrel (*Spermophilis variegatus*) and Botta's Pocket Gopher (*Thomomys bottae*) were recovered from the site. Rock squirrel remains are relatively easy to recognize because they are the largest ground squirrel in their range. The typical habitat for this squirrel is broken canyon country with open rocky areas. They may be seen perched on rocks where slopes support stands of juniper and brushy oak. In their southern range (northern Mexico) they remain active all year round (Zeveloff 1988). Interestingly, the only burned bone identified to the species level were the three

Table 2.6. Species List for all Vertebrates from AZ EE:11:15.

Site Number	Common Name	Scientific Name	NISP	%NISP	MNI	%MNI
AZ EE:11:15	Rock Squirrel	Spermophilus variegatus	3	1.97	2	8.70
	Botta's Pocket Gopher	Thomomys bottae	8	5.26	1	4.35
	Deer	cf. Odocoileus sp.	1	0.66	1	4.35
	Indet. Rodents	Indeterminate Rodentia	2	1.32	1	4.35
	Small Mammal	Rabbit-sized	17	11.18	3	13.04
	Small Mammal	Rodent-sized	27	17.76	3	13.04
	Medium Mammal	Carnivore-sized	16	10.53	2	8.70
	Medium-Large Mammal	-	43	28.29	3	13.04
	Large Mammal	Ungulate-sized	6	3.95	1	4.35
	Indet. Small Birds	Indeterminate Small Aves	6	3.95	1	4.35
	Indet. Birds	Indeterminate Aves	1	0.66	1	4.35
	Indet. Medium Birds	Indeterminate Medium Aves	1	0.66	1	4.35
	Unidentified	Indeterminate Class	21	13.82	3	13.04
	Total		152	100.00	23	100.00

fragments of rock squirrel, representing two individuals. It seems reasonable to suggest that this animal was actively hunted by the rockshelter inhabitants.

Botta's Pocket gopher is represented by eight fragments recovered from the site. These bones probably represent a single individual. These gophers prefer a wide range of habitats. Although they are especially common in sandy soils, they can be found in any soil that can support their burrowing activity. The pocket gopher remains appear to be intrusive at the site. The bones are nearly complete and have a greenish "fresh" tint to them. In addition, six of the bones were found together and account for three different elements, thus indicating one individual.

Small mammals in the rodent-sized class are represented by 27 bones from at least three different individuals. Six different genera of rodent are present in the Fort Huachuca study area today: ground squirrels (*Ammospermophilus/Spermophilius*), Harris' antelope squirrel (*Ammospermophilus harrisii*), rock squirrel (*Spermophilius variegatus*), Bottas' pocket gopher (*Thomomys bottae*), desert kangaroo rat (*Dipodomys deserti*), and the White-throated woodrat (*Neotoma albigula*).

The Harris' antelope squirrel (*Ammospermophilus harrisii*) is known to climb in yuccas and various cacti. It can be found within the project area, although it prefers low deserts with sparse vegetation. The desert kangaroo rat (*Dipodomys deserti*) is the largest rat of its genus (Zeveloff 1988). Its habitat includes deep fine sand with sparse vegetation. Occasionally, these soils become heavily flooded and the rats must escape to higher ground. It is possible that some of the faunal material from the site represents this species, but given the thin soils of the area it is unlikely. The common packrat, (*Neotoma albigula*), prefers to inhabit rocky cliffs with shallow caves. These rats are large and are famous for constructing homes two to four feet high. The materials for the construction can be anything from sticks, cactus pads, bottles, mule droppings, and even mouse traps. They inhabit the area today and, as discussed in the next chapter, may have impacted the faunal assemblage from the Rappell Cliffs Rockshelter.

The interpretation of rodent remains from archaeological sites has become an important methodological as well as an economic issue in Southwestern prehistory. It is known that rodents are prone to gravitate towards loose fill, a situation that may lead to their over-representation in the archaeological record. Because meat protein is a relatively scarce commodity in the desert Southwest, however, rodents may well have been a reliable and important food source. Their presence in an archaeological faunal assemblage may be an indicator of economic stress or post-depositional disturbance (Bayham and Hatch 1985). It is important, therefore, to examine the faunal remains carefully for signs of cultural modification and to be conservative in addressing whether or not these

creatures were economically important. In the AZ EE:11:15 faunal assemblage, burned elements from the rock squirrel were found in hearths indicating that this animal was a food source. Other animals could have been used but because no cultural modifications to the bone were identified, we suggest that they are intrusive.

Lagomorphs

Rabbit-sized small mammals are represented by 17 bones, probably from at least three different individuals. None of these bones could be identified to a genus or species, but only two species of cottontail (*Sylvilagus audubonii* and *Sylvilagus nuttalli*) and one of jackrabbit (*Lepus californicus*) inhabit the area today. *S. nuttalli* prefers wooded habitats in the mountains, whereas *S. audubonii* seeks the underbrush areas of foothills and grasslands. High cottontail densities are associated with well-distributed cover used for escape purposes; dense, thorny, low-growing perennials appear to provide optimal nourishment and cover for predator avoidance (Chapman et al. 1982: 103). As with certain other animals, these species have been defined using primarily external criteria, and are osteologically difficult to separate in the absence of complete skulls (Chapman et al. 1982: 85-86). Because skulls were absent from the collection all cottontail specimens were designated *Sylvilagus* sp. It is entirely possible, even probable, that the inhabitants of the rockshelter hunted cottontails; the faunal assemblage, however, offers no definitive proof that this was the case.

The second lagomorph in the general area is the jackrabbit (*Lepus sp.*). The habitat preference of jackrabbits stands in marked contrast to that of cottontails. Virtually all varieties of jackrabbit show affinity toward more open environment because they do not require the heavy escape cover so critical to cottontails. Predator avoidance and escape are more a matter of speed and agility than the "hide and seek" strategy of cottontails (Bayham and Hatch 1985). Jackrabbits are usually found in open, sparsely vegetated areas and generally avoid higher elevations.

Carnivores

Medium, carnivore-sized mammals are represented by 16 bones from at least two individuals; identification to the genus or species level, however, was not possible. Several carnivores of this size are present in the area (see Chapter 2). Two of the most common are the coati (*Nasua nasua*) and hooded skunk (*Mephitis macoura*). The coati (*Nasua nasua*) prefers brushy thickets and rocky locations and may often den in rocks and in some cases hollow trees. The Huachuca Mountains contain one of the largest populations of coati in the United States and at least one individual was seen during excavation of the rockshelter. Coati are considered omnivorous and prefer to feed on small rodents, worms, insects and tubers (Olin 1982). The hooded skunk (*Mephitis macroura*) makes its home in a burrow or in a deep crevice among the rocks. Although rarely used for meat, the fur of the skunk is long and soft and was used by the Apache ethnographically (Buskirk 1908). These species may have been used by the rockshelter inhabitants, but we have no definitive evidence to support this interpretation.

Ungulates

Forty-three pieces of bone were identified as medium-large mammal and six were classified as large mammal. Most of these bones are fragmentary and cannot be identified to the genus or species level. A single specimen, however, was identified to the genus *Odocoileus sp.*, either a white-tailed or mule deer. The element is a longbone fragment but cannot be identified to the species level. Both mule and white-tailed deer inhabit the project area and would have been valuable sources of protein and other animal products. It is highly probable that the rockshelter inhabitants hunted deer throughout the mountains and foothills of the area. One possible explanation for the lack of identifiable deer bone in the assemblage is that portions of the carcasses were transported to lower elevation habitation sites.

Birds

Avifauna remains are not abundant at the site. Six bones from indeterminate small birds, and single bones of medium-sized and unknown-sized birds were recovered. At least three different individuals are represented in the assemblage. Many different birds inhabit the area (see Chapter 2) and several were important prehistorically, either as foodstuffs or as sources of feathers for adornment. Four of the small bird bones and the indeterminate-sized bone were burned, indicating the probable use of avifauna as food items. Without more complete specimens, however, we cannot discern any additional information about the use of birds.

Modified Bone

Burned bone comprises the majority (93%) of the bone from the site (Table 2.7). Only one identifiable species was recorded as burned, however (rock squirrel), with the remainder classified into broader categories as small, medium, large mammals and birds, and unidentified. Fifty fragments come from the shelf area, and their cause of burning is unknown. Test pit 2/2 extension yielded 66 fragments of which 3 were found in hearths (Features 1 and 4).

Only one fragment of worked bone, a bone bead, was found at AZ EE:11:15. Beads made of bone, shell and other materials are first recorded as having been worn in the Southwest by Basketmaker II people (A.D. 1 to A. D. 450-500). It is not known what size animal this bead was manufactured from, but it was probably made from thin bits of bone material. The bead is round and has been perforated with a single hole. It is smooth on the sides and the peripheral edge.

Table 2.7. Burned Bone from AZ EE:11:15 Faunal Assemblage.

Unit	Level	Provenience	Feature	Common Name	Number of Fragments	Percent of Burned Fragments
Surface Collections	0	0	-	Medium Mammal	6	4.11
	0	0	-	Medium-Large Mammal	43	29.45
	0	0	-	Small Mammal	1	0.68
1	2	6	-	Small Mammal	1	0.68
2	1	3	-	Indet. Small Birds	1	0.68
2	1	3	-	Large Mammal	4	2.74
2	1	3	-	Medium Mammal	9	6.16
2	1	3	-	Rock Squirrel	1	0.68
2	1	3	-	Small Mammal	19	13.01
2	2	7	-	Unidentified	2	1.37
2	2	22	hearth (1)	Unidentified	2	1.37
2	3	11	-	Large Mammal	1	0.68
2.2	1	49	-	Small Mammal	1	0.68
2.2	1	49	-	Unidentified	5	3.42
2.2	2	55	-	Rock Squirrel	1	0.68
2.2	2	55	-	Small Mammal	7	4.79
2.2	2	55	-	Unidentified	3	2.05
2.2	2	56	hearth (1)	Indet. Rodents	1	0.68
2.2	2	56	hearth (1)	Indet. Small Birds	4	2.74
2.2	2	56	hearth (1)	Rock Squirrel	1	0.68
2.2	2	56	hearth (1)	Small Mammal	8	5.48
2.2	2	56	hearth (1)	Unidentified	4	2.74
2.2	3	60	-	Indet. Birds	1	0.68
2.2	3	60	-	Small Mammal	3	2.05
2.2	3	61	hearth (4)	Unidentified	1	0.68
2.2	4	62	-	Large Mammal	1	0.68
2.2	4	62	-	Small Mammal	1	0.68
2.2	4	62	-	Unidentified	1	0.68
3	2	8	-	Medium Mammal	1	0.68
4	2	9	-	Small Mammal	2	1.37
Total					136	100.00

Summary

The faunal assemblage from the Garden Canyon Pictograph site is characterized by relatively high diversity. Although only two species and one genus could be identified, the size range of different orders of animals (mammal and birds) suggests that a variety of species are represented. The "incompleteness" of the assemblage suggests that some skeletal elements, particularly of deer, were transported away from the site. The poor condition of the bone in the assemblage indicates that animals butchered and consumed on-site were intensively processed.

Cultural modification of bone acts as a key to site function. Evidence of hearths and burned bone suggest that the Garden Canyon site was a place of hunting and meat procurement. The faunal assemblage from AZ EE:11:15 contains a large proportion (93%) of burned bone. Most of the bone was also broken and battered, presumably to extract marrow. It is reasonable to suggest, therefore, that the hunting was done near or at the site, and that procurement and cooking of the animals was an important activity at the site. Low bone frequencies indicate that entire carcasses were not left at the site and we suspect that portions of some animals were carried back to habitation sites, probably village sites in the lower elevations. The relatively high MNI and low NISP indicates that most of the faunal materials from this site are in poor condition. Cultural practices associated with meat procurement, such as burning and breaking bones for marrow extraction, would yield just such an assemblage

configuration. We suggest, therefore, that this site was used on a short-term basis to procure and process meat, most of which was transported to other sites in the area.

Floral Analyses

The analysis of plant remains and pollen can provide clues to past environmental conditions in an area as well as information concerning the exploitation of floral resources by past human populations. Our objective in these analyses was to identify plants that may have been economically important to the prehistoric occupants of the rockshelter. We did not feel that a comprehensive paleoenvironmental reconstruction was necessary or warranted given the limited occupation span of the site. Pollen and macrofossil samples were collected from every level and feature, but not all were submitted for analysis. Three pollen samples collected from off-site locations were submitted to obtain some indication of the content of the modern pollen rain in the area. The following section details the kinds and amounts of plant remains and pollen grains recovered from specific samples and offers interpretations as to their importance in reconstructing the past human use of the site.

Plant Macrofossils

Analyses of the plant macrofossils collected from AZ EE:11:15 was restricted to seven samples. We believed that feature contexts offered the best hope of identifying economically important plants, so only samples from feature contexts were analyzed. Samples were collected in 1 liter bulk bags. Flotation was conducted by Statistical Research personnel using fine-mesh (1 mm) screen. The sample was immersed in a 5 gallon bucket of water, the light fraction was skimmed off the surface of the water and allowed to dry. The sample was submitted to Ms. Kate Rylander of Tucson, Arizona, who further separated the material using nested screens of 2 millimeters, 1 millimeter, and less than 1 millimeter. The material less than 1 millimeter in diameter was not examined. Materials analyzed include two samples from Feature 1, two samples from Feature 3, and one sample each from Features 2, 4, and 5. Table 2.8 shows the provenience and content of samples analyzed.

Several interesting aspects of the plant macrofossil analysis should be noted. First, plants known to be economically important to Formative period peoples are almost totally absent from the samples. No corn, agave, bean, or squash macrofossils were identified. Chenopodiaceae seeds occur in small numbers both as charred and uncharred specimens; these plants could have been used in the rockshelter, but it is much more likely that the seeds, which occur naturally in the area, were burned accidentally. One plant possibly utilized by the rockshelter occupants is globe mallow (*Malvaceae*) which is present in Features 1, 3, and 5, but only in very small amounts. Likewise, the probable mesquite (*Prosopis sp.*) pod in Feature 5 may have been used, but a single specimen certainly does not indicate extensive mesquite exploitation. Walnut (*Juglandaceae*) macrofossils are present in Features 1, 3, and 5, and may have been used prehistorically.

All of the macrofossils analyzed from the rockshelter occur naturally in the area and their presence does not necessarily indicate that they were exploited by the site occupants. Several potentially economically important plants are preserved as macrofossils, such as globe mallow, mesquite, and walnut; they occur in such low frequencies, however, that inferring their exploitation by prehistoric peoples in the rockshelter would be speculative at best. Undoubtedly, the users of the site exploited plant foods, probably even some of the species identified in the analysis. Walnut shells in particular occur in abundance in the rockshelter; walnuts are prevalent in the Garden Canyon area, however, and their presence in the deposits may be due to natural factors. Given the results of the

Table 2.8. Plant Macrofossil Data from Locus 1.

Test Pit	Level	Identification	Part	Charred W*	Charred F**	Uncharred W*	Uncharred F**
2	2(F1)	Pinus sp.	needle		1		1
		Pseudotsuga menz.	needle				1
		Cheno-am	seed				1
		Chenopodiaceae	seed			23	5
		Malvaceae	seed	1	1		
		Juniperus sp.	seed				1
		Unknown A	seed		5		
		cf. unknown A	seed		1		
		Unknown B	seed		3		
		Unknown C	seed		1		
		Unidentified	cf. leaf		2		
		Bone			1		
		Insect fragments					38
2 ext	2(F1)	Cheno-am	seed	27			3
		Cheno-am	embryo				2
		Chenopodiaceae	seed		2	25	11
		Malvaceae	seed		3		2
		Unidentified	cf. leaf				1
		Bone					1
		Insect fragments					31
2	3(F2)	Pinus sp.	needle		2		2
		Pseudotsuga menz.	needle				1
		Chenopodiaceae	seed			7	1
		Papaveraceae	seed				1
		Unknown A	seed		1		
		Unidentifiable	seed		2		
		Unidentifiable	cf. leaf		4		2
		Insect fragments					24
2	3(F4)	Juniperus sp.	seed			2	1
		Cheno-am	seed				2
		Chenopodiaceae	seed				1
		cf. Malvaceae	seed		1		
		Unknown A	seed		1		
		Unknown B	seed		2		
		Unidentifiable	seed		1		
		Insect fragments					37
2	4(F5)	cf. Leguminosae	pod		1		
		Juglandaceae	shell		5		
		Unknown B	seed		1		
		Unidentifiable	seed		1		
		Insect fragments					4
5 ext	3(F3)	Chenopodiaceae	seed			2	
		cf. Juglandaceae	shell		4		
		Malvaceae	seed		1		
		Unidentified	seed		1		
		Unidentifiable	cf. leaf		1		
		Insect fragments					13
5 ext	4(F3)	Pinus sp.	needle				11
		Conifer	needle				1
		Juniperus sp.	stem				1
		Cheno-am	seed				1
		Chenopodiaceae	seed			4	2
		cf. Juglandaceae	shell		2		
		Unidentified	cf. leaf				4
		Insect fragments					10

*W = Whole

**F = Fragment

analysis, it is impossible to determine whether these species were introduced into the deposits by cultural or natural processes.

Pollen Analysis

Analysis of the pollen present in and near the rockshelter was restricted to 10 samples. Seven of these samples came from excavated contexts, whereas three were collected outside the shelter for comparative purposes. Collection was done with clean trowels. Each sample consisted of a 100-150 gram volume of sediment placed into an airtight plastic bag which was submitted to the analyst unopened. The samples were extracted using a modified Mehringer technique with the addition of a heavy liquid (Zinc bromide) step. All samples received tracer *Lycopodium* tablets to facilitate the calculation of population estimates for different pollen types found within the samples. The pollen from AZ EE:11:15 was poorly preserved, very reactive, and contained abundant quantities of silica gel. The samples were treated with a hot HCL solution to remove the gel. Each sample was stained on the slide and examined with a binocular light microscope at 525x. All samples submitted contained pollen, but not always in amounts sufficient for calculating population estimates. Those samples with insufficient pollen were nonetheless scanned at 300x for economically important plants. Submission of pollen samples, like the macrofossils and charcoal samples, was done with an eye toward identifying the strongest, most potentially informative contexts. Attention was focused on samples from features and strata important to the interpretation of prehistoric behavior. Samples collected from archaeological contexts that were examined include those from Features 3 (n=2), 4, and 5, from Levels 2 and 3 in Test Pit 2/2 extension, and from Level 2 in Test Pit 3.

Generally, the pollen in all samples was poorly preserved, probably due to the acidic nature of the forest soils. Pollen grains that could not be identified to the family level (indeterminate) comprise a substantial portion of most of the samples (Table 2.9).

Table 2.9. Pollen Remains from Selected Contexts.

POLLEN TYPE	T.P.2E, L2 (NO COUNT)	T.P.2, L3 (NO COUNT)	T.P. 5E, L4, FE3 (NO COUNT)	T.P.2E, L4, FE5 COUNT (%) (COUNT =50)	T.P. 2E, L3, FE4 COUNT (%) (COUNT =50)	T.P.3, L2 COUNT (%) (COUNT=100)	T.P. 5E, L3, FE3 COUNT (%) (COUNT=50)	OFF-SITE COUNT (%) (COUNT=100)	OFF-SITE COUNT (%) (COUNT=100)	OFF-SITE COUNT (%) (COUNT=100)
JUNIPERUS					1(2)		1(2)	8(8)	8(8)	10(10)
PINUS		1	1	5(10)	7(14)	83(83)	17(34)	22(22)	5(5)	29(29)
PROSOPSIS				2(4)	1(2)		1(2)	1(1)		1(1)
QUERCUS				6(12)	4(8)			2(2)	1(1)	6(6)
JUGLANDACEAE		1								
RHAMNACEAE								1(1)	1(1)	
CHENO-AMS	1	1		1(2)	4(8)		5(10)	8(8)	8(8)	4(4)
ARTEMESIA				1(2)				11(11)	2(2)	
LOW-SPINE	1	1		2(4)	2(4)	1(1)	1(2)	9(9)	3(3)	11(11)
HIGH-SPINE				2(4)	5(10)	3(3)	4(8)	13(13)	17(17)	9(9)
GRAMINEAE				2(4)		2(2)			1(1)	
ROSACEAE									1(1)	1(1)
TUBUL				3(6)	5(10)	2(2)	6(12)	4(4)	17(17)	7(7)
YUCCA	1									
INDETERMINATE	2	2	1	26(52)	21(42)	9(9)	15(30	21(21)	36(36)	22(22)

The three samples collected from off-site locations provide some information about the modern pollen rain in the area but should not be used to infer absolute proportions of those plants in the modern environment. Arboreal pollen comprises between 14 and 46 percent of all pollen in these samples. Not surprisingly, pine and juniper pollen are the major arboreal constituents, although aspen and mesquite are also present. The non-arboreal pollen consists mainly of shrubs and grasses. High- and Low-spine composites, cheno-ams, and Tublifloreae comprise the bulk of the non-arboreal pollen with sagebrush (*artemesia*), wild rose (*Rosaceae*), and other grasses present in small amounts.

Three samples from archaeological contexts (T.P 2 Level 3; T.P. 2 extension Level 2; T.P. 5 extension Level 4 Feature 3) contained insufficient pollen for making population estimates. Pollen present in these samples consists of pine (Pinus), walnut (*Juglandaceae*), cheno-ams, low-spine composite, and yucca. These species may have been utilized by the rockshelter inhabitants, but the presence of these plants in the vicinity of the site suggests the possibility that they may have been introduced into the deposits through natural processes.

Four samples from archaeological contexts contained enough pollen to make population estimates (see Table 2.9). The two samples from Test Pit 2 extension, Features 4 and 5, are very similar. Both contain 26 percent arboreal pollen, mostly pine, juniper, and aspen. The non-arboreal pollen consists of *Tubliflorae*, high-spine composites, and cheno-ams. None of these plants is considered to be economically important. In some circumstances cheno-ams may have been exploited, but the similar proportions in the feature and off-site samples indicates that this pollen was probably deposited in the features by natural processes.

The single pollen sample from Test Pit 5 extension, Feature 3, is similar to the other feature pollen and off-site samples. Arboreal pollen comprises 38 percent of the sample, mostly pine pollen. The non-arboreal pollen comprises mostly *Tubliflorae*, cheno-ams, and high-spine composites.

One sample stands out as different from all the other archaeological and off-site samples. This sample, from Test Pit 3 Level 2, contains 83 percent pine pollen and very little else. This sample was taken from Stratum 2A, the dark burned organic layer in Test Pits 3 and 5. The pollen data indicate that the burned layer was predominately pine, possibly a layer of needles or a pine mat of some sort. These data indicate that the layer is probably cultural, but the exact cultural context and depositional history of Stratum 2A remain a mystery.

The macro and microfossil data from AZ EE:11:15 indicate that economically important plants such as maize and agave were not exploited at the site. There is no evidence of the storage of cultigens or the gathering of wild plants. Several potentially important plants, such as mesquite and walnuts, were present in the rockshelter as either macro-fossils or pollen grains. They certainly could have been exploited by the rockshelter inhabitants, but their presence can be most easily explained as importation to the site by non-human agents. If the rockshelter was used by prehistoric populations to exploit floral resources in the canyon, those resources must have been plants that do not produce pollen or leave macrofossil remains. They may have imported other plants foods to the site in forms that leave no traces, such as corn meal. A more parsimonious explanation, however, is that the rockshelter was *not* a locus of plant gathering or processing.

DATING

One of the main objectives of this project was to determine when the rockshelter was occupied. Four classes of data were used to address the questions of occupation span and time period: stratigraphy, lithic artifacts, ceramic artifacts, and radiometric samples.

The stratigraphy of Locus 1 clearly demonstrates that there were at least four different occupation episodes. The four superimposed hearths in Test Pit 2/2 extension could not have been created simultaneously and indicate a succession of use events. The single hearth (Feature 3) in Test Pit 5/5 extension cannot be directly correlated with the hearth sequence in Test Pit 2/2 extension, but may be the most recent hearth in the rockshelter. If the burned organic layer, Stratum 2A, is associated with Feature 3, then this hearth is younger than the others because Stratum 2A clearly overlies the upper-most hearth (Feature 1) in Test Pit 2/2 extension (see Figure 2.10). The stratigraphy of Locus 1 indicates the relative age of each feature, but does not provide any information as to its age relative to the Christian calendar.

The lithic assemblage from AZ EE:11:15 comprises 97 items. Within this small assemblage, two artifact classes may have temporal significance: projectile points and debitage. Projectile points are generally used as time markers in the Southwest during the Paleo-Indian and Archaic periods (see Irwin-Williams 1973). Changes in ceramic design throughout the Formative period, however, are thought to represent much narrower time frames than changes in Formative period projectile point styles. Nonetheless, projectile points may offer supplemental evidence at the Garden Canyon Pictograph Site. The three projectile point fragments recovered from Locus 1 are similar to types found in Classic period contexts elsewhere in the San Pedro Valley. The triangular point (see Figure 2.24a) is similar to Type IV points at Second Canyon Ruin (Franklin 1980:164) that occur in Salado pit houses. The small basal notched point fragment (see Figure 2.24b) is similar to Type V projectile points also found at Second Canyon Ruin (Franklin 1980:164) in Salado contexts. Finally, the small basal fragment (see Figure 2.24c), although difficult to classify, may be similar to Type I subtype "a" specimens found in cremations and floor assemblages at Babocomari Village (Di Peso 1951). These three projectile points, though fragmentary, all suggest an occupation during the Classic period (A.D. 1200-1450).

The debitage from Locus 1 comprises 84 items. All are flakes produced by a simple flake-core technology typical of sedentary agriculturalists in the Southwest (Parry and Kelly 1987). Although the degree of resolution attainable by characterizing the lithic technology is not high, we are confident that the debitage indicates a Formative period occupation.

Ceramics, especially decorated types, provide a much narrower temporal range for dating an occupation in the Southwest than do lithic materials. The ceramic assemblage from AZ EE:11:15 is small-- only 53 sherds-- and unfortunately, most of the sherds are too small to make definitive type identifications. The majority of sherds recovered from AZ EE:11:15 fall into two groups, micaceous and non-micaceous red-on-brown wares. The micaceous red-on-brown wares are similar to Babocomari Polychrome, a Classic period type, and may date to the 13th century. The non-micaceous wares resemble Sedentary period Hohokam types from the Tucson Basin that are thought to date from approximately A.D. 950 to A.D. 1200 (Dean 1991). The presence of these two types may indicate occupation of the rockshelter during multiple time periods or during a transition period between the late Preclassic and Classic Periods. There is, however, no vertical or horizontal separation of these sherd types in the rockshelter and we cannot discern separate occupations from their distributions.

The final class of data used to date the time period and occupation span at Locus 1 is radiocarbon dating. The discovery of radiocarbon dating had a significant impact on the field of archaeology (Taylor 1987). Unfortunately, many archaeologists have failed to fully understand the nature of the method and its limits. One of the most common errors in interpreting radiocarbon dates is equating "radiocarbon years" with terrestrial years. Because the amount of natural radioactivity in the atmosphere has varied significantly over the past few millennia (the De Vries effect), an uncalibrated radiocarbon date of, for example, 760 B.P., may not simply be subtracted from the 1950 baseline and identified as A.D. 1190. Radiocarbon dates, once corrected for the fractionation effects of stable carbon isotopes, must be calibrated using a curve based on dendrochronological samples of known ages (Stuiver 1982). The resulting dates are presented as ranges; the range mid-points are often presented

for convenience, but are not more likely estimates of the true age of a sample than any other year in the range. Finally, a radiocarbon date may intercept the tree-ring calibration curve in more than one location; in this case, each intercept may represent the true age of the sample, but one intercept may have a higher probability of representing the true age than the others.

Four charcoal samples from the site, all from feature contexts, were submitted for radiocarbon dating. Two samples each were submitted from Test Pits 2/2e and 5/5e. All of the samples were corrected for fraction effects by the Radiocarbon Laboratory at the University of Texas. We calibrated these dates (Table 2.10) using the CALIB 2.0 program (Stuiver and Reamer 1986) to determine their ages relative to the Christian calendar.

All of the calibrated age ranges are between the 11th and 14th centuries (at the two sigma range). The lowest sample from Test Pit 2/2e was collected from Feature 5 and yielded a date of 720 ± 100 B.P. (TX-7421; cal. A.D. 1218-1387 1 sigma; cal. A.D. 1210-1330 p=.77). The second sample from this unit, TX-7422, was from Feature 4 and yielded a date of 760 ± 90 B.P. (cal A.D. 1194-1284 1 sigma; cal. A.D. 1159-1309 p=.96). Two samples were submitted from Feature 3 in Test Pit 5/5e. The lowest sample from this feature, TX-7418, yielded a date of 850 ± 60 (cal. A.D. 1068-1258 1 sigma; cal. A.D. 1154-1281 p=.81). The higher sample from this feature, TX-7420, yielded a date of 780 ± 80 B.P. (cal. A.D. 1157-1284 1 sigma p=1.00). All of these dates are statistically identical and indicate an occupation between A.D. 1150 and A.D. 1300.

The two sigma ranges are more likely to include the true ages of the samples. Those two sigma ranges with the highest probabilities (see Table 2.10) generally occur from the mid-1100s to the late 1200s and early 1300s. It seems likely, therefore, that the site was used intermittently during a transitional period between the Preclassic and Classic periods or early in the Classic period.

The data used to address the question of site chronology all indicate an occupation during the early Classic period. Although the stratigraphy and ceramics suggest the possibility of occupations during different time periods, the radiocarbon dates from individual features indicate that these occupations occurred at the same time, within the degree of resolution of radiocarbon dating. If the site was occupied during a transitional period, the presence of Preclassic and Classic period ceramics in the deposits is easily explained. The radiocarbon dates suggest that the site was occupied, at least in part, during the period of overlap between Rincon and Tanque Verde phases in the Tucson Basin identified by Dean (1991). Other possible explanations for the presence of Tucson Basin Sedentary styles in this context include the possibility of a small amount of "lag time" between the Tucson Basin and the middle San Pedro. Sedentary styles may have been abandoned later in the San Pedro Valley after the adoption of Classic period styles from Chihuahua. The idiosyncratic use of vessels as heirlooms also could account for the mixing of styles at this site. We interpret all of these data to indicate a single, early Classic or transitional period occupation of Locus 1.

Table 2.10. Calibrated Radiocarbon Dates from Locus 1.

Sample Number	Test Pit	Feature Number	Level	Corrected Date	Calibrated Range	Probability	Intercepts
TX-7418	5/5e	3	4	850 ± 60 B.P.	1 sigma 1154-1258	.81	1068-1087, 1125-1138, 1154-1258
					1 sigma 1069-1086	.10	
					1 sigma 1125-1138	.08	1020-1280
					2 sigma 1148-1264	.62	
					2 sigma 1034-1143	.37	
					2 sigma 1269-1276	.02	
TX-7420	5/5e	3	3	780 ± 80 B.P.	1 sigma 1157-1284	1.00	1165-1167, 1191-1291
					2 sigma 1148-1319	.79	1030-1140, 1150-1320, 1368-1387
					2 sigma 1034-1143	.18	
					2 sigma 1368-1387	.03	
TX-7421	2/2e	5	4	720 ± 100	1 sigma 1210-1330	.77	1218-1316, 1369-1387
					1 sigma 1350-1391	.22	
					2 sigma 1150-1420	.92	1042-1093, 1121-1139, 1150-1420
					2 sigma 1041-1094	.05	
					2 sigma 1119-1140	.02	
TX-7422	2/2e	4	3	760 ± 90	1 sigma 1159-1302	.96	1194-1199, 1207-1284
					1 sigma 1372-1382	.04	
					2 sigma 1149-1330	.75	1030-1140, 1150-1330, 1345-1393
					2 sigma 1037-1142	.16	
					2 sigma 1347-1393	.09	
All Dates Pooled				792.5 ± 39	1 sigma 1213-1276		
					2 sigma 1160-1280		
				T'=1.307	No Significant Difference		

CULTURAL AFFILIATION

If dating the occupation of the site seemed a relatively straight forward task, determining the cultural affiliation of the site occupants is anything but simple. Although projectile points are sometimes used to indicate cultural affiliation, our small, fragmentary sample precludes any such attempt. We are left, therefore, with one class of data to address this question: ceramics.

Much of Southwestern archaeology has been based on the premise that different cultural groups produce different ceramics. The Hohokam of the Gila Basin were for many years described as the Red-on-buff culture (Gladwin and Gladwin 1935), the Anasazi the Black-on-white culture and so on. The assumption is certainly a valid one. Our problem comes in working in an area that has never been adequately defined and has always been considered an area of cultural overlap and blending.

The decorated sherds in the AZ EE:11:15 assemblage, like many other sites in southeastern Arizona, show affinities with two or more different cultural groups. The non-micaceous red-on-brown sherds in the assemblage exhibit design traits, especially the curvilinear and rectilinear designs, typical of Hohokam ceramics from the Tucson Basin. Micaceous red-on-brown sherds in the assemblage are most similar to the Babocomari Polychromes of the San Pedro Valley. The four red ware sherds in the

assemblage show similarities to the San Simon series ceramics normally found east of the San Pedro area.

Ceramic design styles may indicate some form of cultural interaction but do not necessarily imply cultural affiliation. Petrographic analyses of the sherd tempers and potential temper sources might distinguish between locally produced and imported products. These types of analyses could determine if we are describing a local population that interacts with other local populations or whether we are seeing wholesale immigration into the area. The preliminary descriptions of these types indicate local production of these vessels and the imitation of design styles found in other areas. The best that can be said from the small ceramic assemblage at AZ EE:11:15 is that we are dealing with Classic period sedentary agriculturalists who may have been part of larger cultural groups exploiting the San Pedro Valley and Huachuca Mountains.

CONCLUSIONS

Test excavations at the Garden Canyon Pictograph site (AZ EE:11:15) were designed to answer several research questions concerning the use of rockshelters and upper elevation sites in southeastern Arizona. Because little was known about the use of the rockshelter by prehistoric or historic groups, our research questions were divided into four broad domains: site integrity, temporal occupation span, cultural affiliation, and site function. Our overarching research goal was to relate pictographs on the ceiling and walls to the use of the rockshelter and to place the use of the rockshelter into regional settlement and subsistence patterns. The test excavations were conducted within agreed upon limits and, we believe, demonstrate the utility of using small, carefully selected test pits to recover the maximum amount of information with the least possible disturbance to important archaeological sites.

The first research question at the site was to determine the horizontal and vertical extent of any intact cultural deposits. The testing program indicates that intact deposits are present in the central area of Locus 1 in the main rockshelter. Test pits outside the Locus 1 dripline and in Locus 2 failed to reveal any intact cultural deposits and are not discussed further. Cultural deposits in Locus 1 are concentrated between Test Pits 2/2 extension and 5/5 extension. Intact deposits remain in the area south of Test Pit 2, but probably do not extend beyond Test Pit 5 to the north. It is also possible that intact deposits occur beneath the two large boulders east of Test Pit 2. Vertically, the deposits reach an average depth of approximately 50 centimeters below the ground surface. Although rodent activity is apparent, other major disturbance processes have not impacted the site.

Our next goal was to determine the time periods of occupation in the rockshelter. Much of the rock art, especially the larger white elements, is undoubtedly Apache and was probably created in the Historic period. We are certain of this identification from the style and content of the pictographs on the ceiling and walls (see Meighan, this volume). Given our opportunity to characterize an early Apache assemblage, it was somewhat disappointing therefore, that none of the cultural strata, artifacts, or chronometric data recovered during the testing are temporally related to the Apache use of the shelter. All cultural deposits in the rockshelter relate to occupations by an earlier group of people, perhaps the creators of many of the non-Apache pictographs.

The stratigraphy, lithic and ceramic artifacts, and radiocarbon dating, suggest that a single occupation of the shelter sometime during the 12th and 13th centuries was responsible for the deposition of cultural materials. Stratigraphically, repeated use of the central area is shown by the superposition of four hearth features. Successive use events in the shelter are indicated by these hearths, but the temporal separation of those events cannot be determined within the degree of resolution of radiocarbon dating. The lithic artifacts indicate only a Formative period occupation. The ceramic artifacts suggest two alternatives; either a single occupation in the 12th to 13th centuries or two separate occupations, one in the 11th or 12th century and one in the 13th century. Given all these data, repeated short-term use of the site in the late 12th and early 13th centuries is the most parsimonious explanation.

Determining the cultural affiliation of the site occupants presents several problems. The only class of data available for this task is ceramic. Our sample size of sherds (n=53) is small and of limited utility for several reasons. First, the design styles on the non-micaceous red-on-brown wares are similar to those of the Hohokam Tradition in the Tucson Basin. The micaceous red-on-brown wares, however, show more similarities to the Babocomari wares of the San Pedro area. We also have a few red ware sherds (n=4) that most closely resemble the San Simon series ceramics of Mogollon derivation. We therefore have several choices. Do we have a local group using the rockshelter who have contacts with both the Hohokam to the northwest and the Mogollon to the east and north? Do we have one or both of these groups using the Huachuca Mountains without regard for any local population? Finally, and perhaps most importantly, can we assume ethnic identity and cultural affiliation on the basis of such a small sample of sherds? Until we get a larger sample size and petrographic analysis of pottery production locales, the question of cultural affiliation will remain unanswered. Given the mixture of ceramics, time period, and site location, we tend toward the interpretation of the rockshelter being used by a small group of local people who have widespread cultural or economic ties throughout southeastern Arizona.

Identifying the function of the site was another of our research goals. It is apparent from the test excavations that the occupation of Locus 1 was short-term; there are few artifacts and the cultural strata are restricted to the central area of the shelter. Activities conducted at the site were probably few. Processing and cooking of small- and medium-sized mammals, probably deer and rodents (squirrels and or rabbits), are the only subsistence activities that have left material remains. The majority of the faunal remains are small fragments of burned mammal, bird, and rodent bone concentrated in Test Pit 2/2 extension. This same test pit has the highest concentration of flaked stone artifacts and sherds and is the only test pit in the rockshelter that contained ground stone artifacts. The latter artifact class is particularly noteworthy given the almost total lack of domesticated plants identified in the floral analyses. Walnuts may have been exploited, but they may have been introduced into the deposits naturally as well. The seven "manos" found in this test pit were probably not used to process plant remains. It is much more probable that they were used to break animal bones during marrow extraction, although the immunological analysis failed to substantiate this conclusion. The projectile points and shaft straightener found at the site reinforce the interpretation that the site was used as a hunting/butchering camp on an occasional basis by normally sedentary agriculturalists. The occupants may have come to the area specifically to hunt, or they may have hunted and camped at the site while traveling through the area.

Identifying and characterizing the occupation of the rockshelter is important in furthering our understanding of the types of environments and resources utilized during the prehistory of the middle San Pedro Valley. Two occupations were identified at this site, a Classic period (A.D. 1200-1450) occupation focused on the exploitation of small and large game animals in the Huachuca Mountains and an Apache occupation that utilized the rockshelter for ceremonial purposes. Each of these quite different uses of the site will be discussed in Chapter 6.

CHAPTER 5
RAPPELL CLIFFS ROCKSHELTER
(AZ EE:11:30)

The Rappell Cliffs Rockshelter (AZ EE:11:30) is located a few hundred meters upstream from the Garden Canyon Pictograph Site at an elevation of approximately 6200 feet (1913 meters) (see Figure 2.7). The site received its name because the Army uses the cliff face above the rockshelter as a training area for rappelling exercises. Pictographs in the shelter consist mainly of red and black geometric, anthropomorphic, and zoomorphic elements and have been badly damaged by historic and modern graffiti (see Meighan, this volume for a more complete discussion of the rock art). Stylistically, the pictographs reassemble Mogollon-type rock art (Schaafsma 1980), but definitive cultural ties cannot be demonstrated. The site was recorded by Burton (1988b) but not given an ASM site number until the current project. As part of the Legacy award to Fort Huachuca, a protective fence was erected early in 1991.

The rockshelter consists of a single locus formed by the undercutting of the limestone by Garden Canyon creek. The rockshelter faces almost due north and encompasses an area of approximately 100 square meters, although much of that area is taken up by large boulders and bedrock (Figure 2.28). The Rappell Cliffs Rockshelter is larger than AZ EE:11:15, mainly due to a much higher cliff face. It does not, however, contain as much usable area. The rockshelter is approximately 35 meters east-west, 15 meters north-south, and 10 meters high. The slope in front of the rockshelter is relatively steep and prevents easy movement between the creek and the small level area inside.

In contrast to the Garden Canyon Pictograph Site, the Rappell Cliffs Rockshelter does not offer much protection from the elements. Its north-facing entrance never receives sunshine, and rain moving down the canyon is easily blown into the central living area. The lack of sunshine is welcome during the summer heat, but the rockshelter can become chilled in the early morning even on hot days.

A total of four excavation units representing approximately 3 square meters of surface area was excavated at the site (see Figure 2.28). Three of the test pits were placed within the central area and one test pit was placed on the slope in front of the rockshelter. In contrast to AZ EE:11:15, test pits at this site were excavated as complete units; no extensions or adjoining test pits were excavated.

The four test pits were judgmentally placed in those areas thought most likely to contain cultural remains. Test Pits 1, 2, and 3 were placed in the few areas inside the shelter not covered by boulders or exposed bedrock. Test Pit 4 was placed in an area near the fence-post hole where Mr. George Jones and Ms. Cathy Black recovered an ungulate tooth. Test pits were excavated in arbitrary 10 centimeter levels because there were no identifiable cultural strata. All materials were screened through 1/8-inch mesh hardware cloth; soil and charcoal samples were taken from each level in every test pit, and are curated with the artifacts and available for future study.

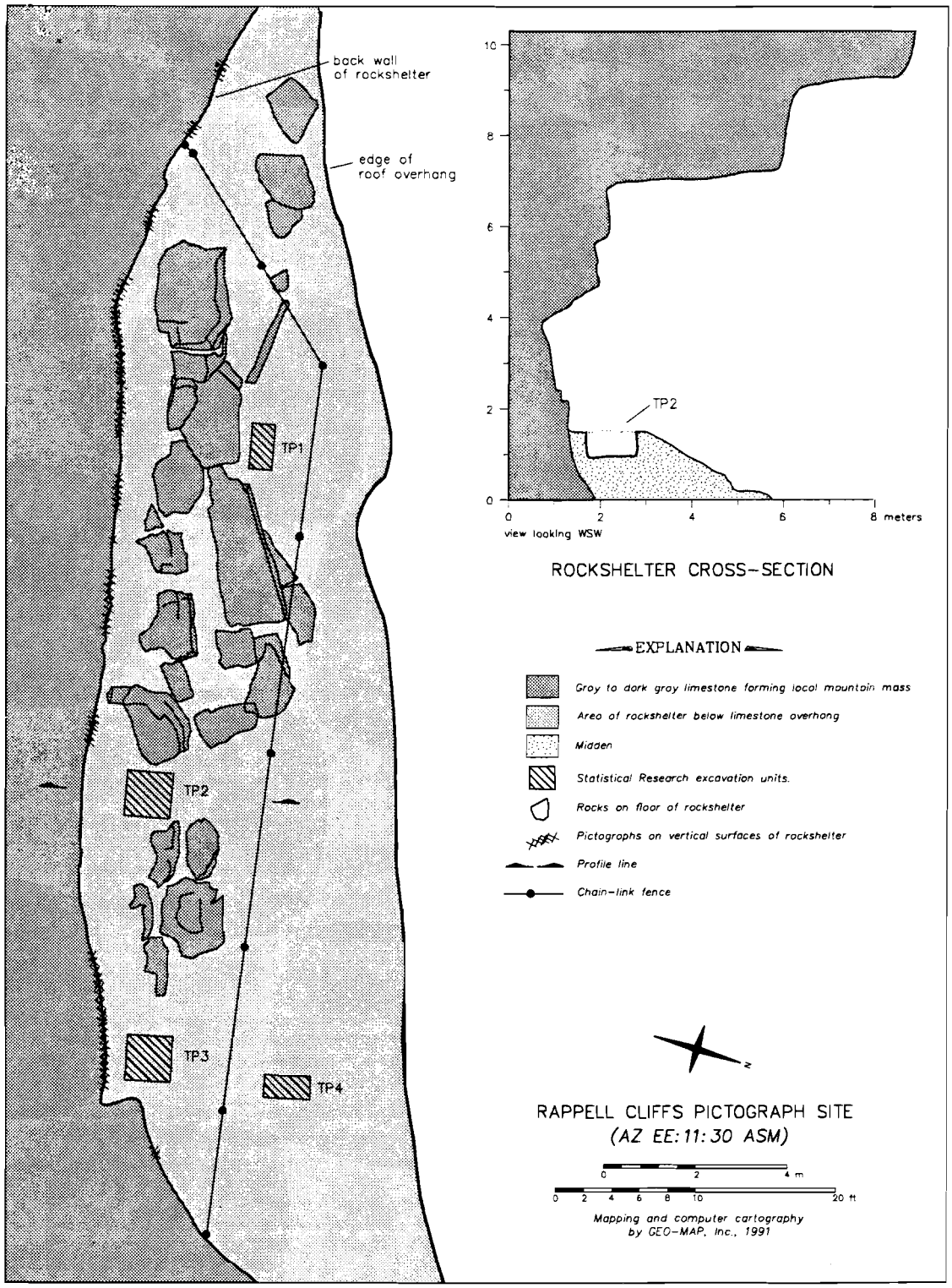

Figure 2.28. Plan view and cross-section of Rappell Cliffs Rockshelter (AZ EE:11:30).

RESULTS

Test Pit 1

Test Pit 1 is a 1 meter by 50 centimeter unit located in the west end of the shelter north of (below) a large boulder. The test pit was placed in this location because it was the only area in the west end of the shelter that appeared to contain sediments. A modern packrat (*Neotoma sp.*) midden beneath the large boulder may be the source of some of the sediments and artifacts recovered.

Test Pit 1 was excavated in two arbitrary levels, Level 1 comprised ground surface to 10 centimeters below surface and Level 2 extended from that point to bedrock at approximately 30 centimeters. Level 2 was extended because no artifacts were found and there was a large amount of roof fall in the unit. Our goal was to determine if cultural strata were present. Natural strata in the test pit include Stratum 1A, 1B, and 1C (Figure 2.29). These strata are specific to this rockshelter and should not be confused with stratum descriptions and contents in the Garden Canyon Pictograph site. Stratum 1A is a thin layer of loose fine silty sand and packrat midden debris washed down from the boulder above the test pit. Stratum 1B is a thicker, more compact, very fine silty sand dark brown in color (10YR 3/2). Stratum 1C is a thicker strong brown (7.5 YR 4/6) layer of very fine silty sand that contains abundant angular roof fall cobbles. Stratum 1C overlies limestone bedrock throughout the test pit. None of these strata are cultural in origin.

Artifacts recovered from this test pit were all found in Level 1 and include glass fragments, cigarette butts, a plastic comb handle, six rodent bones, two small fragments of burned mammal bone, and a vertebra from a large bird, probably a wild turkey (*Meleagris sp.*). The vertebra has a "green" appearance and probably is modern. Even though the test pit has been impacted by modern human activity, it is highly unlikely that any prehistoric cultural materials were present.

Test Pit 2

Test Pit 2 is a 1 meter by 1 meter unit located in the eastern portion of the rockshelter. It was located in the largest area of level ground in the central part of the shelter. The test pit was excavated in arbitrary 10 centimeter levels to bedrock at approximately 40 centimeters below the ground surface. A modern campfire impacted the northern half of this test pit and, for that reason, no charcoal samples were analyzed from this area of the rockshelter.

Natural strata present in the test pit include Stratum 1A and 1B (Figure 2.30). Stratum 1A is the loose fine silty sand that covers most of the rockshelter. In this test pit it is approximately 5 centimeters thick and mixed with ash and charcoal from the modern campfire. Stratum 1B is a mixture of fine silty sand, ash, and angular roof fall cobbles that overlies bedrock throughout the test pit.

Artifacts recovered from this test pit include 6 pieces of lithic debitage, several pieces of glass, walnut (*Juglandaceae*) shells, two agave spine tips, and a single fragment of unburned mammal bone. This unit is the only test pit in the rockshelter that shows any possibility of prehistoric use. Even here, however, there were no intact cultural strata. Interestingly, the pollen analysis described below shows more pollen from economically important plants in this test pit than any other samples collected during the entire project.

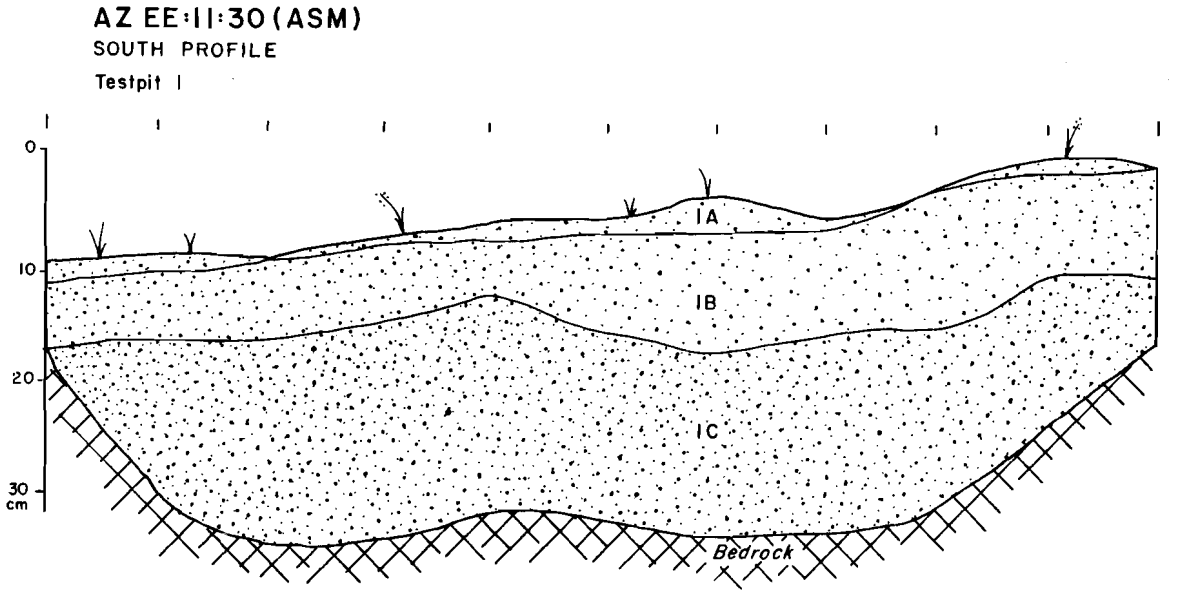

Figure 2.29. Stratigraphic profile of Test Pit 1, south wall.

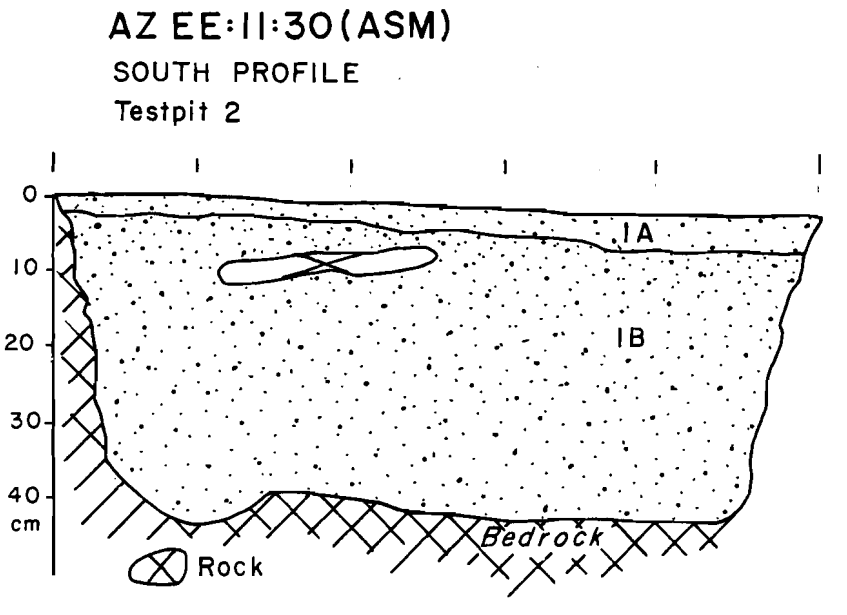

Figure 2.30. Stratigraphic profile of Test Pit 2, south wall.

Test Pit 3

Test Pit 3 is a 1 meter by 1 meter unit located at the eastern end of the rockshelter. It was placed here because it was the largest level area in the eastern part of the rockshelter. The unit was excavated in a single arbitrary level to bedrock at a depth of approximately 20 centimeters below the surface.

Natural strata present in Test Pit 3 include Strata 1B and 1C (Figure 2.31). Stratum 1B is approximately 10 centimeters thick and consists of dark ashy gravelly silt mixed with angular roof fall cobbles. The ash component of Stratum 1B originates with the modern campfire in Test Pit 2. For this reason, no charcoal samples recovered from this test pit were analyzed. Stratum 1C consists of aeolian silty sand mixed with abundant angular roof fall cobbles. It is culturally sterile in this unit.

Artifacts recovered from Test Pit 3 include glass, aluminum foil, bits of plastic, 2 pieces of lithic debitage, and a single small fragment of unburned mammal bone. It is apparent that few prehistoric activities occurred in the area of this test pit.

Test Pit 4

Test Pit 4 is a 1 meter by 50 centimeter unit located on the slope north of the rockshelter. The test pit was placed in this area in an attempt to identify a potential midden area. In addition, it is near the fence post where the contractor found the large ungulate tooth. Due to the high degree of slope and large amount of talus rockfall, the sediments in this test pit were excavated as a single unit.

The single stratum in this test pit, stratum 1A, consists of aeolian silty sand mixed with abundant packrat midden debris. All of the sediment was very loose fill around a large rock exposed just below the surface.

This test pit contained the largest number of artifacts found in the Rappell Cliffs rockshelter. A small bone bead, one piece of lithic debitage, two yucca "quids," a small corn cob, snail shells, and abundant bone were all recovered from this test pit. The faunal remains include three fragments of unburned mammal bone, 17 rodent bones, and seven bones of a large bird, probably a wild turkey (*Meleagris sp.*). Although some of these artifacts are undoubtedly cultural in origin, because of the "fresh" appearance of much of the bone, we suspect that their deposition in this test pit is the result of activity by the resident packrat.

ARTIFACT ANALYSES

Relatively few artifacts were recovered from AZ EE:11:30. No ceramics, no lithic tools, nine pieces of lithic debitage, 52 animal bones, and a single bone bead were found. The paucity of artifacts, combined with the shallow or nonexistent cultural stratigraphy in the shelter indicates that the prehistoric use of the rockshelter was very limited.

Lithic Artifacts

Lithic artifacts consist entirely of nine pieces of flaked stone debitage (Table 2.11). All of these flakes are made of locally available mudstone and all have simple, single-facet striking platforms. While generalizations from such a small sample are dangerous, this assemblage is typical of sedentary agriculturalists throughout the Southwest (Parry and Kelly 1987). Given the lack of ceramics at the site, this may be the finest degree of temporal resolution possible for this occupation.

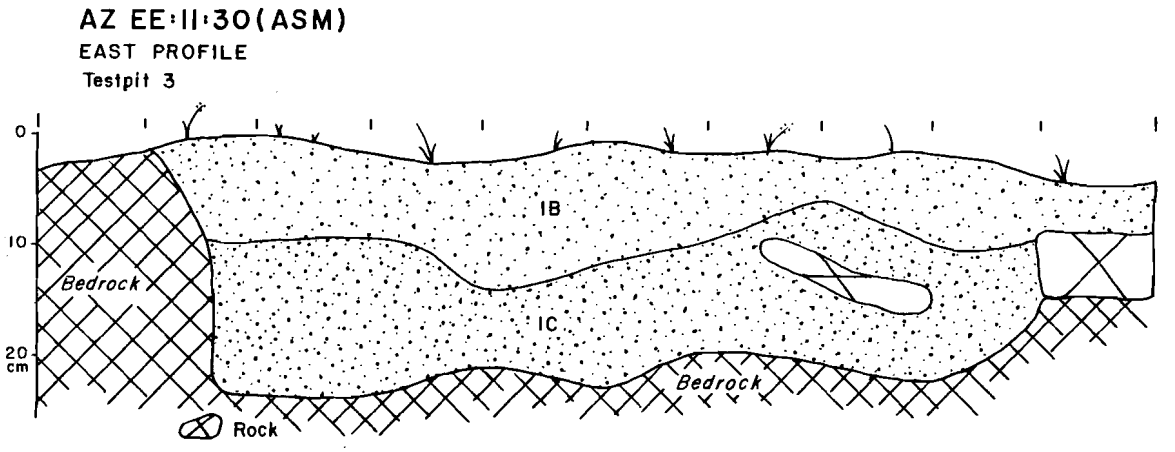

Figure 2.31. Stratigraphic profile of Test Pit 3, east wall.

Table 2.11. Lithic Artifacts from AZ EE:11:30.

Item Number	Provenience	Debitage
14	T.P. 2 Level 1	5
18	T.P. 2 Level 2	1
25	T.P. 3 Level 1	2
35	T.P. 4 Level 1	1
	TOTAL	9

Faunal Remains

Kellie M. Cairns

The faunal assemblage from AZ EE:11:30 comprises fifty-two (52) pieces of bone recovered from both surface and subsurface contexts. Eleven species, two genera, three mammal size classes and two bird size classes were identified (Table 2.12). Unidentified fragments accounted for 14 percent (n=7) of the bones. The analytical methods and data concerning species abundance are the same as those described for the Garden Canyon Pictograph Site. Likewise, habitat preferences for many of the species identified at AZ EE:11:30 have been described in the faunal analysis section for AZ EE:11:15.

Rodents

Five different species of rodent were identified at the site: Botta's pocket gopher (*Thomomys bottae*), rock squirrel (*Spermophilus variegatus*), desert kangaroo rat (*Dipodomys deserti*), white-throated woodrat (*Neotoma albigula*), and Harris' antelope squirrel (*Ammospermophilus harrisii*). The woodrat, kangaroo rat, and pocket gopher are all represented by single elements; the rock squirrel and Harris' antelope squirrel are represented by two elements each and the latter

Table 2.12. Faunal Remains from AZ EE:11:30.

Common Name	Scientific Name	NISP	%NISP	MNI	%MNI
Cottontail	Sylvilagus sp.	5	9.62	3	9.68
Jackrabbits	cf. Lepus sp.	1	1.92	1	3.23
Ground Squirrels	Ammospermophilus/Spermophilus	1	1.92	1	3.23
Harris' Antelope Squirrel	Ammospermophilus harrisii	2	3.85	2	6.45
Rock Squirrel	Spermophilus variegatus	2	3.85	1	3.23
Botta's Pocket Gopher	Thomomys bottae	1	1.92	1	3.23
Desert Kangaroo Rat	Dipodomys deserti	1	1.92	1	3.23
White-throated Woodrat	Neotoma albigula	1	1.92	1	3.23
Coati	Nasus nasua	1	1.92	1	3.23
Hooded Skunk	Mephitis macroura	1	1.92	1	3.23
Bison/Domestic Cow	Bison bison/Bos taurus	1	1.92	1	3.23
Indet. Rodents	Indeterminate Rodentia	9	17.31	2	6.45
Small Mammal	Rabbit-sized	1	1.92	1	3.23
Medium Mammal	Carnivore-sized	5	9.62	3	9.68
Large Mammal	Ungulate-sized	5	9.62	2	6.45
Turkey	Meleagris gallopavo	2	3.85	1	3.23
Northern Flicker	Colaptes auratus	1	1.92	1	3.23
Red-winged Blackbird	Agelaius phoeniceus	1	1.92	1	3.23
Indet. Small Birds	Indeterminate Small Aves	2	3.85	1	3.23
Indet. Large Birds	Indeterminate Large Aves	2	3.85	1	3.23
Unidentified	Indeterminate Class	7	13.46	4	12.90
Total		52	100.00	31	100.00

represents the remains of two individuals. All of these species occur in the area today and none of the bones were burned or show any other evidence of cultural modification. We suspect that their presence in the assemblage is the result of natural processes.

Lagomorphs

Rabbits comprise approximately 12 percent (n=6) of the remains from AZ EE:11:30. Five of the bones are from cottontails (*Sylvilagus sp.*) and represent three individuals. The second lagomorph in the assemblage is represented by one fragment of a vertebra tentatively identified as *Lepus* sp., probably a jackrabbit. Vertebrae, however, are one of the most difficult bone elements to identify at the species level and this identification should be considered tentative. The habitat preferences of these rabbits have been discussed previously and may be important in the interpretation of the site. If the single jackrabbit bone is correctly identified, its presence in the rockshelter is probably not the result of natural processes because this species prefers the open grasslands at lower elevations. The presence of a single Jackrabbit bone in the assemblage may be indicative of meat transport from lower elevations, but the tentative nature of the identification and small sample size make such a conclusion highly speculative.

Carnivores

Carnivores remains make up a small portion of the Rappell Cliffs assemblage with a total of only two fragments representing two different species. These bones represent a Coati (*Nasua nasua*) and a

Hooded skunk (*Mephitis macroura*). Neither of the two specimens shows any cultural modifications. Their time of deposition is not known, although both were exploited ethnographically.

Aves

Three species of bird were identified in the assemblage: turkey (*Melagris gallopavo*), northern flicker (*Colaptes auratus*), and the red-winged blackbird (*Agelaius phoeniceus*). Each species is represented by a single individual and the red-winged blackbird and flicker are represented by single bone elements. No cultural modifications or evidence of use was noted on the bones. Although these species may have been used by prehistoric occupants of the rockshelter, there is no definitive evidence that the remains are not the result of natural processes.

The turkey is the largest gamebird in North America and is adaptable to a wide variety of habitats. It inhabits the woods of the eastern United States as well as the arid West. The modern species, *Meleagris gallopavo*, is not a recent form but was present in the western hemisphere before humans made their appearance. It is not found in the areas of the hot Southwestern deserts, but does inhabit mountainous country where adequate cover and water are present, including the Huachuca Mountains. Olsen (1968) states that turkeys were kept as domesticated stock on the Colorado Plateau as early as the Basketmaker II-III period (A.D. 450-750). These birds were domesticated primarily for their feathers which have been used to make clothing and blankets. Only two fragmented vertebrae were recovered from the site and did not contain sufficient information to determine if the turkey was domesticated or wild; nor can we approximate the age of the bone. The turkey bones were found associated with the packrat midden debris in Test Pits 1 and 4. They all appear to be relatively fresh and show no consistent breakage patterns or butchering marks. They were probably deposited in the rockshelter either by the resident packrat or modern users of the shelter.

The northern flicker (*Colaptes auratus*) is a species that lives in open forests, woodlots, groves, and semi-open country. Flicker feathers are extremely common in ethnographic collections (Parmalee 1977a:216). The single element in the assemblage, however, was not burned and shows no evidence of cultural modification.

The red-winged blackbird (*Agelaius phoeniceus*) is generally known to nest in thick vegetation of fresh water marshes, sloughs, and dry fields and may forage in woodlands. This blackbird is small and brightly colored. It is reasonable that its plumage may have been valuable to native peoples. Wissler (1912) described a Pikuni shaman that used a red-winged blackbird in his headdress to symbolize power over weather. The single element in the assemblage, however, shows no evidence of cultural modification.

Artiodactyla

The artiodactyla, otherwise known as the even-toed hooved animals, account for 2 percent of the total bone count. The only species present at AZ EE:11:30 is *Bison bison/Bos taurus*, represented by the molar found during construction of the protective fence. Distinguishing between the wild bison and domestic cattle is extremely difficult and often depends upon the context of individual specimens. When found, the tooth appeared extremely weathered and was covered with calcium carbonate. It is noteworthy because Ms. Black and Mr. Jones found it below the ground surface while setting a fence post. The heavy encrustation of calcium carbonate suggested the possibility of a Pleistocene animal. Once it was cleaned of calcium carbonate, however, it became apparent that the tooth was still relatively fresh and was identified as the tooth of a modern bovine by C.V. Haynes (personal

communication, 1992). It is possible that in setting the fence post, Ms. Black and Mr. Jones were drilling sideways down the slope and encountered packrat midden deposits similar to those excavated in Test Pit 4. This would explain both the recent age of the tooth and its apparent location at considerable depth below the surface. In 1949 a portion of Fort Huachuca was used as a buffalo preserve and range for 144 choice bulls and cows. The tooth, therefore, could derive from a bison, but it is still probably a modern specimen. It seems very probable that the tooth came from a *Bison/Bos* no earlier than the late 1940s.

Large Mammal

Five bones were identified in the large mammal class. Two caudal vertebrae, two long bone fragments, and a rib fragment could not be identified beyond the level of large mammal. They appear to be ungulate-sized elements, but further identification is not possible.

Modified bone

AZ EE:11:30 contained 10 fragments of burned bone (Table 2.13). There were no identifiable elements beyond the broad categories of small, medium, and large mammal, bird, and unidentified. Burned bones were recovered from surface collections and Test Pits 1-4. Test Pits 2 and 3 were impacted by a modern campfire. The burning of the bones, therefore, may have been unrelated to their deposition.

Intersite Comparison of Faunal Assemblages

Two hundred and four fragments of bone were analyzed from the two sites. Of this total, 176 fragments were identified to the ordinal level of which 11 various species were differentiated. Five other genera of animals were identified, but could not be classified to the species level. Conversely, 14 percent of the bone could not be identified. From this assemblage, the two rockshelters depict a fauna which is consistent with the animals available in the area today and represent a variety of terrestrial mammals and avifauna.

The Garden Canyon Pictographs Site and the Rappell Cliffs Rockshelter appear to have been used for two very different reasons. Of the 204 fragments analyzed, 152 (75%) come from the Garden Canyon Pictograph Site and 52 (25%) come from the Rappell Cliffs Rockshelter. All wild species except for cf. *Lepus* sp., inhabit the project area. All show preferences toward higher elevations supporting stands of juniper, oak and various species of cacti, and many of the species use rocky areas for shelter. Any procurement of animals by prehistoric populations, therefore, was probably local in nature. The majority of the animal bone at AZ EE:11:15 was burned and therefore it is likely that the faunal assemblage at that site represents animals utilized for meat protein by the prehistoric inhabitants.

Table 2.13. Burned Bone from AZ EE:11:30.

Unit	Level	Provenience	Feature	Common Name	Number of Fragments	Percent of Burned Fragments
Surface Collections	0	0	-	Large Mammal	1	0.68
	0	0	-	Unidentified	1	0.68
1	1	2	-	Medium Mammal	2	1.37
2	2	4	-	Unidentified	1	0.68
3	1	7	-	Unidentified	2	1.37
4	1	8	-	Small Mammal	1	0.68
4	1	8	-	Unidentified	2	1.37
Total					10	100.00

Such is not the case for AZ EE:11:30; the Rappell Cliffs Rockshelter site appears to have had less activity than the Garden Canyon Pictograph Site. Bone identifiability is high but bone frequency is very low and most specimens seem intrusive. The burned bones seem to be a result of modern campfires at the site. The fact that cultural modifications to the bone, other than burning, are practically non-existent suggests that deposition of the bone may have been entirely natural. The Rappell Cliffs Rockshelter has higher MNI but lower NISP than AZ EE:11:15, indicating better condition of the assemblage. If the use of the site was during the Formative period, the faunal remains should not have a "fresh" appearance. We feel, therefore, that most of the bones from Rappell Cliffs are probably modern and intrusive. Until more evidence of culturally modified bone is recovered from more secure contexts, it is reasonable to hypothesize that faunal procurement was not practiced at this site. The faunal remains, like the lithic artifacts, suggest that any occupation of the rockshelter by prehistoric people was very short-term, probably on the order of a single event. This short-term use was probably centered in the area of Test Pit 2, and was similar to, although of much shorter duration than, the use of AZ EE:11:15.

FLORAL ANALYSES

Floral analyses from AZ EE:11:30 consist of pollen analysis and the examination of two ecofacts collected prior to the start of the test excavations. Samples were collected for macrofossil analysis, but none were submitted to the analyst. The shallow and disturbed nature of the deposits, the meager artifact assemblage, and the presence of extensive packrat middens in the shelter indicated that macrofossil analysis would not be a productive use of resources. Samples were submitted for pollen analysis, however, because it was thought that pollen would be less subject to the disturbance processes acting in the shelter.

Eight maize cobs, including the specimen collected by Mr. Victor were recovered from the surface of the site. Two yucca "quids," and two burned agave spines, provide some indication of plant use at the site. Unfortunately, these materials came from Test Pit 4 and may have been imported to that area by packrat activity. One of the maize rachis and one of the quids were examined by Ms. Lisa Huckell of the Arizona State Museum. The maize cob probably had 8 or 10 kernel rows and has strongly compressed rectangular cupules similar to maize varieties introduced into the Southwest from Mexico after approximately A.D. 700 (Huckell 1991). Earlier corn varieties typically had a higher number of rows, smaller cupules and kernels, and were less productive (Ford 1981). The use of 8 and 10 rowed corn, however, continues in many ares of northern Mexico today (L. Huckell, personal communication). Thus, the type of corn cannot be used as a temporal indicator of site occupation.

The quid examined is probably *Yucca* or *Agave* and lacks any dental impressions (Huckell 1991). Quids are the expectorated residue of these plants after the soft tissues have been removed by chewing. Typically, these plants are exploited to make cordage or as a food source (Reed 1978). Unfortunately, due to the uncertain provenience of the corn cobs and quids, we cannot determine whether they were deposited in the rockshelter by prehistoric people, historic occupants of the area, or modern users of the site. It is unlikely that soldiers from Fort Huachuca used yucca quids, but the residents of northern Sonora still chew quids and may have used the area earlier in this century.

Pollen Analysis

Pollen samples were collected from every excavated level and from off-site locations. Samples submitted for analysis include the two off-site samples and a single sample each from Test Pit 2 Levels 1 and 2. Submission of pollen samples from Test Pit 2 was done because this is the only area that provided artifacts from excavated contexts. We felt that if there was a prehistoric occupation of this shelter, it was probably in the area of Test Pit 2.

The off-site pollen samples are similar to those collected downstream near AZ EE:11:15 (Table 2.14). Unidentifiable pollen grains again account for a substantial portion of the samples. Arboreal pollen, exclusively juniper, pine, and aspen comprise between one-quarter and one-third of the pollen grains. Non-arboreal pollen consists of the same suite of plants seen in the off-site samples from AZ EE:11:15: cheno-ams, *Tubliflоreae*, low- and high-spine composites, and sagebrush. The only plants in these samples not represented in the other off-site samples are ceanothus, *Rhamnaceae*, and golium.

The two pollen samples analyzed from Test Pit 2 contain similar plant species as other samples, but have additional species present that may represent prehistoric use of the shelter. In addition to the usual juniper, pine, and aspen arboreal pollen, both of these samples contain walnut (*Juglandaceae*) and mesquite (*Prosopsis*) pollen, although in small amounts. The non-arboreal pollen from the test pit samples is even more indicative of human intervention. Yucca, agave, wild rose, and some type of legume are all present in addition to the usual suite of composites. Cheno-ams are almost totally absent from these two samples. This single test pit exhibits more pollen from potentially economically important plants than any other location sampled during the project.

The pollen analysis from the Rappell Cliffs Rockshelter provides some of our most compelling evidence of past human occupation. We felt that the yucca quids and burned agave spine found in Test Pit 4 were somewhat compromised due to their presence in packrat midden deposits. The pollen from Test Pit 2, however, indicates the exploitation of several wild plant resources. Unfortunately, the meager ecofact and artifact assemblages and lack of clearly identifiable cultural deposits make any interpretation of these data highly speculative. There may have been a short-term use of the area near Test Pit 2, possibly by Formative period hunters or travelers, but the material remains in the shelters are too few to make any definite conclusions. There is simply no way to determine when and by whom these pollen were deposited in the rockshelter.

Table 2.14. Pollen Data from AZ EE:11:30.

POLLEN TYPE	OFF-SITE COUNT (%) COUNT=100	OFF-SITE COUNT (%) COUNT=100	T.P. 2, LEVEL 1 COUNT (%) COUNT=200	T.P. 2, LEVEL 2 COUNT (%) COUNT=100
JUNIPERUS	4 (4)	9 (9)	32 (16)	5 (5)
PINUS	15 (15)	25 (25)	45 (22.5)	23 (23)
QUERCUS	4 (4)	2 (2)	30 (15)	17 (17)
PROSOPSIS			2 (1)	4 (4)
SALIX			3 (1.5)	
FRANIXUS			2 (1)	
JUGLANDACEAE			2 (1)	2 (2)
CEANOTHUS	1 (1)			1 (1)
RHAMNACEAE		1 (1)		
CHENO-AMS	2 (2)	3 (3)		1 (1)
ARTEMESIA	2 (2)	1 (1)		
LOW-SPINE	8 (8)	6 (6)	13 (6.5)	5 (5)
HIGH-SPINE	13 (13)	10 (10)	16 (8)	7 (7)
GRAMINEAE			17 (8.5)	7 (7)
ROSACEAE			1 (.5)	1 (1)
AGAVACEAE				5 (5)
TUBLIFLOREAE	12 (12)	24 (24)	11 (5.5)	2 (2)
GOLIUM		1 (1)		
LEGUMINOSAE			1 (.5)	1 (1)
YUCCA				1 (1)
SAXIFRAGACEAE			1 (.5)	
INDETERMINATE	39 (39)	17 (17)	23 (11.5)	18 (18)

DATING

The dating of AZ EE:11:30 can best be described as tenuous. Since there was no identifiable cultural stratigraphy and no ceramics, only two types of data could be applied to the problem, lithic technological similarities and radiocarbon dating. The lithic assemblage is similar to other Formative Period assemblages but assigning even such a broad temporal range on the basis of nine flakes would be speculative at best.

Radiocarbon datable materials were collected from the site, but most samples come from uncertain contexts. We chose, therefore, to submit floral remains for dating in an attempt to get a date directly applicable to some prehistoric behavioral event. A combined sample of plant remains, consisting of four small cobs of 8-rowed corn collected from the rock shelter was submitted for radiocarbon dating. Surface remains collected by Mr. George Jones and Ms. Cathy Black of Fort Huachuca prior to the commencement of the testing program were combined with a single cob collected from Test Pit 4. Initially, only the single cob recovered from Test Pit 4 was submitted, but this sample proved too small for dating. Additional corn cobs collected from the surface appeared

similar in size, number of rows, and state of preservation and were thought to represent the same occupation. This sample came back from the laboratory tagged as "ultra-modern," yielding a date of 30 ± 240 B.P. Modern materials emit a characteristic count rate and are immediately identifiable as modern. A large standard error attached to a modern date does not mean that the specimen dates between, in this case, A.D. 1680 and A.D. 2160. Rather, the large standard error is indicative of a short counting time. The results were, needless to say, disappointing. If not for the pictographs, pollen, and nine pieces of lithic debitage, we would conclude that the use of the site was confined entirely to the modern era.

CONCLUSIONS

Test excavations as the Rappell Cliffs Rockshelter revealed few cultural remains. Whereas a few stone artifacts, faunal, and floral remains were recovered, there is no evidence of a sustained occupation in the rockshelter. The material remains found indicate at best a temporary, possibly single-event, use of the shelter. The ungulate tooth recovered prior to the start of the testing program is undoubtedly modern in origin. The radiocarbon sample from the corn cobs indicates modern use of the rockshelter as well. Although the type of corn was introduced into the Southwest in the first millennium A.D., it continues to be grown today. Finally, the red pictographs, lithic artifacts, a few of the faunal remains, and pollen data indicate that there may have been a very brief use of the rockshelter, possibly sometime during the Formative period. The small assemblage of lithic artifacts are similar to those from other Formative period sites and the floral and faunal remains suggest a similar adaptation in the area of Test Pit 2. It is possible that the site was used on a short-term basis by hunters or travelers moving through the mountains. Association of this meager artifact assemblage with the creation of the pictographs, however, is impossible. Dating activities associated with the creation of the pictographs must rely on the development of techniques to date the rock art itself.

CHAPTER 6
SYNTHESIS AND CONCLUSIONS

Excavations at two small rockshelters in Garden Canyon were conducted to answer specific research questions about prehistoric and historic use of the area. The research questions concentrated on basic data such as site integrity, site chronology, cultural affiliation of the site occupants, site function, and the role of the sites in the regional subsistence and settlement systems. The success of the project can be judged in terms of how well the questions were answered as well as how the answers contribute to our knowledge of the area. Several of the questions can only be answered with negative data, but that in itself contributes to our understanding of past human use of the area. The following section discusses each site in terms of the research questions and its role in the regional system.

RAPPELL CLIFFS ROCKSHELTER

Test excavations at this site indicate a very limited occupation, probably during the Formative period. Three lines of evidence, each relatively sparse, suggest such a limited occupation. Although the integrity of the site has probably been compromised due to roof fall and bioturbation, the simple fact is that there are no cultural deposits or features present. Even without disturbance from packrat middens and modern human activity, it is doubtful that data relevant to regional questions could have been recovered. Without stratigraphic deposits or *in situ* organic materials, characterizing and dating the use of the rockshelter depends on rather tenuous evidence.

The most compelling evidence for use of the rockshelter comes from the pictographs--the reason excavations were conducted in the first place. Executed primarily with red and black pigments, the abstract geometric, anthropomorphic, and zoomorphic designs are similar to those termed Mogollon Red (Schaafsma 1980:196). The Mogollon Red label, however, carries with it both temporal (Formative) and cultural (Mogollon) implications that cannot be confirmed with our small database. Additional discussion of the rock art is presented by Meighan in Part 1 of this volume.

Detailed comparison with other pictograph sites is beyond the scope of this project, but similarities in style and medium are the strongest data available for dating the use of the shelter. Similar pictographs at Tom Ketchum Cave (Burton 1988a) in the Chiricahua Mountains have been directly dated by the radiocarbon method to the first few centuries of the Christian era (Farrell and Burton 1992). Unfortunately, such techniques are not applicable to the Rappell Cliffs Rockshelter pictographs. Several elements in the rockshelter also resemble, in style but not pigment, pictographs in Black Sheep Cave near Tucson that are associated with the Hohokam culture (Hartman 1985). Based on the other, negative, evidence at the site, the best we can achieve in terms of placing this site within a regional cultural-historical framework is a Late Archaic or Early Formative label. It should be noted, however, that Schaafsma argues for a continuity of style from earlier Archaic designs to the Mogollon style. Thus, while the pictographs seem to have more in common with a Formative period culture, an older date cannot be ruled out. New methods to date the rock art directly (Farrell and Burton 1992) are necessary before these examples can be integrated into a regional framework.

The second line of evidence for a Formative period occupation is the lithic technology identified at the site. The lithic artifacts recovered (n=9) are all debitage-- by-products of a simple flake-core reduction system. Similar flakes are produced during the initial reduction stages of several technologies, but in the Southwest these flake types are most common in assemblages from agriculturally-based sedentary peoples (Parry and Kelly 1987). With such a small sample and no

formal tools, however, even such a broad temporal assignment must be considered tentative. The lithic technology provides no information about the cultural affiliation of the site occupants.

Finally, the floral analyses hint at an occupation geared toward the exploitation of plant foods. Macrofossils recovered during the excavation indicate the use of yucca and agave. The pollen analysis hints at the use of other wild plants such as walnut and mesquite, but no cultigens are present. The identified plants have been utilized since Archaic times and provide no information concerning the cultural affiliation of the site occupants. They do, however, suggest an opportunistic use of plants in the area. The fact that these plants could have been procured in the Lower Garden Canyon, as well as near the site, indicates people were not going to the site to gather plants, but that these activities were imbedded in other uses of the area.

The lack of such basic data regarding the occupation of the site makes integrating it into a regional framework a difficult task. If we do not know who used the site, when it was used, and what it was used for, we cannot place it within temporal or cultural parameters. The hints of a Formative period casual use of the shelter suggest that the site was used on an intermittent basis by hunters or travelers exploiting resources in the mountains.

GARDEN CANYON PICTOGRAPH SITE

In contrast to the Rappell Cliffs Rockshelter, the Garden Canyon Pictograph Site provides ample evidence for at least two periods of use, one during the Classic period (A.D. 1200-1450) and one during the Early Historic Period (A.D. 1540-1821). The excavations were successful in meeting all of the research goals except one. We were unable to characterize an early Apache assemblage because the Apache use of the rockshelter left no material remains other than the pictographs. The Classic period occupation, on the other hand, provides artifactual evidence of site function, cultural affiliation, and chronology that can be combined to allow inferences about the role of the site within its regional setting. Similar inferences can be drawn from the Apache use of the shelter, but the evidence is much more speculative.

Classic Period Occupation

Although there is some ambiguity in the ceramic data, the preponderance of evidence indicates a single occupation of the site during the late 12th and early 13th centuries. This occupation was a series of short-term use events that all occurred within a relatively short time period. Some of the rock art in the rockshelter was probably produced at this time. The use of the shelter centered around the exploitation of faunal resources in the area and there is no evidence of wild or domesticated plant use. Culturally, the site occupants were probably members of a local community that maintained ties with groups outside the middle San Pedro Valley. The most obvious conclusion is that these people lived at the Garden Canyon Site (AZ EE:11:13) at the mouth of the canyon.

If the initial occupation of the rockshelter occurred in Classic times, the question is why? Why wasn't it used by Paleo-Indian, Archaic, or Preclassic people? With the exception of a few individual fluted projectile points (Bedwell 1970; Jennings 1957), Clovis people apparently did not utilize rockshelters. Archaic peoples, on the other hand, made heavy use of such locations throughout the United States, and Arizona is no exception (Haury 1975). It is somewhat surprising, therefore, that the rockshelter did not yield any evidence of an Archaic occupation. Archaic populations were certainly present in the middle San Pedro Valley, but apparently did not exploit the Garden Canyon area.

The next logical question is why were Classic period people using the rockshelter. Before addressing this question, it is instructive to determine what they were not doing there. They were not using domesticated plants and storing foods in ceramic vessels. They were not quarrying and reducing lithic raw materials for either flaked or ground stone tools. The Classic period people were using the site as a temporary camp while hunting mammals and, possibly, gathering wild plants in Garden Canyon. The question remains why? Deer, antelope and other mammals are currently available in the lower reaches of the canyon where transportation costs are not as high. The same may be said for wild plant resources such as walnuts and acorns. The answer to this question may never be known, but it may be as simple as relief from the heat and humidity of the valley bottom--the same reason many denizens of the Sonoran desert today travel to higher elevations in the summer months. Although the data on site seasonality is not now and probably never will be available, this seems a logical, though untestable, explanation. The site also may have been used as a temporary camp along a travel corridor. It is possible that Garden Canyon was used as a route to gain access to the upper Santa Cruz Valley, and possibly the large Trincheras population centers in Sonora.

While relief from the heat and the travel route hypothesis seem logical explanations for the Classic period use of the shelter they do not explain why the shelter was not used in earlier times. Altschul and Jones (1990) indicate that during the Classic period the middle San Pedro came under the influence of Paquime in Sonora. They hypothesize that the Ramsey Canyon Complex, at the confluence of the San Pedro River and Ramsey Canyon Wash, was a major center in the network of trade routes oriented toward Paquime in the southeast. In addition, they show (1990:234) that the Garden Canyon Site at the mouth of the canyon may have been a significant link between the trade nodes at Babocomari Village and the Ramsey Canyon Complex. Thus, the Garden Canyon drainage may have been utilized to meet the increasing needs of a growing community at its mouth. We do not want to suggest that the canyon was supplying goods destined for Paquime; quite the contrary, use of the canyon was probably always of a local nature. The growth of the village sites during the Classic period, however, may have put additional stress on the resources at lower elevations necessitating an expansion of the procurement zone for specific items. Simply put, if a greater number of people were living and farming in the mouth of the canyon, once available game may have been either overhunted or driven to higher elevations or both. The stresses on wild plant foods may have been similar; overexploitation of plant foods in the lower elevations may have necessitated an expansion of the catchment area to feed a growing population. Such a scenario would explain the lack of use of the rockshelter in earlier periods and its use on repeated occasions during the Classic period.

The hypothesis presented above cannot be tested with data from the Garden Canyon Pictograph Site. Although we know the site was used as a hunting and possibly gathering camp during the Classic period, we have little evidence concerning what plants and animals were procured at what times of year and in what frequencies. Given the spatially limited nature of the deposits in the site, it is unlikely that such information remains in the rockshelter. This hypothesis of increasing stress on the local resource base during the Classic period can be tested with additional survey data on site type, location, and affiliation, in the Huachuca Mountains. If such a scenario is correct, we would expect to find a higher frequency of Classic period artifact scatters and temporary camps in the uplands than similar site types from earlier time periods. These sites should contain evidence of increased exploitation of faunal and floral resources over earlier time periods. It is extremely unlikely that any additional rockshelters with intact deposits exist in the area. Surface survey and possibly open sites with buried components may be the only sites able to contribute data to testing this hypothesis.

Apache Occupation

The pictographs represent the only tangible evidence for Apache use of the shelter. There are no artifacts, features, or cultural strata associated with the Apache use of the rockshelter. This is one of

the most disappointing aspects of the project; we expected to be able to find and characterize an early Apache assemblage. In retrospect, however, it is probably not surprising that there are no cultural remains associated with an Apache camp or habitation. Ethnographic informants interviewed by Goodwin (1942) indicated that caves and rockshelters were to be avoided as living areas due to the presence of *Gan* spirits, tabooed animals, and human burials. Such sites were used for ritual purposes.

Even though the excavation failed to reveal an Apache occupation of the rockshelter, the rock art dramatically demonstrates an Apachean presence. Whereas the rock art is discussed elsewhere in this volume (see Meighan, Part 1), the following discussion places the Apache use of the shelter in a cultural and chronologial framework within the regional settlement system. Dating the Apache use of the shelter with any degree of precision presents several problems. The date of initial Apache immigration into southeastern Arizona, which marks the earliest possible date for the Apache pictographs, is still unknown. Most estimates (Goodwin 1942) place the Apache north of the Mogollon rim until the 17th century. Similar time parameters placed upon other Athabaskan groups, however, have been revised in recent years (Hogan 1989) and it is not unreasonable to expect that Apache archaeology will contribute to this problem in the near future.

The style and content of the pictographs may provide some temporal information, but a high resolution seriation of Apache rock art is currently unavailable. There are no horses, crosses, or other European inspired motifs in the panel, but the rock art was almost certainly created after European contact. The Apache are known to have been in the San Pedro in the late 1600s and became the sole occupants of the valley when the Sobaipuri withdrew to the Santa Cruz in A.D. 1762. A polychrome figure that may be both pre-Apache and Apache (see Meighan, this volume) suggests possible Puebloan influences in the rock art. This figure is associated with a long line that may be a serpent and may represent a sun shaman. Opler (1973) indicates that shamans who receive their power from the sun and moon are able to look down on distant events. A similar figure is described by Schaafsma (1980:339-340) from the Malpais Hills Pictograph Site (AZ BB:2:16) near Winkleman. Puebloan influences were highest in the period after the Pueblo Revolt of A.D. 1680 until approximately the middle of the 18th century. The Apache use of the area was probably heaviest during the 18th century and our best estimate is that the pictographs were painted during that time period.

The function of the rock art remains problematic. The pictographs are not a random placement of figures, but appear to be integrated into a coherent theme. The lack of horses and riders suggests that the site is not documentary (Schaafsma 1980:342) but probably has religious significance. The katchina/sun shaman figure, serpent, and square masks are all common elements in Apache religion. Places with markings on walls or rocks are often sacred to the Apache. Given the above information, it is reasonable to conclude that the Apache use of the rockshelter was religious in nature and occurred sometime during the 18th century.

Placing the Apache use of the shelter into a regional settlement pattern is difficult. So little is known about Apache use of the landscape during the 18th century that several scenarios can be constructed to explain why the Apache used Garden Canyon. Historical documents, although undoubtedly biased toward specific events, indicate that raiding was an important part of Apache subsistence. If the site was created in the 18th century, the site may have played a role in cleansing ceremonies prior to or after raids. The katchina/sun shaman may have been used to see distant events related to such raids. It is difficult to devise a test for such hypotheses, however, and perhaps the best information to be gained about the pictographs will come from Apache informants. Identification of some elements in the rock art has been done by Mr. Ernst Victor, Jr., Councilman of the San Carlos Apache. The solicitation and incorporation of Native American interpretations of the rock art is a very positive development and one that should be encouraged. Dr. Marie Cottrell, Fort Huachuca archaeologist, is to be commended for her recognition of the important role the Apache can play in the preservation and interpretation of this site.

CONCLUSIONS

Rockshelters have long been considered places of human habitation by both archaeologists and laymen. Because rock art is rarely found in stratigraphic contexts, it has traditionally been difficult to date and place within cultural and functional contexts. Test excavations at the Rappell Cliffs Rockshelter and the Garden Canyon Pictograph Site were designed to address both these issues. Using principles of association, data collected from the test excavations were to be used to place temporal and cultural parameters on the pictographs at the sites. Conversely, the rock art was to be integrated into a picture of past human activities at the sites. Although these goals were not always met during the project, the fault lies not in the approach, but in the data. Much of the data from the excavations did not apply to the creation of the pictographs and vice versa. This is one valuable lesson of the Garden Canyon Project; the spatial association of different cultural manifestations, in this case Apache rock art and Classic Period occupational debris, does not necessarily mean there is temporal or cultural affiliation. We are not the first archaeologists to learn this lesson and we will probably not be the last.

Despite the incongruities between the initial project expectations and the final results, the excavations have provided valuable information about various aspects of southeastern Arizona prehistory. The project demonstrated that there was a very limited occupation at the Rappell Cliffs Rockshelter that may be related to the red pictographs. No reliable temporal or cultural parameters can be placed on this limited occupation.

The Classic period occupation and Apache use of the Garden Canyon Pictograph Site each have contributed to regional questions. The Classic period occupation provided the only absolute dates for Sedentary and Classic period ceramics in the middle San Pedro Valley and is the only upper elevation site excavated in the Huachuca Mountains. The occupation has also been used to generate new hypotheses concerning changes associated with the rise of Paquime as a regional power. The Apache use of the shelter was restricted to ceremonial purposes that may have been associated with raiding during the 18th century. The lack of an Apache artifact assemblage supports ethnographic accounts about the use of caves and rockshelters as ceremonial and not habitation locations.

The Garden Canyon project was limited in scope due to the desire to preserve as much of the sites as possible. We have answered many of the basic questions that guided the research effort with a minimal amount of disturbance to the sites. More importantly, the project contributed to our understanding of the past human use of the area and generated new, testable hypotheses regarding changes that occurred on a regional level.

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