MAKING THE CONNECTIONS: AN ARCHAEOLOGICAL SURVEY OF PREHISTORIC TRAILS AND TRAIL MARKERS ALONG THE LOWER COLORADO RIVER

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ABSTRACT

Within the southern boundaries of the Lake Mead National Recreation Area lies a relatively pristine archaeological landscape. Within a six square mile research area, 145 sites were documented, with the earliest characteristic of the San Dieguito I (4,500 B.P.) cultural group. Ceramics, Lower Colorado Buff Ware, of the Patayan era were identified through petrographic analysis. Three key factors were revealed through the research. First, there is a direct correlation between some artifacts and site-utilization: trail markers (*elongated/directionally placed rocks*, *rocks of differentiated color*, and *chipped basalt boulders*), previously undocumented in archaeological literature were strategically placed within the landscape for possibly a thousand years. Secondly, the research area lies along a well-traveled east-west corridor, and this may have additionally been utilized by shaman who created the petroglyphs on boulders along the main trails to *Avikwáamé*, ethnographically noted within the Mohave origin myth. Lastly, the inter-relationship between chipped basalt boulder trail markers and levels of procurement activity–scatters, stations, and workshops–has provided for a correlation between marker type and the lithic record. Chipped basalt boulders led to basalt areas, yet no identifiable trail marker types were utilized for stations or scatters. The research has shown the area to be a nexus for east-west travel, procurement, and ideological purposes, and trail markers were utilized here to provide an iconographic messaging system to aid travelers across the landscape.

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In memory of
Frank J. McClean Sr.
my dad, who took me to my first rock art site
when I was six and instilled in me a love for the desert.

CHAPTER 1

INTRODUCTION

Located within the southern borders of the Lake Mead National Recreation Area (LMNRA), the research area lies approximately twelve miles north of Davis Dam (Figure 1). With the installation of the dam in 1953 and filling of Lake Mohave behind it, the area became nearly inaccessible. Today, access is gained by watercraft, jeep, or overland hike. Since 1999, I have spent approximately 250 field days traversing the entire area, a distance of roughly six square miles. The miles encompassed by the research covers monsoon swept washes, boulder strewn ridges, and gravel-slicked slopes which hinder progress in many directions. I discovered the first rock art site, Split-Rock, and reported it to LMNRA, and then signed on as a volunteer archaeologist at the same time.

Utilizing both my art and archaeology backgrounds, I began my first fieldwork in the South Basin. Over the course of ten years, I have recorded six additional rock art sites and a total of 145 sites altogether. Observations made from archaeological remains within the landscape helped to form the basis of my thesis. All photographs presented herein were taken by myself; half were digitally recorded and the others made utilizing 35mm film. Using maps, GPS recordings, drawings, and these photographs, I present an argument on how the landscape played an integral part with regard to the trails, rock art sites and lithic procurement areas used by the prehistoric people who lived in the region.

For some, the desert is a harsh and drab environment. Alluvial washes hinder the progress for travelers and water is scarce. Even today, one must take careful notice of the ridges, washes, and sheer cliff walls to cross landscape safely. For years archaeologists have argued that various trail marker types (Heizer and Baumhoff 1962; Rogers 1966a; Rogers 1966b; Von Werloff 1965, 1988; Whitley 1996), such as rock cairns, petroglyphic boulders, and rock alignments, were utilized to aid prehistoric travelers across the region. Malcolm Rogers (1966) made extensive studies of early Yuman cairns and the cultural remains helped him to build the chronological sequences for the southwestern desert region. Yet, the field of archaeology lacks specific studies of *trail markers*, as a discrete research focus. Noticing the variations in the types of rock colorations, rock

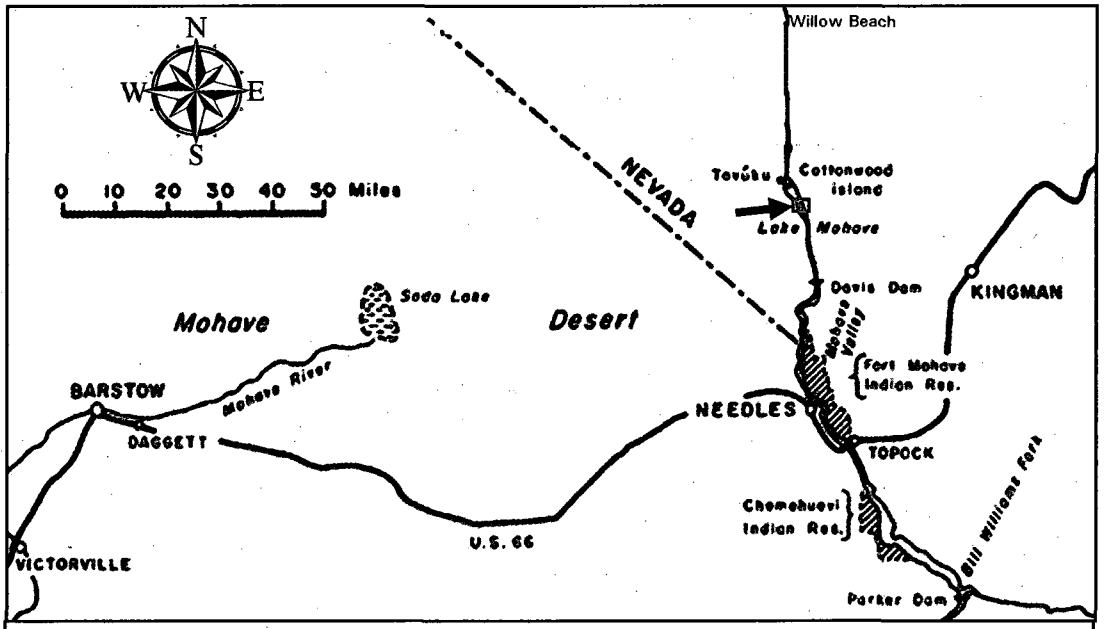


Figure 1. The Mohave Desert and Research Area. The South Basin portion of Lake Mohave (in red box) located in the Lake Mead National Recreation Area is now accessible only by boat, jeep, or overland hike. Map adapted from Kenneth M. Stewart, The Aboriginal Territory of the Mohave. Ethnohistory (NC: Duke University Press, 16:3, 1969), 258.

configurations, and impacts to the rocks themselves, has led me to propose that three additional trail marker types were utilized within the study area: *elongated/directionally placed rocks*, *rocks of differentiated color*, and *chipped basalt boulders*.

I argue that when a specialized trail marker was placed, it did one or more of the following: (1) noted change of trail direction, (2) indicated objects within the landscape which were out of visual range, such as camps or procurement areas (3) acted as a cautionary device, which aided in the selection of an alternative, safer route, or (5) showed downward-cutting wash areas for passage from a ridgeline.

I suggest that elongated/directionally placed rocks were first positioned to *grab* the attention of the traveler and then direct the viewer through the use of its *implied* line. I contend that these markers were primarily installed to provide aid for subsequent visits or travelers crossing the rockier terrain, where the trails would not have been clearly seen within the desert pavement. Rocks of differentiated color would have been incorporated, so that the iconographic message showed the traveler to (1) stop, (2) change, or (3) turn, similarly to our own roadway *stop*, *merge*, or *turn* signs of today. The use of these markers would have facilitated movement through the landscape, thus making travel easier or less perilous. This would have been especially true where the high cliff walls (Figure 2) met the Colorado River at the palisades area of the South Basin.

The third "new" trail marker type for the area is the chipped basalt boulders. I argue that these were struck in a specific manner: (1) to show high contrast, (2) to indicate the direction to be followed, and (3) to act as an indicator of basalt procurement areas. These were set almost like a "trail of breadcrumbs" across the landscape.

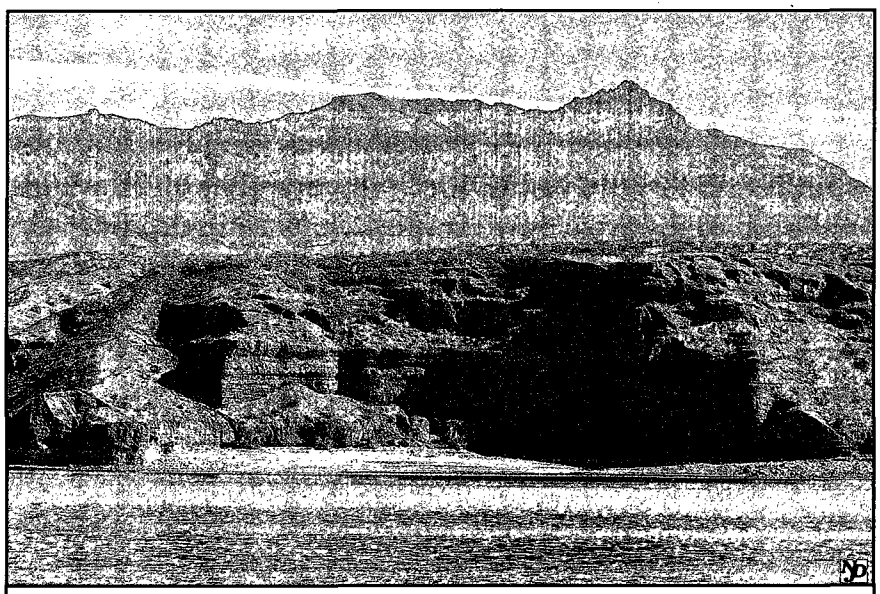


Figure 2. The High Palisades. These sheer cliff walls may be avoided by following the trail markers to down-ward cutting washes. The Black Mountains are seen in the eastern distance.

I propose that the elongated/ directionally placed rocks, rocks of differentiated color, and chipped basalt boulders were specific trail marker types and in the areas perhaps beyond. The main trails on the eastern shores of the Colorado River are clearly delineated with all six marker types. On the opposite side of the river, these trails follow the Empire Wash (Figure 3), rise and maintain the easiest course through the Newberry Mountains. The trails here may be followed southward to Spirit Mountain, *Avikwáamé.* According to Mohave mythology, *Avikwáamé* was made by Mastamho (Kroeber 1976:771; Stewart 1983:65; Whitley 1996:128), who was the son of the creator, Matavilya. I will be use the term, *Avikwáamé,* the indigenous name, for the remainder of the thesis. Some maps, however, sometimes also show this mountain as the Newberry Peak.

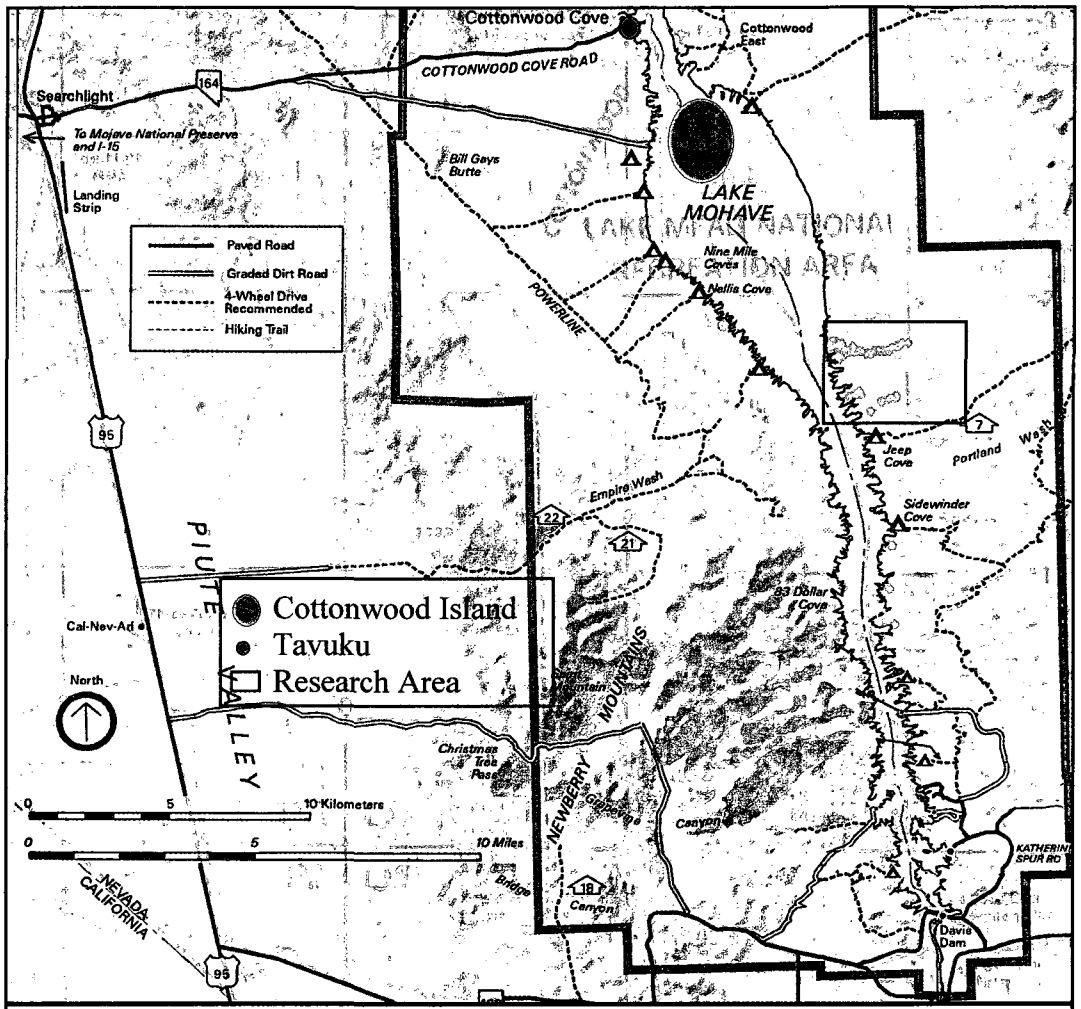


Figure 3. Jeep Trails with topographical overlay. The map shows the regional topography in relationship to the study area, shown as the blue box. The olive colored oval represents the area in which Cottonwood Island previously existed and the red dot represents Tavuku's reported position. Note the Empire Wash Trail on the west shore and its proximity to Spirit Mountain and part of the Piute Valley Trail (US 95). Adapted from LMNRA Map, http://www.nps.gov/ lame/ planyourvisit/upload/lmnra.pdf, accessed September 13, 2004 and USGS Topopragphicals, http://store.usgs.gov/b2c_usgs/usgs/ maplocator/ (xcm=r3standardpitrex_prd&layout=6_1_61_48&uiarea=2&ctype=areaDetails &carea=%24ROOT)/.do. accessed August 18, 2004.

Followed further to the west, the paths may join the Mohave Trail, when continued overland. This was a trade route that has been in use since approximately A.D. 900 (Warren 1984:423) and was utilized for the trading of clay figurines in exchange for shell beads on the California Coast (Koerper and Hedges 1996). Following the trails eastward, these link with what is now called "Jeep Trail 7" and continue up and through the Black Mountains.

The Mohave's main territory lay within the lower Mohave Valley. The Mohave warriors had a reputation throughout the Southwestern Desert region for their prowess in battles (Stewart 1971:431); sometimes warlike and aggressive, they stopped others from crossing the Colorado River, even killing those who tried (Baley 2002:115). "Tribes hundreds of miles away were attacked and raided" (Kroeber 1976:727). I argue that the southern part of the Cottonwood Valley was used in conjunction with the east-west aboriginal trade trail system (Colton 1941; Farmer 1935; Heizer 1941; Kroeper and Hedges 1996) as an alternative travel route (Figure 4). In times of strife, it would not be surprising for non-Mohave travelers to find an alternate route around their main homeland in the Mohave Valley, by crossing the Newberry Mountains and Cottonwood across this less populated terrain Valley a little farther to north. Springs were available and trail markers showed the way.

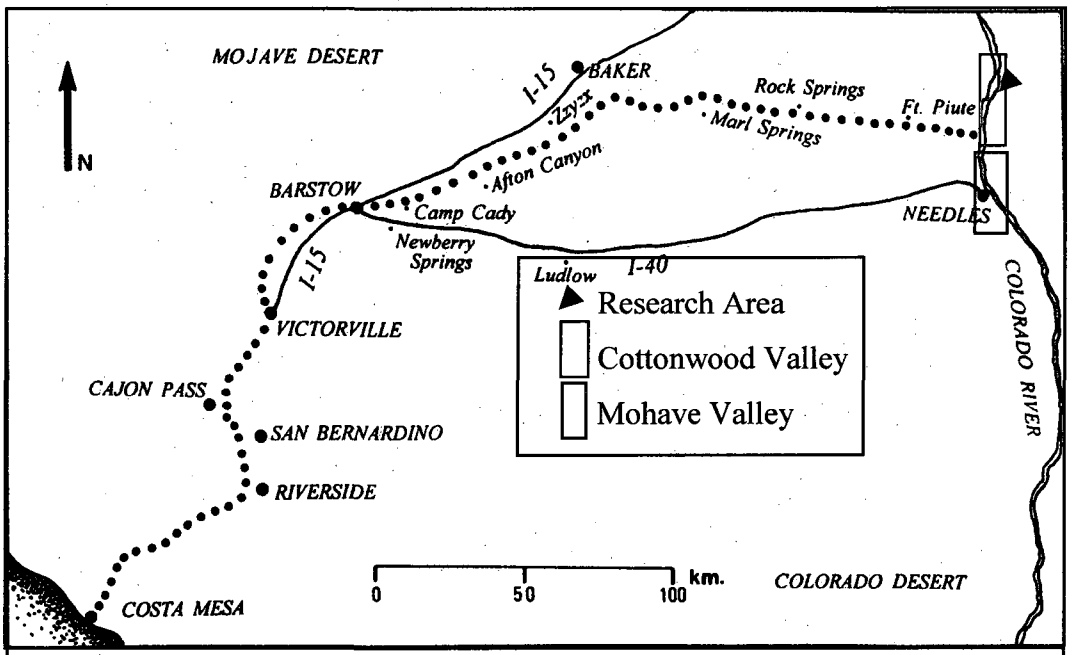


Figure 4. Mohave Trade Trail. The "Old Mohave Trail," was used for the trading of clay figurines in exchange for olivella shells on the coast (Koerper and Hedges 1996). The Mohave were also well noted for their warlike dispositions. In times of strife, it would not be surprising for non-Mohave travelers to find an alternate route around the main homeland in the Mohave Valley (red box), by crossing the Newberry Mountains and Cottonwood Valley a little farther to north. Springs were available and trail markers showed the way across this less populated terrain. Map adapted from Henry C. Koerper and Ken Hedges, Patayan Anthropomorphic Figurines from an Orange County Site. Journal of California and Great Basin Archaeology (CA: Malki Museum Press 18:2, 1996), 214.

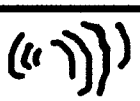
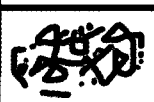
Discovered alongside one of the trails, two broken ceramic vessels lay at the base of a slanted rock. Included in this research is the petrographic analysis of four thin-section slides made from four sherds, two from each vessel. These were collected with permission from LMNRA and the Department of the Interior and sent for professional thin-section slide mounting to Vancouver Petrographics.

I analyzed the thin-sections of the sherds to determine ceramic type and possible place of origin. Some raw materials, such as fine clay and micas, may be obtained locally for the making of ceramics, but I have not discovered any firing pits in the area for the completion of the process. Petrographic analysis allows for the cross-comparisons of the fabric of ceramic vessels, as their mineral composition may be seen under a high-powered microscope. Therefore, I suggest that the vessels would have been brought into the area, and could provide evidence for travel to or trade with other areas.

Avikwáamé lies directly westward across the Colorado River from the study area and Grapevine Canyon, one of the most well-known rock art sites of the Southwestern Desert region, rests at its summit. All trails in the study area were marked by the travelers, who possibly sought to return to the area or knew of others who would follow. I argue that the trails that have the petroglyphic boulders should be considered most important, as these were the most widely used. Shamanism played a large role in Mohave society (Devereaux 1937, 1941, 1949, 1957, 1970; Stewart 1983:66) and dreaming (Heizer and Whipple 1951:433; Kroeber 1976:755) regulated much of how the Mohave spent their lives.

I propose that these trails were utilized as a part of a network of interwoven shamanic sites, where the rock art panels were originally made in relation to *Avikwáamé*. The petroglyphs contain entoptic (Table 1), inner eye designs, which are produced in the earliest stage of trance (Lewis-Williams 2001:337). "The neuropsychological model identifies three progressive stages of an altered state that influences a person's mental imagery" (Whitley 1996:13). The creation of these patterns in both pecked and painted

Table 1. Entoptic Patterns. These patterns are seen as inner-eye designs within the earliest stages of trace or altered state of consciousness (Whitley 1996:12). Column three lists sites within the study area which contain the entoptic petroglyphs. Column four refers to how many petroglyphs of each type are seen at each site. Adapted from Davids S. Whitley, A Guide to Rock Art Sites: Southern California and Southern Nevada. (Montana: Mountain Press 1996), 12.

ENTOPTIC PATTERNING			
		Petroglyph Sites	Total
Grid Patterns		Spit-Rock (A - C) and The Grid	7
Parallel Lines		Lone Tree, Split-Rock	3
Dots		Spit-Rock. Mullion, and Petrified	14
ZigZags		Spit-Rock, Petrified, The Gateway	4
Nested Curves		Cloven	1
Meanders		Split-Rock, Mullion, Petrified	12
Spirals		Split-Rock, Mullion, Petrified	5

imagery is documented throughout the world, as these entoptic designs are seen within the inner cortex of the human eye. These universal images appear in the earliest stage, level one, of trance.

In level two, the designs are made in a transitional form where the entoptic patterns take on additional features to become "familiar" objects or animals. In the final stage, level three, transformation of the entoptic forms takes place and there is a

"participation" in the hallucination by the shaman through the act of creating the petroglyphic imagery (Lewis-Williams 2001:338; Whitley 1996:13); the shaman *becomes* the petroglyph. Of the three levels, only the first two levels are represented within the research area, although the majority of imagery falls within stage one, entoptic designs. Since *Avikwáamé* lies directly across the river and in alignment with the petroglyphs placed within the study area, I suggest that the primary pecked figures at each site, may have been purposefully selected not only for their prominent position within the landscape, but for their relational position with *Avikwáamé* as well.

Chipped basalt boulders lead to lithic workshop procurement areas, and it is the repetitive nature of the sites which makes the use of these boulders as trail markers types viable. Basalt, microcrystalline cobbles of chert, chalcedony, jasper, quartzite, and carnelian dot the landscape. I suggest that these have been utilized within the study area in thee distinct scales of flint-knapping practices: lithic *scatter*, *station*, and *workshop*. The importance of establishing these three distinctive classifications is to show how chipped basalt boulders were used as trail markers and how these were specifically placed to indicate basalt workshops. Markers were not used for scatters or stations.

Although the terms *scatter* (Morrow 1996:354-357, Sullivan III 1995:49-64) and *workshop* (Odell 1996:55) have been utilized within the archaeological literature, the term, *station*, is introduced here to identify a specific level of lithic activity. Scatters contain up to three cores with debitage (flakes which are not tools or cores) laying in relatively close proximity. Typically, these are seen radiating out from a central working area. Workshops contain eight or more cores, the resultant flakes from working and have

an absence of finished tools. These display an overlapping series of knapping events through the layering of lithic debitage.

I propose using the term *station* to show procurement artifacts of four to seven cores and their resultant debitage. It is limited utilization of a smaller group of knappers or possibly the limited reuse of the same source by an individual or pair, which makes this a unique characteristic of this type of site. Stations exist on a more transitory basis than workshops; the creation seems spurred more by the accidental find of the preferred rock type, as opposed to workings at a "known" procurement area. Trail markers do not lead to these sites; and reuse of the sites is not evident. The reason to specify this level of procurement practice is two-fold. One, procurement by more than one individual at a given time may indicate an opportunistic knapping session by travelers as they were crossing the landscape. Secondly, when mapping these against the scatters, workshops, and trail markers, I discovered that only workshop trail areas were marked and these were with the chipped basalt boulders.

The examination of various trails and trail marker types has led me to suggest travel patterns on both major (with petroglyphs) and secondary (to sites or to unseen procurement areas) trails. The utilization of specific rock configurations may reveal more than human passage. It is my hypotheses that these conveyed directional and cautionary messages which aided travelers in traversing the desert landscape and to avoid sheer cliffs. I suggest that *elongated/directionally placed rocks*, *rocks of differentiated color*, and *chipped basalt boulders* were strategically placed within the landscape and used for possibly a thousand years.

I have proposed that specialized trail markers were utilized to aid travelers across this east-west travel corridor; and that shaman specifically placed petroglyphic symbols on boulders along the main trails; and thirdly, I have argued that the inter-relationship of trail marker and procurement level is linked through utilization of chipped basalt boulders, as demonstrated through the incorporation of this type as a signifier alongside trails to workshop areas. The documentation of these sites, as well as the others which lie along the east-west travel corridor, should support the theories I have proposed and make a valuable contribution to the archaeological record for the Southwestern Desert region.

Chapter Organization

The chapters in the thesis are organized to provide an overview of the area first and then detail the work that has been accomplished within the research area. Chapter Two reveals the setting, describing the research area and the environment. In Chapter Three, the historical and archaeological background is provided so that an understanding of the cultural constructs of the people which may have been responsible for creating the artifacts may be gained. These anthropological and archaeological perspectives may reveal possible links for understanding the dynamics of landscape utilization.

Included in Chapter Three is a review of noted trail markers types (cairns, petroglyphs, and rock alignments) and the introduction of three "new" styles: elongated/directionally placed rocks, rocks of differentiated color, and chipped basalt boulders, which help to reveal utilization of the area as an east-west travel corridor.

Ceramics, characterized both as time markers and containers of artifact origins, play a vital role in the establishment of travel networking systems and are also included in this chapter.

Ceramic making history of the local area is also outlined in Chapter Three, providing a review of the literature from varying points of view. From the colloquial essay of Dr. Edward Palmer to the more astute analyses made by Albert Schroeder after he had completed his own like-experimentations of ceramic manufacture, one may gain insights into the varying components needed to be carefully addressed when formulating hypothesis.

Chapter Three also provides an overview of rock art research in general, as well as more specifically those believed to be created with entoptic designs. These are pecked onto the boulders alongside the main trails within the study area and reveal the nature of their shamanistic origins. Rock art studies have shown that neuropsychological elements (Lewis-Williams 2001:337) utilized in these designs represent the universal symbols seen within the earliest stages of trance.

Additionally, Chapter Three outlines the inter-connectedness of trail markers and procurement levels: chipped basalt boulders indicate lithic workshops in this area and scatters and stations have no trail markers to these sites. In order to establish the direct correlation between the specific trail marker type and procurement activity, each level will be delineated. Clear distinctions are noted, so that the repetitive nature of the workshop and the reuse of the chipped basalt boulder may be seen in combination, to

establish its use as viable trail markers. Stations and scatters do not have markers indicating their positions in the landscape.

Within Chapter Four, Field Methods and GIS, the discussion of the six square miles and how these were surveyed by myself and recorded over a period of ten years is encapsulated. During that time, photographs, digital images, site maps, and GPS recordings documented the artifacts and site remains scattered across the landscape. Detailed information is provided to confirm survey of all segments of the area and to establish the overall parameters of the study.

Chapter Five, Analysis, allows for inferences to be made based on data collection, ethnographic and historical correlations, and how these correspond to their source of discovery–their place within the landscape. For example, specialized trail markers showed that *viable passage* (one may go this way) was noted for access to main ridgelines, downward-cutting washes, and procurement areas. Additionally, the various petroglyph sites are examined within this chapter, as to their position in the landscape and to the style of symbol incorporated. Petrographic analysis of the two pottery vessels is also included in Chapter Five, as well as lithic procurement variables.

Conclusions are laid out in Chapter Six. I have proposed that specialized trail markers were utilized to aid travelers across this east-west travel corridor; and that shaman may have specifically placed petroglyphic symbols on boulders along the main trails; and thirdly, I have argued that the inter-relationship of trail marker type and procurement level may be linked through utilization of the chipped basalt boulders.

CHAPTER 2

SETTING

Research Area

The Cottonwood Valley lies along the Colorado River. It stretches nine miles long with gently sloping sides to the Black Mountains, which are situated six miles to the east. The Newberry Mountains remain in a jagged upheaval three miles to the west (see Figure 2). On the eastern incline, dissected washes of gravels that were dragged over the eons by the waters of the Colorado River (Chronic 1983:86) cover the area; desert monsoons added to the ragged edges. Volcanic uplifts punctuate the northern and southern terminuses of the valley constricting the flow of the Colorado River. Desert pavement allows for the well-worn trails to remain long after the people who used them have departed. Breaks in the eastern and western ranges allow for passage and utilization is evident through previous trail usages. In the southwest, access to the more widely used, indigenous Mohave Trail may be made through several points. To the east, Jeep Trail "7" routes around several springs to a well-defined pass leading through the Black Mountains.

Historically, the Mohave (Yuman) and Mo-vwi-ats (Southern Paiute-Shoshonean) groups have both occupied sites within two miles of the study area (Kroeber 1976:726). Cottonwood Island, a primarily Mohave settlement, and Tavuku, a Mo-vwi-ats' (Southern Paiute) village site (Kelly 1934:555), are both currently underwater due to

waters held back by Davis Dam. These sites are within a few miles of the research area, and the study area falls within the land-use radius typical for hunter-gatherers (Binford 1983:109-143). One day's travel for maximum subsistence in return for least effort expended is the projection for optimal foraging (Winterhalder 2001:20). Winterhalder argues that many "hunter-gatherers are *central place foragers (CPF)*. Whether on day trips or longer hunting and gathering expeditions, individuals or small groups radiate from and return to a central site" (2001:21). The primary sites for CPFs are located adjacent to critical resources, such as water, fuel, or food, or immovable procurement areas. The study area in the South Basin lies well within these CPF projections.

In the study area, circular clearings, which are the depressions left where the desert pavement was pushed aside for the construction of temporary brush shelters, dot the landscape. Various rock features, including circles, walls, and possible hunting blinds lie beside the trails. Petroglyphs were created within view of *Avikwáamé*. The presence of basalt and microcrystalline materials and the resultant production waste shows that this area was utilized for lithic procurement. At one site, the sherds of two small vessels lie at the base of a slanted rock. This was a multi-use area where travelers left iconographic trail markers to insure that passage through the landscape would be easier or less perilous for those who would come next.

Environment

Along this southern portion of the Colorado River is now a semi-arid region, which belies its previous cooler, wetter climate of the pluvial lakes period (Ezzo 1994:6). The area under study is made up of Quaternary volcanic debris (Rogers 1989:3), with exposed deposits of valley fill (Chronic 1983:34-35). Eroded alluvial ridges and thinly crusted ash-covered mesas comprise most of landscape; these are interlaced with both indigenous and newer game trails. The valley floor is composed of dendron-like washes (Chronic 1983:35) branching out from the main ridges (Figure 5).

Creosote (*Tarrea tridentata*) makes up the primary vegetation although this sparsely populates the area. Lower growing beavertail cactus (*Optuntia basilaris*) and

Figure 5. Dendritic Washes. Travel in this area is hampered by the maze of washes which have dissected the area. Trail markers: to denote down-ward cutting washes to lower areas, cautionary signs to avoid cliffs, to stop, turn, or indicate objects unseen from the trail were utilized within the study area and may be indicative of the region. Adapted from http://earth.google.com, accessed August 12, 2006.

arrowweed (*Pluchea sercea*) makes up a considerable amount of the balance. Honey mesquite (*Propsopis juliford*) and screwbean mesquite (*Prosopis pubescens*), from which the seedpods were gathered (Bean 1972:118), grows close to the Colorado River, so does palo verde (*Cercidium floridium*) as well sparsely populated smoke tree (*Dalea spinosa*). In some lakeside areas, cattails (*Typhaceae latifolia*) have begun to grow, as well as some non-native grasses and vining plants. Although the Mohave did add some Spanish introduced crops to their diets, such as squash and wheat, many of the plants growing in the study area are the more recent, intrusive additions.

CHAPTER 3

HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

Occupation of the Lower Colorado River Region

Although this research encompasses but a small portion of the lands used by both the ancestral and historic Mohave, their actual homelands ranged fifty miles farther to the north to Willow Beach. They possibly used the Willow Beach area as a camp for trading purposes (McClellan 1980:90; Schroeder 1961:1-2). However, their traditionally held territory ended at a location only about eight miles north of the study area, which is now underwater and known as Cottonwood Island. At its zenith, the population stood at approximately two hundred inhabitants. To the south, the Mohave lands reached the jagged peaks known as the Needles south of Topock, Arizona (Stewart 1983:55). The study area was also utilized by the Mo-vwi-ats, a Southern Paiute (Shoshonean) group, whose occupation began later than that of the Mohave and was intermittent, depending on Mohave occupations of this northern outpost. The Southern Paiute village of Tavuku, Cottontail Hill, was located in proximity of the current Cottonwood Cove Marina (see Figure 2).

To understand the land-use of the research area, an overall picture of who occupied these lands must first be made. Before I proceed, there is a need to disentangle the web of conflicting names and jargon associated with the cultural groups who

inhabited this area. Knowledge of the Mohave prior to 1859 is an incomplete record of their various encounters with outsiders. The Yuman-speaking Mohave tribe (Stewart 1983:55) living along the Colorado River prior to contact was a semi-agrarian society. These flood-plain farmers planted beans, melon, and maize for approximately fifty percent of their dietary needs, but they also still relied on hunting, gathering, and fishing to augment their agricultural endeavors. Ancestral Mohave (San Dieguito I) migration showed movement across the desert region, along late Pleistocene watering spots, to the pluvial Lake Mojave (Campbell et al. 1937:42), and finally arriving at Colorado River delta (Rogers 1966). Pleistocene Lake Mohave, at its height at approximately B.P. 15,000 (Campbell et al. 1937:48) provided optimal living conditions with fish and game available nearby. As the climate began to change to higher temperatures with lower precipitation, the drying of the pluvial lakes forced migrations out of the desert regions to the area along the Colorado River. Estimations of the arrival of the San Dieguito I population to the Colorado River delta area was first proposed by Rogers to be about B.P. 9,000. But arguments about this date forced him to reconsider this and several time lines have been subsequently proposed. The shift to a more sedentary subsistence mode occurred approximately between A.D. 500–1050 (Rogers 1966b, 1989) with the rise of agriculture and beginnings of pottery production (Schroeder 1961) in the area.

The first descriptions of the Mohave were provided by two priests, who accompanied the Don Juan Ornate overland party in 1604 (Stewart 1983:55), who was trying to locate the "Southern Sea." In their journals, they wrote the first accounts of these "tall, fierce people," whom they called the *Amacabos*. In the Yuman language, the

Mohave were named the *Aha'macave*, which meant *along the water* (Stewart 1969:259). The Spanish records detail the Mohave again in 1699, when a Jesuit priest, Padré Eusebio Kino, wrote about their location, but did not visit them (Stewart 1969:260). Then in 1776, Padré Francisco Garcés, who had accompanied the Anza party overland, met the Mohave, whom he called the *Jamajabs*. He traveled with some of them to the Hopi pueblos in the east and west to the Pacific Ocean. Garcés gave the first detailed accounts of the Mohave in his journals.

Garcés explained how both the Mohave men and women took part in the agricultural duties. Flood plain farming took place along the fertile delta of the Colorado River, and then many explorers began likening it to the Nile (Kroeber 1976:726). Mohave men rarely seemed to hunt, as there was little game to be had, but they did fish. Women made coarse basketry and pottery for household consumption. It was thought by some researchers that due to cremation practices (Kroeber 1976:749-751), there was little need to refine these skills, as all personal possessions were thrown into the funeral pyre. Trade was not a large industry, but some small Mohave terra cotta figurines (Koerper and Hedges 1996:204-220) have been excavated in places as far away as coastal California.

The re-naming of the Mohave people continued to change as newer explorers and anthropologists began documenting their finds. In A. L. Kroeber's anthropological research of the area, he claimed that the Mohave thought of themselves as a national entity, called the *Hamakhava* (Kroeber 1976:727), yet another variation of the original, Yuman *Aha'macave*. This same Mohave group contemporarily call themselves the *Pipa Aha Macav*, meaning the People by the River.

Anthropological Studies along the Colorado River Delta Area

Malcolm Rogers, who began his work in the area in the 1900s, claimed that an ancestral Mohave group first occupied the territory which he called the Scraper-Makers (1929:45-7). He later changed the name to the Malpais (1989:23), which combined two Spanish words, *mal* for bad and *pais* for land. Later, Rogers changed the designation to Playa I and II (Appendix 1) for the Malpais grouping, based on what he felt were distinctive tool type advancements within this Paleo-Indian tradition. He again re-named this same group as the San Dieguito I, II, and III (Appendix 1). He believed this archaic Yuman population (1966a:23) may have had their earliest manifestations of cultural traits along the San Dieguito River drainage in Southern California.

Others believe that the traits of the Yuman culture were first manifested in Mexico and traveled northward along the Colorado River's drainage. Others had argued against Rogers' proposal, on the basis that Rogers was unable to positively prove these first inhabitants were indeed Yuman speakers. So the cultural name was again changed several times. Harold S. Colton (1938:552) suggested the term *Patayan*, since it was from a Walapai word for "ancient people" (*Pataya*). Lyndon L. Hargrave, a fellow archaeologist, had also suggested this name for use, as it was "easy to say" (Colton 1945:119). The term, Patayan, was later used to denote the culture, which settled the area along the Lower Colorado River located below the Grand Canyon in the Late Prehistoric Period, from AD 900 to AD 1500 (Figure 6). The Patayan designation was then used by

Harold S. Colton (1938:552) to denote *only* the lowland portion of the group, which was then later called the Amacava by Albert Schroeder (1961).

Later in his career, Rogers argued against the usage of the term Patayan, preferring his Yuman designation, as he felt it was a more accurate means of identification. Colton (1938:552) responded to this criticism, citing again the Walapai terminology. It is important to note that within the historic record, the Walapai and the Mohave were enemies (Schroeder 1953:4). So, to use a Walapai word to denote ancestral Mohave seems to me a bit odd, as it must have to Rogers. Additionally, Colton had

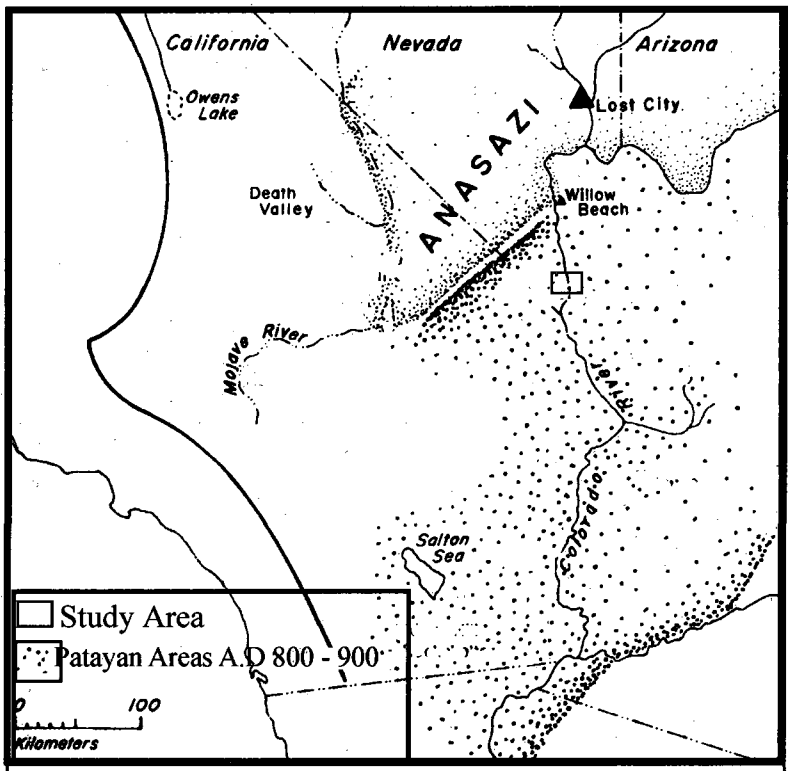


Figure 6. Patayan Area A.D. 900 – 800. Schroeder documented sites as far north as Willow Beach. He called the Yuman inhabitants of the area the *Amacava* and then changed the designation of them to the *Hakatayan* cultural group. Map adapted from Michael J. Moratto, *California History*. Salinas: Coyote Press, 2004) 421.

proposed that the term, *Laquish*, be used to define the Riverine Branch of Yuman speakers, yet support for this term is lacking. In his article, *The Patayan Problem*, Colton (1945:120) stated unequivocally that the term, Patayan, referred to the pre-historic culture, which *has* ceramic remains. This excludes the culture, whose evidence of stone tool usage and no ceramic remains that was documented by Rogers as the "Scraper-Makers," Malpais or San Dieguito I.

When the 1940s salvage archaeology surveys and excavations were underway in the area of Davis Dam, Gordon C. Baldwin, senior archaeologist for LMNRA wrote about the findings in the area. Yet, when it came to identifying the material culture, he had the same difficulty as I with the "name game." Baldwin (1948:2) stated that the area of Davis Dam was the center of the "so-called Patayan culture." He recognized the ambiguity of the title, as well as the designation as a distinctive cultural entity. He called into question the authority for naming a group based on so few excavations, which had been conducted and on a sub-group or branch based solely on surface finds. This was a very clear message about the inaccuracy of the term Patayan, which seemed to have reached some archaeologists, but not others.

Further modifications of the Mohave cultural designation were brought about by Albert H. Schroeder (1953:30-32), when he proposed that by A.D. 900 the Riverine branch of Yuman speakers had reached the Willow Beach area, which is located just south of the Black Canyon below the current Hoover Dam. Using the Gladwin's naming system (Gladwin and Gladwin 1934:9-10). Schroeder determined that this group had come from a Hakatayan root. Although Schroeder (1953:54) specifically quotes the

Gladwins on this terminology, they in fact did not use the word Hakatayan, nor did Colton. In the Gladwin chart referenced by Schroeder (1957:177), the terms Laquish and Hakatayan were not used at all, nor did the Gladwins reference any ancestral Mohave-Mohave-type artifact. Theirs was a linguistic analysis of Southwestern cultures and contained minimal references to Yuman speaking peoples. Later, Schroeder (1957:177) reintroduced the term Hakatayan as a rejection of the Yuman designation, which Rogers had supported. Schroeder did explain that Hakataya meant the Colorado River in the Yuman language.

Schroeder did, however, find ancestral Mohave ceramic artifacts in his excavations in the Willow Beach area, at lower stratum than that of later Shoshonean groups. He then inferred that these ancestral Mohave predated Southern Paiute groups. A complication to his reports, though, is the fact that Schroeder (1961:2) also used the term *Amacava* as yet another designation for these same people. The interjection of new names for the same group within the literature by the same researcher, as well as by different researchers, has made the search for data regarding the ancestral Mohave all that much more difficult.

At the height of occupation, though, the Mohave held much of the western portion of Arizona along the banks of the Colorado River. Cottonwood Island, however, passed back and forth between the Mohave and a Southern Paiute band, depending on whom dominated the area at the time. The Mohave lands stretched as far north as Willow Beach (Figure 7), which was used as a camp as early as A.D. 900, and south to the Bill Williams River.

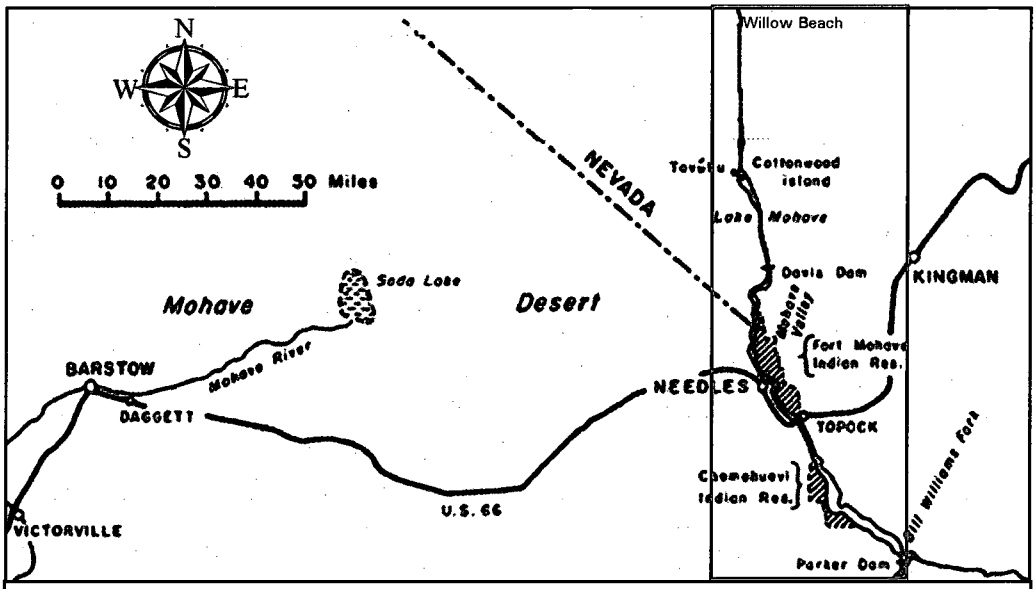


Figure 7. The Mohave Lands (Inside red box). At the height of occupation, the Mohave held much of the western portion of Arizona along the banks of the Colorado River. Cottonwood Island passed back and forth between Mohave a Southern Paiute band, depending on who dominated the area at the time. The Mohave lands stretched as far north as Willow Beach, which was used as a camp area as early as A.D. 900 and south to the Bill Williams River. Map adapted from Kenneth M. Stewart, The Aboriginal Territory of the Mohave. Ethnohistory (NC: Duke University Press,16:3, 1969), 258.

Schroeder sought to "set the record straight" during the 1956 Archaeological Pecos Conference, so that the rationale to use the term *Patayan* could be heard and agreed on by anthropologists. Many of the top Southwestern Desert researchers of the time were in attendance. Notably missing were Rogers, Colton, and the Gladwins. Those who were there, agreed to use the term, without a qualm. Current researchers (Seymour and Perry 1998; Waters 1982) tend to use the Patayan designation. If one can put aside for a moment the romantic nomenclature for the use of terms, such as Anasazi, which has risen to the same form of criticism, then one can put aside the word Patayan

much the same way and for the same reason. However, it would be inappropriate to add yet another name to the already long list.

Mohave Trails, Trail Markers, and Iconography

The desert limited the Mohave's lands to the fertile Colorado delta, but they were great travelers and utilized extensive trail systems (Rogers, 1966a:47). According to Kroeber, the Mohave were "little interested in trade" (Kroeber 1976:727), but as their trail networks and artifact remains reveal, this was not as he suggested. The Mohave had traveled west to the Pacific Ocean, where they traded ceramic figures for shell and other items (Koerper 1996:213). Chronicles of their travels also show that the Mohave travelled north beyond the Shivwitz Plateau, east into the pueblo areas, and south to the Gulf of California (McClellan 1980:64). Malcolm Rogers' archaeological survey work along the Colorado River and into the adjacent desert areas detailed these extensive trail systems, which he claimed were both Yuman (Mohave) and Shoshonean in origin (1966:66-67). He believed that these stretched as far as the San Diego coastal areas, which he concluded was the place of the ancestral Mohave's origin. Rocks were utilized in a variety of configurations, sometimes to note passage and in other instances to convey iconographic messages to aid travel across the landscape.

Trail Markers. It is the travel and procurement patterns of the hunter-gatherers that make the trail systems, and therefore the trail-markers, an important aspect of this research, providing clues as to the landscape utilization of the area. Based on the associated artifacts discovered in the research area, the ancestral Mohave, the pre-contact

Mohave, and the Southern Paiute, who lived along this section of the lower Colorado River, presumably made the trails and markers.

Although much discussion may be made over how trails can be formed naturally through the course of water or wind and by animals as well. The trails documented within this research area *all* have associated artifact remains, which make these if not originally of human manufacture, utilized by people for travel, possible trading excursions, subsistence, procurement, and ideological or shamanistic reasons. In order to make passage across the landscape easier or less perilous, trail markers were situated where necessary and these include the typical types found in many areas throughout the world: stacked rocks or cairns, rock alignments, and petroglyphs (Rogers 1966, Von Werhoff 1988). Incorporated within this area, but not mentioned in the literature is the use of directionally placed rocks, rocks of differentiated color, and chipped basaltic rocks. Together, these six types were used to mark passage, but may have been selected specifically to convey deeper meanings, as well.

The trail markers in this area along the Colorado River are situated on the slopes and ridges adjacent to what is now the South Basin portion of Lake Mohave. Whether one or more indigenous tribe, clan, family, or individual made these is difficult to ascertain, but the meanings for most, nonetheless, are relatively clear. The survey and recording of these markers has taken place within my own research over the course of more than a decade, and it is within that time period that the more subtle meanings of the markers have become evident. Sometimes, while just out walking, one may overlook the minute variations in color, texture, or alignment, but as one grows accustomed to these

surroundings and adapts to the typically harsh environment, these changes become more noticeable. The observed characteristics were noted and the body of evidence mounted, as to their possible, subtler meanings.

Rock Cairns. One of the most recognized forms of marker, whether it is for survey, boundary, or trail is that of stacked rocks or cairns. In this area, cairns indicate all of these and possibly other meanings others as well. Cairns differ from "jumbled rocks" tossed about by environmental factors, as these have been purposefully placed. Typically, little or no debris lies at the base of the cairn, as the rocks have been collected from other locations and placed upon each other to form the cairn pile. At times, however, groundstone has been used as the base for cairns, and additional rocks placed upon this to add to its height.

Malcolm Rogers mentioned the use of cairns as trail shrines (1966:48-49). In the cairns he excavated, Rogers also recorded ceramics, lithics, and sometimes turquoise deposited in the piles. These additional materials have not been discovered in this area's cairns to date. Although several styles of cairns lie within the survey area, most are relatively small in comparison to those excavated by Rogers.

Cairns in the study area range in size from South Basin (Figure 8), which is the largest, to smaller stacks of three to four rocks. The hill that the South Basin cairn sits upon is an ash covered mesa, which has a harder crust of the eroded light pumice with scattered boulders of basalt. These had been worked, again and again, for procurement purposes with debitage scattered about in multiple layers. The cairn may be seen up and down the for miles in the Cottonwood Valley, as the darkened patina of the basalt

boulders stand out in high contrast to its surroundings and the height of the cairn adds to its notability.

Figure 8. South Basin Rock Cairn. With *Avikwáamé* across the Colorado River, these stacked rocks may be seen up and down the Cottonwood Valley and may be used as a reference point for the workshop area at this site. A trail is located just below the summit of the hill (out of the photograph, approximately ten yards to the south). The hill is an ash covered mesa, which has a harder crust of the eroded light pumice with scattered boulders of basalt. These had been worked, again and again, for procurement purposes with debitage scattered about in multiple layers.

Petroglyphs. The iconography of the petroglyph has been argued by many to have more significance than that of a mere trail marker. The symbolism attached to the individual petroglyphs cannot be overlooked, nor understated. Petroglyphs, engraved

designs or pictures on a rock surface, are found alongside many trails in this area (Figure 9). The significance of petroglyphs and their relative dating is important to the understanding of this entire trail system. The petroglyphs here fall within the Great Basin Tradition of rock art (Stewart 1971; Whitley 1996), the most common form found within the tri-state area of Arizona, California, and Nevada. The act of creating a petroglyph marks human passage, yet the inherent significance of the entoptic imagery pecked on the surface of the boulders is that it records the visions seen within a trance state, possibly produced by shaman.

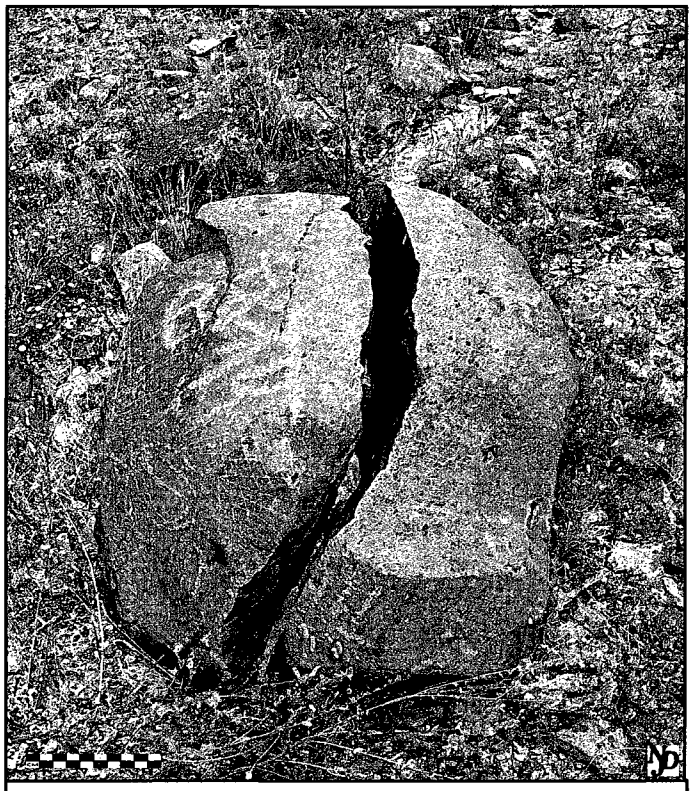


Figure 9. Split-Rock. Great Basin curvilinear and rectilinear motifs, as well as scratched petroglyphs. Original curvilinear meanders criss-cross the chasm. The split is in direct alignment with Spirit Mountain, Avikóamé, the mythic place of Mohave origin.

The Split-Rock site marks a prominent, possible prehistoric trail, one of the shortest across this section of the desert. Further to the east, along this trail lie four more rock art sites, the foundation on which to base the inference that this petroglyph site was indeed used as a trail marker. Other significant trails along the Colorado River in this area are also denoted by similar petroglyphs. The petroglyphs themselves may originally have been made as part of a shamanistic experience (Whitley 1996:10-13), as the marks are entoptic patterns or inner-eye designs seen in the earliest stages of trance.

Rock Alignments. The markers most often used to guide travelers across this harsh landscape are rock alignments (Figure 10). These incorporate the directional placement of three or more rocks in a series to point the way to objects or objectives within the landscape beyond. Rogers noted the possible use of rock alignments for

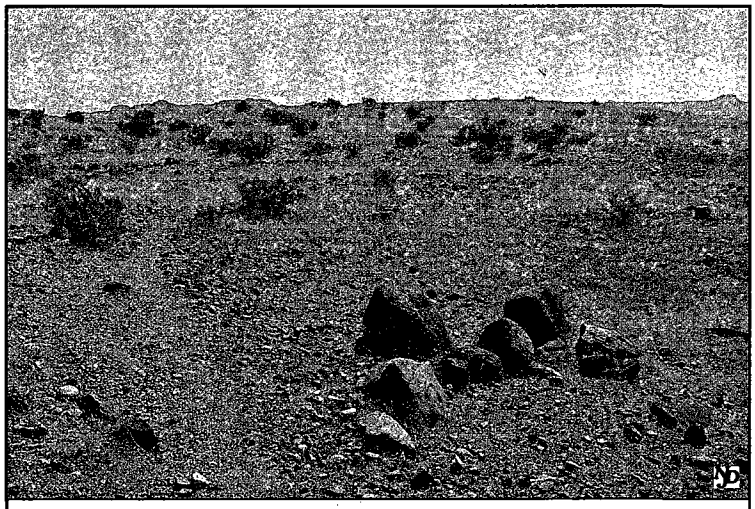


Figure 10. Rock Alignment to Campsite. Rock alignments in the research area incorporate the directional placement of three or more rocks in a series to point the way to objects or objectives within the landscape.

ceremonial purposes (1966:50-55). He even mentioned that rock alignments may have been used to "effect a superstitious blocking of the spirits of the departed San Dieguito men which might still be using the trail out of habit" (1966:47). Although for this last reference, Rogers cited no ethnographical source for his information. Literature by other authors does not support this hypothesis and the source for its inclusion is not found within Mohave myths located to date.

Directionally Place Rocks. From what I can discern, the use of directionally placed rocks is new to archaeological literature, but actually quite old from the desert's archaeological record. In the areas where the rocky terrain takes over from the smoother desert pavement, the trail sometimes seems to disappear. In order to find the trail again, occasionally clues have been provided in the form of directionally placed rocks to show how one ought to proceed. Rocks were placed so that the traveler could spy these, set within the landscape first, and then follow the direction of its implied line; these act as guides across the rockier terrain of the study area.

In following the direction indicated, the trail may be picked up again after the rockier area has been traversed (Figure 11), until another trail marker is located or an objective is reached. Documentation of these has been for the utilization for (1) signaling device, (2) eye-catching appeal, and (3) trail marker type. The directionally placed rock is typically placed upon another rock in a prominent position within the landscape in order to gain the travelers attention. Typically, these are placed when travelers have traversed a distance great enough to warrant one to wonder which direction is needed to proceed upon, as the trail is usually not readily apparent.

Elongated cobbles or basalt rocks are used lengthwise to show the way in which to travel. Typically, approximately one hundred meters or more is traversed before seeing the next trail marker. It is a far enough distance to wonder if the direction is correct. Then, another directional marker is spied, or another type, and the trail continues. Trail

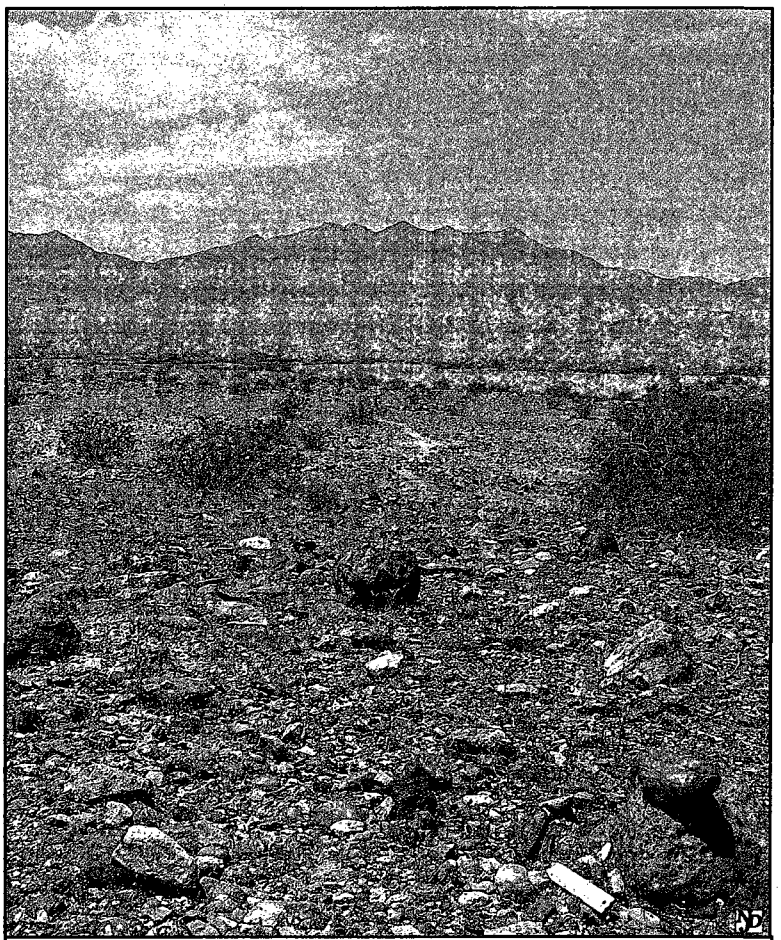


Figure 11. Directionally Placed Rock with Differentiated Color. Note the trail in the desert pavement as you follow the implied path provided by the rock's elongated shape. This directionally placed rock was seen after traversing approximately one hundred rocky meters without sign of the trail.

marker to trail marker, across the rocky terrain, the travelers may proceed with recognizable markers for them to follow. Picking one's way through boulder strewn ridgelines, while trying to cross the desiccated alluvial fan from the Black Mountains to the Colorado River, is challenging at best.

Rocks of Differentiated Color. To most, the desert is a rather drab background of browns. To see brightly colored rocks piled atop each other draws the eye to that point in the landscape and begs the question, "Why?" Obviously, these were put there for a reason. The absence of smaller rocks and debris underneath these colorful selections indicates that these were placed intentionally and not naturally. If rocks of differentiated color were utilized to capture the attention (Figure 12), draw focus, or demand attention, then when one was aware of the color, one was also aware of the iconographic message it conveyed: (1) to stop, (2) change, or (3) turn, so that the movement through the landscape

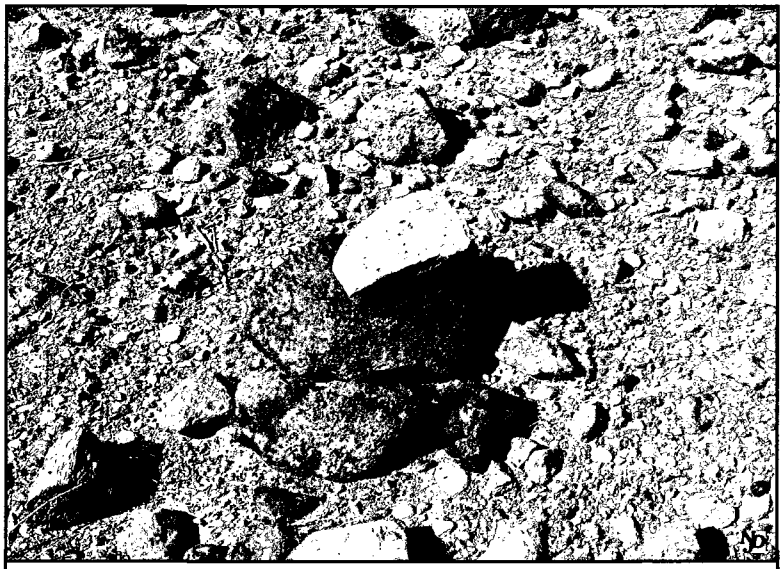


Figure 12. Rocks of Differentiated Color. In a harsh, drab landscape the appeal of brightly colored rock catches the eye. Placed like this atop another, it is sure to garner even more attention. This is elongated as well and points the traveler in the desired direction.

becomes easier or less perilous. I argue that differentiated colored rocks were used in the region as trail markers to draw attention to the fact that a choice could or should be made.

Sometimes, rocks of different color indicate alternative choices of direction, especially for trails which are nearby but may be out of eyesight due to changes in landscape. In other instances, these have been used as "warning" markers to denote the safest downward cutting washes so that a westward bound traveler will not continue to proceed to the palisade section of the Colorado River's banks, but take an easier pathway. At times, the choice of rock was also elongated adding to the directional significance.

Clearly, it was the specificity of the selection of colorful rock, which was the imperative component in the making of these trail markers. The ability to capture the attention of the traveler and draw the gaze in the direction necessary for information to be transferred was accomplished through this medium. These markers could be veritable life savers for those who would have had to back track to these same washes, had they continued on to the palisades and been stopped in their tracks by those sheer cliffs. Some have drops of forty feet and greater. Someone would have had to pass the knowledge of their meaning on to the next travelers, in order for their placement within the landscape to have any significance. Who living now might know this lore, or where in the past was it was written down, is anyone's guess.

Chipped Basalt Boulders. One of the most unique discoveries about the trail systems within the research area is of the use of chipped basalt boulders as markers At first, these were hardly noticeable, but once identified these could be followed like a trail

of breadcrumbs. The chipped basalt rocks led to basalt workshops, which proved significant in relationship to the overall network of trails within the area. The trails with chipped basalt boulders primarily marked access to procurement areas, more specifically those of basalt.

Although the marks on the basalt boulders might be thought by some, as the random testing or strikes made by harried travelers, the boulders which were used as trail indicators are primarily not the type used for tool making. These are a more porous, non-crystalline basaltic rock and are heavily patinated (Figure 13). Secondly, in some itself,

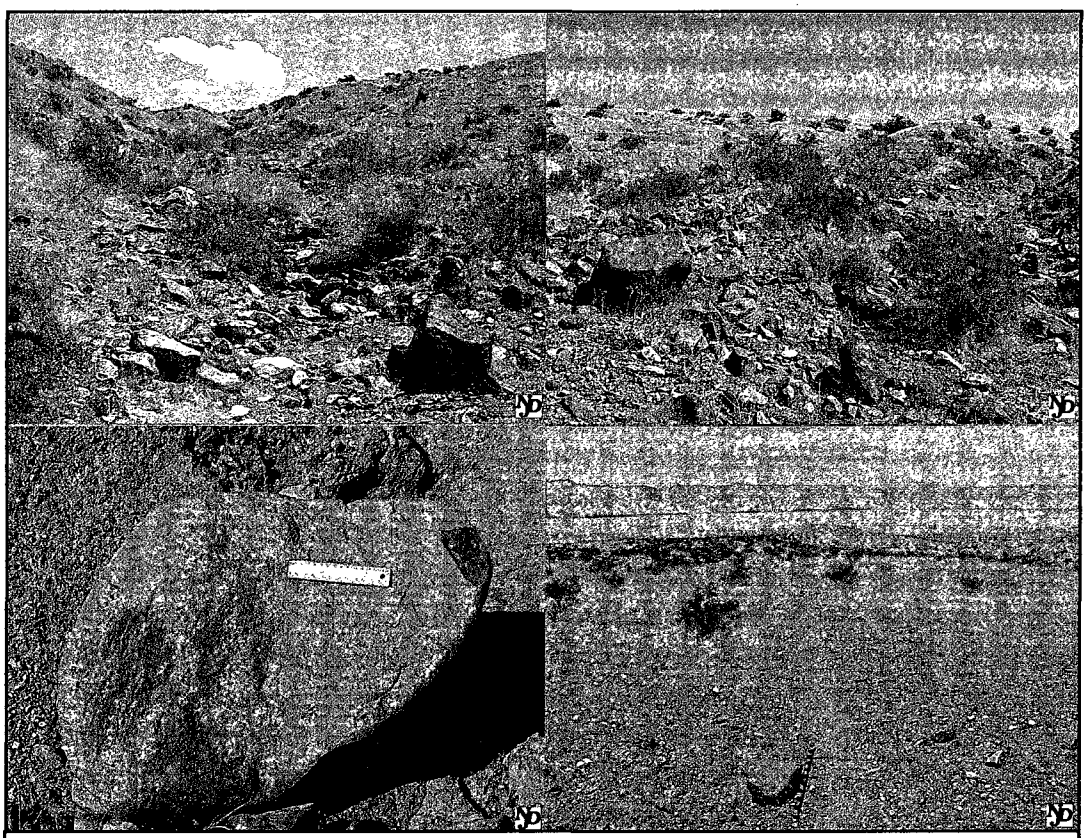


Figure 13. Chipped Basalt Boulders. The Chipped Basalt Boulder in the upper left hand corner lies about four meters to the east of the Mullion Rock. Further to the east, the trail may be followed using the chipped basaltic boulder as trail markers across the landscape.

instances, boulders had been actually moved trailside and then struck, so that the specific strike mark could be observed from the nearby trail. The directionality of the strike, was further enhanced, either by elongating the mark intentionally or by creating the symbol on a side of the boulder which "faced" a specific direction that one ought to "follow."

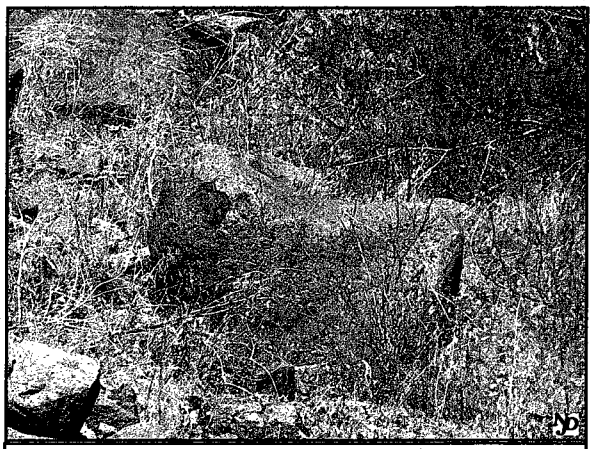


Figure 14. Chipped Basalt Trail Marker at Wash Junction. This chipped basalt trail marker is one of the first markers seen on an eastward procurement trail.

Finally, in all instances recorded, the markings would have been highly visible from the trail (Figure14). There was a specific selection of the "strike zone." These areas should not be confused with chips or abrasions that may be caused by naturally occurring phenomenon, such as spalling or rivulet damage caused by monsoon flooding. These chips occur at a height (18" – 24") which is meant to be seen (Figure 15)

Figure 15. Trailside Chipped Basalt Marker. The removal of the outer cortex reveals the inner, darker basalt, making a high contrast mark which is easy to see by anyone passing. The angle of the mark and the direction of the rock may provide an additional layer to the messaging system.

and set "upstream" as typically these are set for the eastern traveler going from the Colorado Rover to the basalt procurement areas. The use of chipped basalt boulders may have been for maximum visibility: sometimes at the start of a trail, at the head of a wash, at a trail junction, or just to be certain that the traveler would maintain a particular path. The idea was conveyed, via the contrasting chip, which could then be followed across the landscape, mark to mark. As recorded here as set within the landscape (Figure 16), the chipped basalt boulder ought to be recognized as a viable trail marker type.

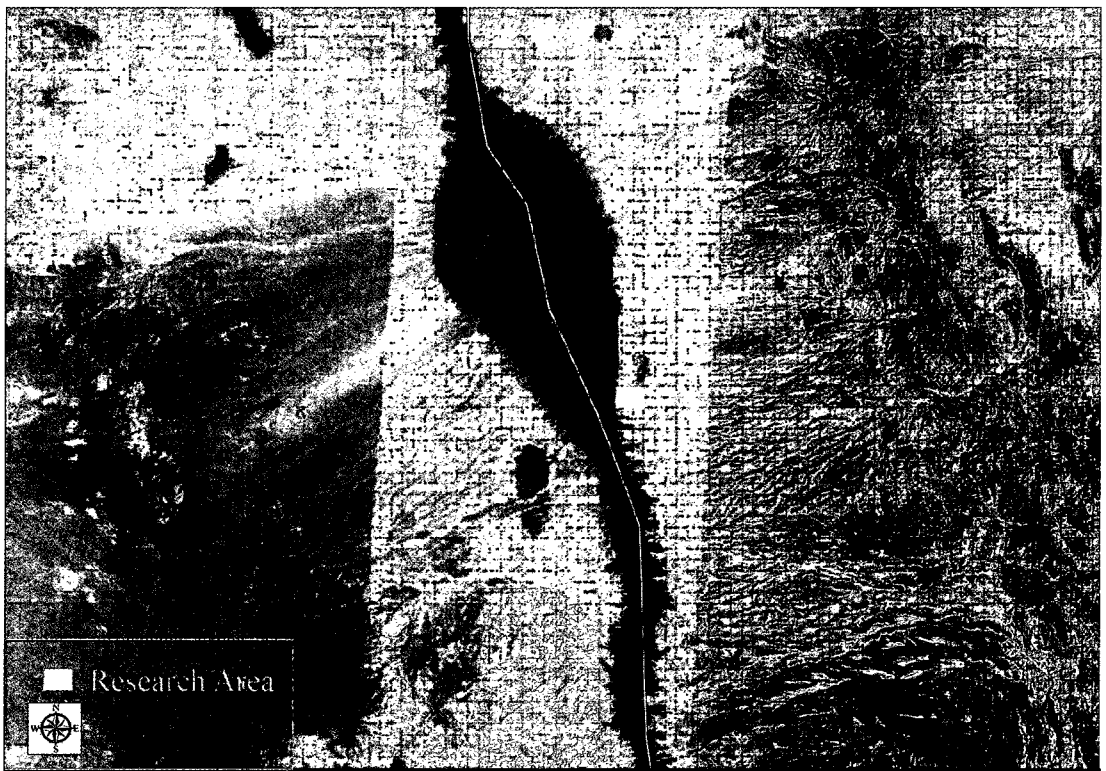


Figure 16. Satellite Imagery of Research Area. The natural drainage patterns shown above through the use of satellite imagery reveal the structure of the Cottonwood Valley. Archeological sites follow the major ridges along the southern edges. Adapted from http://earth.google.com, accessed April 14, 2009.

Correlation of Ceramic Sherds to Place of Origin

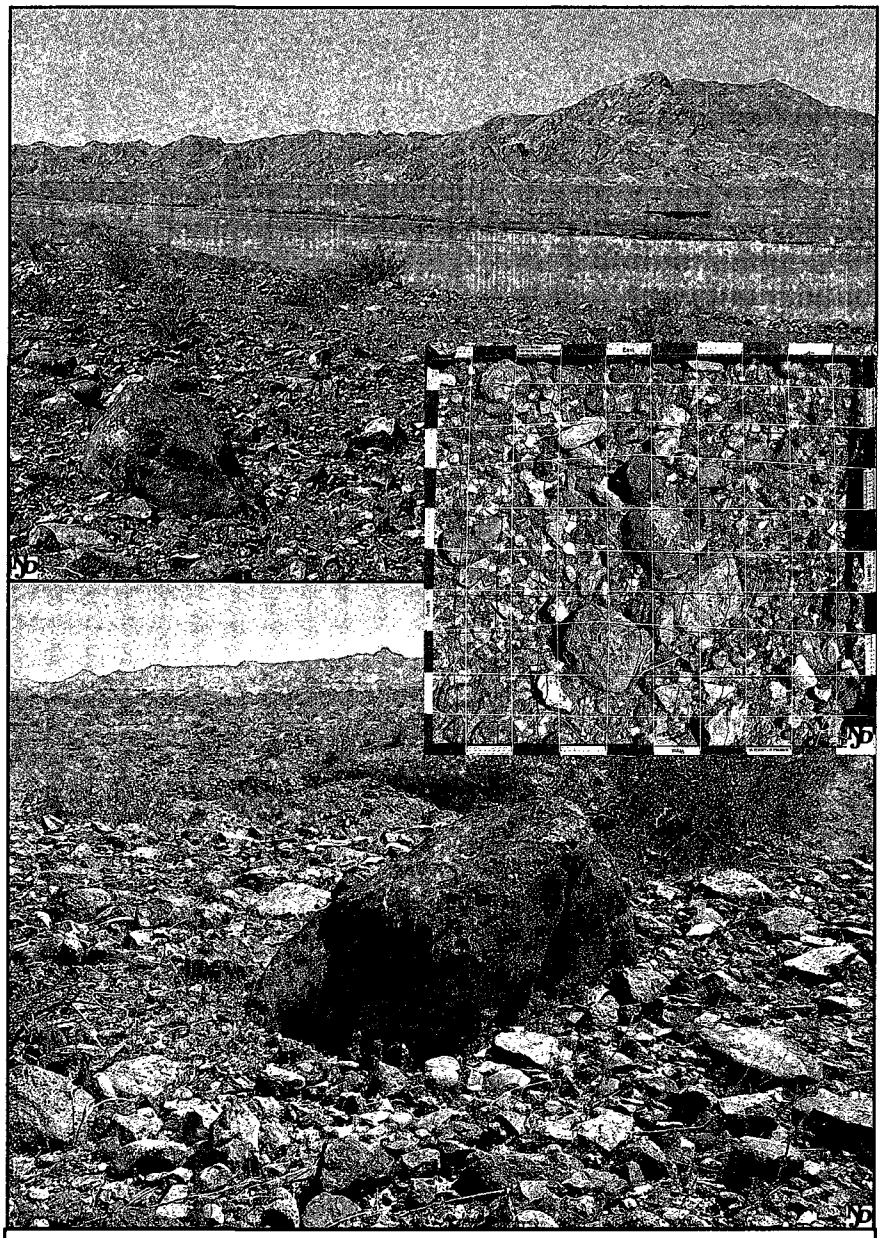
Within the research area, at one site only, the sherds of two small pottery vessels lay broken. In order to analyze the ceramic sherds that I had discovered, I first narrowed the field of possible ceramic typologies to which these could belong. I contacted an expert (Seymour 1997; Seymour and Perry 1998) in the field of ceramics, Gregory Seymour, through the Lake Mead National Recreation Archaeologist, Steve Doron. Greg Seymour examined my digital photographs and field notes, confirmed the opinion I had that these could be Lower Colorado Buff Ware (personal communication 2006). Inconclusive data, though, surrounded the high mica content for vessel two. Just by looking at the sherds and seeing the pictures, it looked like vessel two had a relatively high mica content, which Colorado Buff ware lacks. This threw the equation off balance. It did bolster the concept that vessel two could be an imported or trade ware. Petrographic analysis could help to tell the difference.

Permission was requested through the United States Department of the Interior for an Application for Permit for Archeological Investigations, so that I could collect the samples and do data analysis within the Lake Mead National Recreation Area. Permission had previously been granted for me to do the data collections and mapping of the area as a part of my volunteer archaeological field study, for what I have called the Gemini Project, on-going in the South Basin portion of Lake Mohave. The collection of the sherds was to be done under the auspices of California State University, Fullerton and overseen by my thesis advisor, Dr. Carl Wendt, in order to fulfill the requirements set forth by the Department of the Interior.

Throughout my research, I had come to believe that this area was a nexus for east-west travel, and that the ceramic analysis would help to support the theory. Within the research area, approximately six square miles have been covered on foot. Just about every nook and cranny has been looked into. Each ravine has been crossed and double-checked for cache spots of any type. There simply are no other ceramics to be found. The two bowls in question lie broken at the base of the same slanted rock (Figures 17—19). It seems unlikely that these would have been broken simultaneously. It is possible that the rock was used as a wind-break for a cooking fire: a camp area of cleared circles within the desert pavement lies within a few meters of the ceramic site.

Local Ceramic Making History. The Patayan Tradition of pottery making was first attributed to a Southwestern Hohokom influence by Harold S. Colton; yet Albert Schroeder believed, what he called the Hakatayan (Schroeder 1957) tradition arose in the area with the advent of agricultural subsistence. He claimed that the Yuman speaking peoples used rock technologies for building, hunting, and as a means for food processing. Malcolm Rogers used both the term Yuman and Patayan to denote this same culture and recorded similar attributes, documenting their locations up and down the Colorado River and far into the Mojave Desert to the west. Rogers designated the group living along the Lower Colorado River as the San Dieguito, which he split into three phases (I, II, and III). Yet these terms were not applied to the ceramic-making cultures.

As new discoveries had been made, names were changed by archaeologists and dates pushed back and forth to align and re-establish starting points for the various phases



Figures 17, 18, and 19. Ceramic Site at Slanted Rock. Within the six square mile radius at the base of this one slanted rock, two pottery vessels lie broken and discarded. One, Parker Buff, and Two, Pyramid Gray, fall within the Lower Colorado Buff ware typology and ascertained by petrographic analysis. Meter grid shows the ceramic sherds in-situ at the base of the rock.

of ceramics within this Lower Colorado River region. The time periods used here are those contemporarily defined by the Harry Reid Center (Seymour and Perry 1998:12), which incorporated evidence of ceramic typology changes, population relocations, and the addition of foreign goods within the archaeological record. Patayan I was designated as AD 500–AD 1050. This reflects the approximate time period that Willow Beach was occupied, as denoted by the Pyramid Gray Ware sherds found by Schroeder. He had not agreed with Rogers' analysis and thought that the occupation of the Colorado River's delta region began first in this northernmost area.

Later studies supported Rogers' findings that suggested Yuman habitation did begin in the south and that migration was up-river. The designation Patayan I was given for the period in which agricultural production began to occur along the Colorado River, which was also the time when people became more sedentary. The rise in ceramic production also coincided with the need for storage of harvested crops.

The Patayan II phase of ceramic production is tied to contact with the Spanish, when Don Juan Ornaté first visited the area in the 1600s. Ceramic manufacturing had increased in the Mojave Desert Region of California across the Colorado River as well. The introduction of the paddle and anvil technique tor ceramic manufacturing of Lower Colorado Buff ware ceramics started with more trade and contact (1700s) and continued until the present day.

Dr. Edward Palmer. *Manufacture of Pottery by Mohave Indian Women* provides the first discussion of the pottery of this area with Dr. Edward Palmer's 1867 article. In it, Palmer sheds a highly biased, chauvinistic light on the subject, by describing the ceramic process in detail. He explained that the women began by forming a base of clay on a flat stone and then added coils atop the base, joining each coil as they went. A paddle and anvil technique (a stone on the inside to hold the clay firmly and a wooden board on the outside to shape the vessel) deftly utilized formed an aesthetically pleasing vessel. Height was achieved using successive layers of coils, smoothing the vessel as they worked. According to Palmer, this was done by rubbing the vessel's outside with the potter's hands dipped in water, until all the joining marks were obliterated. Tapping the clay over a rounded stone as it moved around the edge of the last coil, helped to produce the rim. This descriptive article provided an overview of the manufacturing process.

According to Palmer, the women let the work dry and then filled in any cracks with clay, which appeared because of shrinkage. Ornamentations were added with the pointed end of a stick. When dry, the vessels were fired (or burned, as he put it) the same day. Then, the ones that were not used for cooking or holding water were given a salt-glaze treatment and re-fired. In the end, he complimented the women on their work, claiming that although they were "plainly clad and besmeared with dirt, [they] had performed their work well "(Palmer 2005:205). His analysis of the symmetry and craftsmanship put him in awe of the aesthetic qualities of their work, yet this was begrudgingly given through a lens of prejudice.

Malcolm Rogers. One of the first anthropologists to create a ceramic chronology (Appendix 1) for the area was Malcolm Rogers (1929, 1966a, 1966b, 1989), who devoted most of his career to the study of the Southwestern Desert Region. Rogers collected and examined "ethnographic data of technology, ethnobotany, and mythology from surviving Indian groups in Southern California, Baja California, and Arizona "(Ezell 1961: 532), and this ethnological, anthropological background helped Rogers with his archaeological interpretations. He uncovered numerous rock shrines alongside the trails across the desert from the California coast to the Colorado River, and by the superposition of pottery one on top of the other, created the time sequence for its deposition. It was through this process that Rogers created the temporal periods of occupation for various regions across the Southwestern Desert area.

According to reports, he collected approximately sixty thousand sherds and hundreds of pottery examples from across the Southwestern Desert Region. Primarily, his collection is housed at the Museum of Man in San Diego. Rogers sorted and classified these into series and chronologies, examining pastes, tempers, and decorations. Rogers believed that the Yuman culture created the paddle and anvil technique as an independent invention (Gifford 1937:145), which drew criticism from his contemporaries. Yet Rogers was undaunted in his ability to push forward with his theories, even if later some were to be proved in-accurate; they were at least a starting point for consideration. For the area along the Colorado River, Rogers transferred his original designation of Malpais to that of Yuman, based on the linguistic alignment to its so-called "root." Regardless of what they may have been called, the Yumans are the ancestral Mohave of today.

Albert H. Schroeder. From the Black Canyon to the Gulf of Mexico, Albert H. Schroeder conducted archeological investigations along the Colorado River and well into the nearby desert regions. His excavations at Willow Beach showed that this area had been used as a stopping point along an overland trail, with Olivella shells, steatite, and asphaltum being brought through here from the Pacific (Schroeder 1961:104). Puebloan materials were found here from the north. Schroeder also argued that Willow Beach was the starting point for the Yuman cultural manifestation overall. He claimed that finding of the Pyramid Gray Ware ceramics, as well as the artifacts of lithic industry and record of the habitation sites provided enough evidence to support his hypothesis. This was later refuted by archaeologists with discoveries in other areas to the south, which again supported Rogers' earlier claims for a northward migration.

The Pyramid Gray Ware, according to Schroeder, was introduced in the Willow Beach area about A.D. 900 (1961:2). The temper is a crushed "quartzose rock" and contains approximately 35% clear to opaque quartz. Mica, magnetite, and hornblende particles may be seen in small amounts within the matrix (Seymour and Perry 1998:37). While conducting his Willow Beach research, Schroeder tested the Pyramid Gray ceramics using various methods. He tested different organic solutions to see how these would react to being fired in a reducing atmosphere, and they turned gray. He experimented with various local clays and numerous mineral pigments to see how these would react to different firing processes. Additionally, Schroeder noted that the biotite mica content that adhered to the quartz was clearly visible on the outside vessels.

Alfred L. Kroeber and Michael J. Harner. The synthesis of Mohave ideological context, ceramic form, and manufacturing comes with Alfred L. Kroeber and Michael J. Harner's book, *Mohave Pottery* (1955). Kroeber provided the ethnographic background for the work, relating the mythology of the people and the linguistic variations associated with each ceramic type. According to Kroeber, the term, kwáΘki, is used to denote all pottery vessels, but loosely translated, this means bowl.

Kroeber believed that the Mohave never perfected the art of pottery manufacture to the same degree as other neighboring cultures, due to their practice of cremation. Since everything was discarded upon a person's demise, everything was expendable; therefore, nothing was prized. Kroeber saw this lack of investment in the way ceramics were made: the uneven walls, sloppiness of designs, haphazard firings, and lopsidedness (1955:10). It is true they are unique in form, although not lacking in character. Specific patterns were chosen to fill the spaces with surety and if not accuracy, uniqueness. Unfortunately, for me however, neither of the two bowls within the area I am studying has designs of any sort.

Kroeber's co-author, Michael Harner, provided the ceramic analysis for what they termed, *Lower Colorado Buff Ware*, following the work of Colton and Schroeder. They were still in the process of setting up the type and chronological seriations for which Normative archaeologists were most noted. Color was determined using the Munsell Soil Color Chart and hardness tests were completed using Mohs scale. Harner even suggested that his conclusions were only tentative and should be revised as new information came

to light (1955:15). He detailed rim and lip types and described how the depth and diameter measurement of the pot were taken from the outside of the vessel's surface.

Specific for my study, Harner analyzed the Parker Red on Buff Variant and the Fort Mohave Variant that both he and Kroeber discerned within the Lower Colorado River Buff Wares, which is similar in description to Schroeder's typology, but included newer forms as well. It excluded some of the work of Rogers and Colton, though, which seems to have each archaeologist backtracking over one another's work to discover who is correct and who is not in their analysis of chronological sequence and origin.

Vessels, which were analyzed, were described according to the variant to which it was assigned. These were illustrated within the volume or referenced as to its place of repository; its point of origin was designated (these were ethnographically recorded as being taken from the Fort Mohave Reservation near Needles, California); and the time and use and collection was noted. The sample size was seventy-two pieces overall. A record was made of the construction and manufacturing process, as well as the firing procedure. The composition of the ware was determined through analysis of the paste, its color, temper, carbon streak, texture, hardiness, and fracture. The surface finish was then assessed and recorded, followed by the surface color. The exterior of bowls, jars, cups, and scoops were each addressed individually, as these had different characteristics assigned to them by the Mohave potters.

The analysis of fire clouds was then made–pottery type to pottery type–however no conclusions were drawn from the variances between the numbers of fire cloud manifestations per vessel type. For example, the fact that bowls had as many as fourteen

fire clouds, whereas cups had only four, was not commented upon, which is a significant difference. Fire clouds could indicate if a vessel was utilized for cooking, after the initial firing process had occurred which would also produce clouding. Form was discussed, with the profile, lip and rim types, shoulder inclusions, type of base, diameter dimensions, depth, and wall thickness; and any additional features were analyzed for their contributions to the overall composition of the ceramic vessel. Harner's work helped to clarify the Parker Buff and Fort Mohave Variants.

Michael R. Waters. Michael Waters was one of the first archaeologists to revisit the work of his predecessors. He went to the sherd collection held in Museum of Man in San Diego to study the type classifications made by Malcolm Rogers. Important to my study is the review of the Parker Buff ware initially made by Rogers and reviewed by Waters. It seems to be one of the closest matches to one of the sherd types that I have discovered. This type, however, is found primarily in the Parker Valley. It is found as far south as the Bill Williams River and to the Yuma area. It is also located a short distance along the river valley and into the desert along its eastern and western peripheries. Progress was made to update the classifications by narrowing the type from seventeen to nine of the list of ceramic typologies that were assigned to specific cultural groups or localities. Clearly, the work in this area was still unfinished.

Greg Seymour and Laureen Perry. Working contemporarily in the Southwestern Desert Region, Greg Seymour and Laureen Perry have strived to document the entire ceramic collection for the Harry Reid Center (HRC) in Nevada. This houses collections by Harrington, Warren, Crabtree, and Colton: all pioneers in this area. Seymour and

Perry have also worked to correlate these findings to those of Waters' so that there will be some continuity between and among chronologies for the Southwest. The HRC sorted the ceramics into ware categories based on color, manufacturing process, attributes (temper, treatment, and decoration), and various other characteristics such as cultural identification if it were known. The compilation of all the data into an easier-to-read and follow format makes sleuthing for the proper ceramic match a little bit easier. The gap narrowed considerably between the known and unknown ceramic types.

Rock Art for Avikwáamé

Contextualizing petroglyphic imagery within its anthropological and archaeological settings for some is a difficult construct. In order to appreciate the significance of the imagery pecked into the boulders within the research area, an understanding of rock art in general needs to be held, balanced with a deeper knowledge of rock arts' connectedness to shamanism (Heizer and Baumhoff 1962; Schaafsma 1995; Whitley 1996, 2001, Lewis-Williams 2001; Turpin 2001). The study of Native American rock art has undergone some dramatic changes since its inception. Rock art research, including petroglyphs (incised, carved or pecked symbols through layers of desert varnish), pictographs (painted symbols and imagery), and geoglyphs (environmental modifications of patinated desert surfaces to show symbols or imagery, which may also include rock features as integral parts of their display) has changed along with the course of anthropological studies. According to some, rock art shows similarities between the technique used and, the execution of design. For example, heavier lines are more labor

intensive, yielding painstaking records and thin lines are quicker, reaping easier-to-make marks or hatchings. Current studies show that the neuropsychological attributes of rock art imagery relates to entoptic designs (See Table 1), which are a part of universal experience (Lewis-Williams 2001:336). Some also claim that rock art produced utilizing such imagery may be shamanistic in origin (Turpin 2001:405). Other studies indicate that it is the placement within the landscape, in addition to its symbology, that makes some rock art "sacred."

Heizer and Baumhoff presented *hunting magic* (1962:11) as one reason for rock art's production, stating that it took too much valuable time away from modes of subsistence to bother with it, if there was nothing to gain by making the of petroglyphs. The Mohave were practitioners of shamanism. Some specialized in the care of the warriors or *kwanami* (brave willing). Others cared for arrow wounds, snakebites, prized scalps, or acted as ghost doctors (Stewart 1971:431-444). A Mohave *dreamed* himself to become a shaman.

Julian Steward (1971:148-9) recorded the nearby Grapevine Canyon and specifically noted its characteristic, rectilinear symbols. These geometric-like designs originated here and the incorporation of this style may be seen on petroglyphic boulders as far away as Mexico. David Whitley (1996:128-131) noted Grapevine Canyon in reference to its Mohave Origin Myth and its use of entoptic designs within the petroglyph symbols. He clearly stated that these have Yuman origins, yet did not disclose his source for this vital bit of information. According to a Mohave elder, Lew Barrackman

(personal communication 2005), "The Mohave do not know how the symbols came to be there. They have always been there."

There is a mixture of symbols at the Grapevine Canyon site: curvilinear, rectilinear, and naturalistic, and these have been created over a great deal of time based on superposition of glyphs and deposition of materials nearby (Stewart 1971). Whitley (1996:130), reinforcing Kroeber's remarks along the same lines, proposed that these petroglyphs may have been produced as a part of the shaman's dream-cycle, to discover his or her sequence within the Mohave origin myth. There is some record of this type of dream activity within the ethnographic record:

> The most crucial factor in shamanistic power dreams is the role of myths, especially the Creation myth, which establishes a set of precedents for everything that happens in human life. In Mohave belief, the future shaman dreams of that portion of the Creation Myth, which pertains to his future specialty, while still in the maternal womb. However, even shamans who specialize in the same kind of cure do not necessarily have identical dreams. Their dreams will, however, fit the general pattern of the pertinent portion of the Creation Myth (Devereaux 1957:1039).

The Mohave placed such an emphasis on dreaming, that actual, acquired learning was not valued as highly (Kroeber 1976:754). Even the positions of chief and *kwanami* warrior were thought to be acquired through "proper dreaming." Dreaming played such a vital role in the lives of the Mohave, that many early ethnographers thought them to be idle, while others thought them to lead idyllic lives beside the river.

Entoptic Imagery. Inner-eye designs or entoptic imagery, such as grids, sets of parallel lines, dots and flecks, zigzags, nested curves, and filigrees of meandering lines comprise the six major groups of rock art icons. "Visual sensations derived from the

structure of the optic system anywhere from the eyeball to the cortex" (Lewis-Williams 2000:339) may be seen in the earliest stages of trance. Although it may seem that some petroglyphs were made primarily as trail markers, the symbols seen may originally have been within an altered state of consciousness (ASC) for more ideological purposes. Trance induced imagery, related to petroglyph making, may be a part of a vision quest experience or a shaman's ritual (Whitley 1996, 2001).

Rock Art of the Southwestern Desert. Julian Steward began the first serious studies for rock art dating in the Southwestern Desert region in the 1920s. Most researchers of the time period related stylistic types to changes in culture or cultural groups. Some researchers have claimed (Schaafsma 1995; Steward 1971) that the pecked petroglyphs are the oldest and are pre-Numic in origin. Others promote that argument also by stating it is because of the Numic Spread that the scratched style permeated across the Southwestern Desert region, citing cases where these have been superimposed atop the wider, pecked glyphs. Others now believe that the Numic-speaking southern Paiute were possibly creating both petroglyphs and pictographs, although at present their variations are difficult to distinguish from other groups (Loendorf et al. 1999:7) like the Hualapai and the Mohave.

It is the difficulty in discerning if a petroglyph were indeed made by a Numic speaker or a Yuman individual, for what would be the difference? That is where the argument lies for most researchers and that is why the debate is still on-going as to whom may have made the scratched or pecked styles in the tri-state area. Within the research area, it appears that the scratched style is newer than the pecked, by the placement of

thinner lines atop the wider pecked marks. This would support the idea that these could have been made by the later arrival of the Numic-speaking Southern Paiute. Yet relative dating of other styles has been questioned, as researchers (Loendorf et al. 1999) now think that the curvilinear, rectilinear, and representational motifs may all have been created as a part of the same rock art tradition.

Julian Steward created traits lists of the rock art panels he had seen in the 1920s. He categorized styles according to design elements, determined now to be entoptic patterns. Stewart's oldest curvilinear designs consisted of circles, wavy lines, and connected circles in a meandering fashion. His estimations of age based on the superimposition of "newer" styles upon older images. The curvilinear designs, he termed *archaic*, and these comprised the greatest number of images seen on rock art panels in the Southwest. A hammerstone and chisel (typically another, more pointed rock) pecked the designs through the desert varnish on the surface of a selected boulder or outcropping. Typically, individual "blow" marks provide evidence for this type of manufacture. Curvilinear designs seen within the research area at Split-rock, Mullion, and the Petrified sites represent many of Stewart's *archaic* patterns.

Heizer and Baumhoff's work (1962) provided insight into understanding some of rock art's conceptual ideals and was used as a guide for its research for many years. The authors tried to categorize and deduce meaning for the symbology used. Drawing from the earlier work of Julian Steward, among others, the authors offered a compendium of rock art sites for the Southwestern Desert region, which they had outlined. At times, ethnographic data was brought in, yet not discussed for its completeness nor interpreted

for its informational value. Most of the panels Heizer and Baumhoff reviewed were simply reduced to records of "hunting magic." What they did provide, was a new opportunity for analysis of the petroglyphic symbols:

> If hunters or shamans were the persons who actually pecked the designs on the rocks, and if (as we suppose) they did so as a part of a ritual connected with hunting, then the symbols may be highly individualized, a hunter or shaman applying those particular symbols which seemed to him to offer the greatest opportunity for success in the coming hunt. There remains the fact, however, that certain designs (lizards, mountain sheep, grid, rake, connected circles) occur over a vast geographical area, and some genetic (historical) connection must be presumed to account for this distribution. There seems, therefore, to be a generic petroglyph-making complex which is probably one aspect of an ancient and widespread hunting pattern (1962: 281).

Heizer and Baumhoff ultimately proved a dichotomy existed between earlier Boasian desires to attribute culturally specific meanings to rock art and the author's more genetically specific and systematic construct of it. They had made such a dramatic leap to its influence, yet had so narrowly focused on "hunting magic" that they lost sight of other possible theoretical models. Much of the work written directly after Heizer and Baumhoff reflected this all-inclusive theory (Whitley 2001:15), whether sites were utilized for these purposes or not.

Since the Heizer and Baumhoff research was published, others have made the physiological connections between neuropsychological entoptic patterning and rock art design. Spurred on by legislation regarding Cultural Resource Management (CRM), archaeologists finally began to take a critical look at the rock art record. Accordingly, "all cultural resources were equal under the law, at least once they were defined as significant, and no plausible argument could be

constructed to deny rock art sites such significance" (Whitley 2001:19). Mandated research and salvage archaeology efforts began in the late 1960s. Researchers looked into both the written and implied histories of the rock art studied. Stylistic variations were shunned in favor of an ethno-historic approach. How could things of the present be related to things of the past? This Post-Processual theoretical approach lead to research about landscape utilization practices and thoughts about how the selection of sites within certain areas may be related to the overall ideological construct of the people who created rock art.

During that time, some full-color books were published, which showed the artistry of the rock sites and art symbols (Martineau 1973), yet these lacked scholarly direction. Although authors provided some information regarding rock art in general, there was no specific analysis undertaken of its content. What was revealed, however, was that the documentation of rock art through non-scaled drawings may or may not have replicated the original works. This meant many of the early, and even some current, rock art research studies, which had relied on such field sketches for the understanding the symbols portrayed, were inaccurate by association. Any drawing had abstracted the work from its environment and typically isolated individual symbols or panels to create specific inferences without reference to its location within the landscape and cosmology of the people who created them. In some cases there were no records or documentation to search through and no one of whom to ask questions.

In the early 1990s, Polly Schaafsma provided a different, transitional look at rock art sites of the Southwest. Although earlier authors had used a Normative approach

towards archaeology by developing trait lists of similar styles, Schaafsma's goal was to show connections between rock art sites and the unique cultural frameworks for their creation. Ethnographic data were accumulated to support her findings. She also noted the phases of rock art types, but she used those to show correlations between subsistence modes, such as hunting versus gathering or farming, instead of compartmentalizing these into categorical isolates. Her work *Indian Rock Art of the Southwest* (1995) was written prior to the anthropological advent of the neuropsychological models for the understanding rock art's creation. Thus, even though Schaafsma's approach pushed the ethnographical aspect of rock art into forefront of its research, it was not until the combination of symbol, site, and individual takes place that a greater understanding behind the phenomenon of rock art's creation began to unfold.

Evidence gathering in regards to rock art sometimes hampered anthropological research (Loendorf et al. 1999). The tactics incorporated to obtain information regarding the creation of rock art actually hindered the research efforts to discover its true meanings. Anthropologists not sensitive to the sacred concepts which surrounded such iconography may have led interviewees to obscure or deny the existence of rock art within its cultural context. This, in turn, led anthropologists to then believe that the work was prehistoric in nature, when in some cases it may have been contemporary. Support for this theory may be seen in the horse and rider figures that are seen in some areas of the Southwest, which would have been inscribed only after contact. Yet some local groups claim no knowledge of the artwork or its makers, even when these may have been the sole inhabitants of the area for centuries.

Local Rock Art Manifestations. Within the cultural boundaries of the Mohave, several highly noted rock art sites exist (Figure 20), such as those at Grapevine Canyon (1), Hiko Springs (2), Davis Camp (3) and Willow Beach (4), yet others seem to remain unnoticed and undocumented. Petroglyphic rock art sites within the Mohave cultural region may have been chosen for their ideological sacredness, prominence of placement, or as informative locales within the landscape. To understand what may be inferred from the symbols utilized, one must look to the overall landscape and cosmology of this group.

Grapevine Canyon. Across the river to the west of the study area on Avikwáamé is Grapevine Canyon (Figure 20), believed to have been where the first manifestations of the rectilinear style (Steward 1971:148) were made.

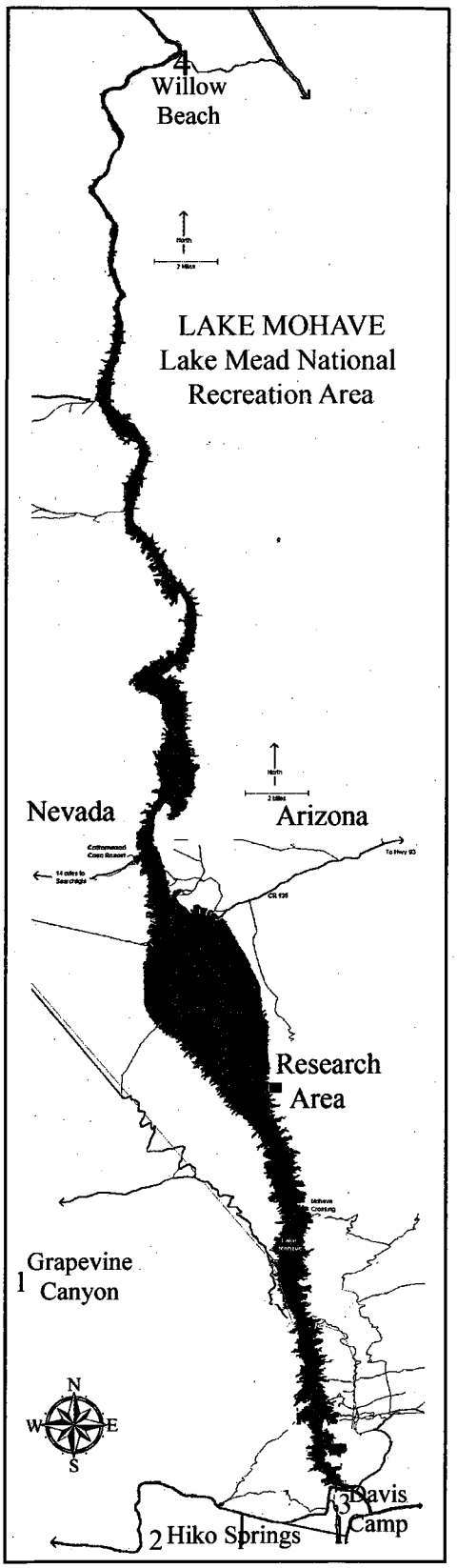


Figure 20. Rock Art Sites. Grapevine Canyon (1), Hiko Springs (2), Davis Camp (3), and Willow Beach (4). The major rock art sites are seen in relation to the research area. Adapted from http:// www.riverlakes. com/ mapslake_ mohave. htm, accessed October 15, 2004.

These are located in an area where a part of the creation myth of the Mohave takes place. Grids, cross-hatching, and angular motifs were assigned to this category. According to Steward, these geometric elements were incorporated as far away as Baja California. Grapevine Canyon also has petroglyphs of big-horned sheep, claimed by some to be the work of possible rain shaman. Few human figures are seen at this location too. These have been created utilizing stylized features to represent heads, hands, bodies, and feet.

Steward tried to correlate his findings to local groups, yet in a telling passage, he noted "that whether these were done by the same people or for the same purpose as the older ones, we can probably never know" (1971:232). Furthermore, he claimed that unless more detailed studies were made or ethnographic accounts came to light, little could be done to interpret rock art meaning. This leaves his book only as an attempt to document stylistic variations within selected, bounded, cultural areas, isolating the rock art from the peoples who created them. This was not done by choice, in this case, but because access to ethnographic data was at the time unavailable to him.

Willow Beach. A long, dry period follows Steward's work, in which a scant amount of rock art was anthropologically examined within this area of the Southwest. Albert H. Schroeder's (1961) analysis of the Willow Beach site is an exclusionary account, at best. Working within a Normative theory base, Schroeder set up phases, traits, and horizons for this camp, which is along the Colorado River, approximately thirty-five miles north of the current study site. The earliest recorded materials from this area are diagnostic point types similar to what was found at other Basketmaker II sites,

approximately 2200 B.P. in Northwestern Arizona. Pottery Horizons at Willow Beach began during what Schroeder termed its Roaring Rapids phase, the highest level of the Colorado River. In this, intrusive styles, as well as the regional Cerbat Brown Pottery types, were found at the lowest statigraphic layers.

Schroeder's first mention of "rock art" was striated, scratched slates, which may have been used for adornment. These were portable and seemed to have been most prominent during what he termed the El Dorado Phase 1500 B.P.) of the site. Within the Willow Beach Phase at A.D. 900-1150, more visitors passed through the area, including the Mohave from the southernmost parts of the Colorado River. During that time, trade was more prevalent, as evidenced by the inclusion of "steatite, asphaltum, turtles shell rattle, and Olivella shell - trade material from California which had undoubtedly reached the Colorado River via the Mohave Desert "(Schroeder 1961:104). By 1150 A.D., a Shoshonean Paiute band inhabited the Willow Beach area.

Entirely lacking from Schroeder's work, though, is the examination of the petroglyphs, which had been pecked into at least a dozen of the larger volcanic rocks in the Willow Beach area. The engraved symbols stand out from the darkened patina of desert varnish. Schroeder would have had to consciously leave these out of his research, as they are prominently displayed within the habitation/excavation areas where he had been working. It is a testament to the "Processual" bent of the archaeology of that time. If it wasn't scientific, it was typically overlooked. When treated at all, these were thought "epiphenomenal, which is to say derivative in origin, secondary in importance,

and analytically irrelevant" (Whitley 2001:16). Given this scenario, it is no wonder that the rock art panels of Willow Beach were overlooked by Schroeder.

Davis Camp. Patinated boulders, which are located on a slope of the southwestern facing shore line below the current Davis Dam, are covered with petroglyphs from an earlier time period (Baldwin 1948). Wide, pecked glyphs cover the surfaces with meanders, grids, rakes, and zigzags. According to David Whitley (personal communication 2000) these were more than likely created as a part of male puberty rites, as opposed to shamanistic trances. This area sits just below the place where, according to a part of the Mohave Creation Myth, the home of Mastamho lies on Avikwáamé.

Scratched Petroglyphs. Numic incursion into this area has been documented in relation to the finds at the Willow Beach (Schroeder 1961) and Vanuku (Kelly 1934), which provides a temporal placement for this culture within the study area. Studies, however, for specific petroglyphs at Vanuku are lacking. Scratched petroglyphs at other sites have been attributed to the "Numic Spread" and claim this due to the super-positioning of newer motifs over older styles, therefore making them "relatively" younger in age. But the debate is still on-going as to the absolute accuracy of this style of dating (Whitley and Dorn 1987:151-152) and to the assigning of cultural affiliation accordingly (Christian and Dickey 1998:36). Accuracy in some timelines for the area has been established due to associated cultural remains, which have had minimal carbon dating verifications completed to date. Other artifacts have acted as time markers to produce temporal associations for various sites within the region. All of these have been taken into account during this research project.

Sites which contain scratched petroglyphs lay scattered across the landscape in the Southwestern Desert (Loendorf et al.; Schaafsma 1995) region. The Grapevine Canyon area has no scratched petroglyphs and neither does Davis Camp. However, located within the research area several boulders covered with scratched petroglyphs lay. Scratching, produced from a sharp, pointed object, creates lines that are drawn typically vertically and horizontally across the panel's surface through the layer of patina or desert varnish. In some cases within the research area, scratching occurs on boulders, which curvilinear and rectilinear petroglyphs had previously been pecked, as these sometimes over-lap the older designs. Incised lines are notably much narrower than those produced through the pecking process. Typically parallel lines, rakes, or hatching are produced using this method; more intricate patterning has not been noted in the area or within the literature.

Lithic Analysis and the Archaeological Record

Lithic analysis has been a focus of archeology for more than a hundred and fifty years. John Evans first made observations about tool formation (1866:242) and the refitting of lithic debitage to its core or nuclei (1899-1900:486), when the Antiquarian Archaeology method of amassing collections was at its height. He discovered the similarities within the tool shapes between cultures–one of the first archeologists to make these connections. Evans examined the tools themselves to find evidence of secondary flaking and edge-wear damage (1869:46-47), and he made lithic discoveries alongside the faunal remains of Pleistocene animals (1896-1897:20). These early discoveries helped in

the development of lithic analysis as a discrete research discipline within the field of archeology.

Later researchers began to concern themselves with the morphological and chronological aspects of lithic industries. Using these as a basis for theory, archaeologists would try to "translate the present into the past by collecting artifacts into groups, and naming those groups as archaeological culture. . . [and] then make the equations between an archaeological culture and a human culture by making the assumption that artifacts are expressions of cultural ideas or norms " (Johnson 1999:17). Normative archaeologists generated long lists of artifact types and developed chronologies for the appearance of these within the cultural record. In looking at the theories utilized during that stage of lithic analysis, modern researchers may scoff at those practices. However, in looking towards this developmental stage of archaeology in general and lithic analysis in particular, one may begin to understand why these methods were employed.

In seeing the lists of trait types and developmental chronologies, it must be observed that the artifacts need to be described and identified in order to be useful to the archaeological research undertaken. Mary Leakey (1981) assigned diagnostic names to the earliest of tools yet discovered: polyhedrons, diskoids, and subspheroids, as well as used choppers, scrapers, and burins to describe our primary toolkit. By dating the lithics, normative archaeologists created temporal types, which could then be used as time markers of the past (Thomas and Kelly 2006:212).

Some of these morphological studies, however, have now proven to be problematic. Early archaeologists, believing that *form followed function,* had assigned many early discoveries into spear or arrow classifications because of point technologies. In looking microscopically at some of these so-called types, modern archaeologists have now discovered that many of those previously labeled as projectiles had never been utilized in that manner (Odell 1988:350).

A shift in the focus on lithic analysis began when anthropologists started examining the way in which all cultures evolved through dynamic changes in hierarchical levels of power and subsistence distribution, with the various modes of ideological manifestations included as well. Examinations of civilization using *systems*-based theories were projected, using cultural trajectories from basic through complex stages of development. It was within this context that the linked cultural usages of tools were outlined. Rationally explained, if all cultures passed similarly through distinct phases, then all artifacts of culture would also demonstrate similar changes in technology, lithics included. Tool schematics were developed to show these cultural progressions.

Examinations of artifacts additionally changed when New Archaeology or Processualism (Binford 1983; Johnson 1999:18-20) came into the forefront of research. Archaeologists then utilized science as the tool for understanding cultural phenomenon. With this, lithic analysis gained prominence in American in the 1960s, modeling the Russian S. A. Semenov's (1986[1957]), use-wear theory. The edges of stone tools were tested to discover abrasion reactions with different materials. Semenov had conducted his experiments with various types of minerals and the object densities, such as sinew and

bone. He recorded how the different use-wear patterns were inscribed onto the blade. The English translation of his book, *Prehistoric Technology* (1986), brought his work into the global arena. American archaeologists tried to replicate his methods, but unfortunately this came to the point where flintknapping practices and other types of experimentation outweighed archaeological fieldwork for many years.

Experimental Archaeology found favor in these lithic studies and a preponderance of new methods for its incorporation was created (Odell 1996:1). Microscopes, to enlarge specific areas to study, were utilized in conjunction with dyes to highlight conchoidal markings and edge-wear fractures (Tringham 1974). There was a reintroduction of knapping practices, which aided in the data-driven, scientific understandings of lithics. Unfortunately, it seemed that the researchers had moved away from the ethnographic information and cultural affiliations of the people who had created the stone tools and other artifacts and these had been utilized. They focused primarily on aspects of geological processes in rock formations and characteristics, impact analysis and fracture qualities, and knapping technologies instead.

A paradigm shift occurred and Post-Processual theories formed, when Ian Hodder using computer-generated data, demonsrated that there were many ways to arrive at the same conclusion; this was termed *equifinality*. It was argued by Post-Processual Anthropologists, that "material cultural should be seen as meaningfully constituted (Johnson 1999:101)." This meant taking into account the ideological constructs pertinent to the unique and individual cultures studied. Science, by itself, could not provide the answers for culturally driven phenomenon.

Therefore, in looking at the lithic record one was required to see past the easier answers. A pointed object was not always an arrowhead. One had to additionally examine how the artifact might have actually functioned within the cultural context, complete with its possible ideological ramifications. Although assumptions about the prehistoric artifacts could not be proven as *truth*, relational inferences could be made if the context with which it was created and utilized was similar to its manufacture and use in the present.

Many archaeologists had been using ethnographic data to make such correlations between artifact types and cultural usages. Most, however, did not incorporate the ideological context nor take into account the environmental construct of where it was made or its locational placement. For this study, both the scientific data and anthropological aspect will be examined in order to obtain a more complete picture of those who utilized the landscape within the study area.

Lithics within the Southwestern Desert Region

Some of the earliest studies within this section of the Southwestern Desert Region were conducted by Malcolm Rogers (1929, 1966a, 1966b, 1989), Campbell et al. (1937), and Albert H. Schroeder (1961) who examined the lithic record and created chronological timetables for its occupation. These were based on the morphological characteristics of lithic artifacts. Using these and updated time references based on later archaeological studies of this area, an overall pattern for subsistence and procurement. Malcolm Rogers, though, seems to have been the only one to have reported Malpias (Patayan I) and

Mohave finds within the Cottonwood Valley, where the research area lies. Although Tavuku is noted by Elizabeth Kelly (1934), I have found no archaeological records of the Paiute village mentioned in her writings.

Rogers began his studies of the Southwestern Desert Region in the early 1920s. Central to Rogers' theoretical approach was the chronological and morphological changes found within artifacts. Rogers had collected thousands of lithics, pottery, and other cultural materials from across the Western Desert (Warren 1966b:4); so many, in fact, those who followed had difficulty in examining the sites he had once visited. According to a published Native American Graves and Repatriation Act (NAGPRA) report, the Museum of Man recently (1999:1-4) had to return 1,509 grave goods, which Rogers had excavated. With these and other artifacts, Rogers worked to develop an historical approach for his research, as he wanted to show how cultures existed previously and to explain how they developed over time. This concept of fluidity was a radically different approach than that of his predecessors, the Antiquarian archaeologists.

Rogers kept records of all of his work, complete with statigraphic and lithic drawings, photographs, and journal entries. He cross-referenced these to denote the similarities and differences in what he had discovered. In his work, *Early Lithic Industries of the Colorado River and Adjacent Desert Areas* (1989), Rogers divided the three cultural sequences of the Southwestern Desert Region into the Malpais (earliest), Playa I, and Playa II, respectively. On completion of his San Dieguito River excavations, however, he changed these names to San Dieguito I (B.P. 4500-3000), II (B.P. 3000-

2000), and III (B.P 2000-1500), to reflect a more accurate alignment of these cultures to what he believed was their place of origin in the southernmost part of California.

These designations were based on his understanding of how tool types changed over time and how the variations in housing structure and their placement indicated age and site usage. The lithic types Rogers enumerated, when classified as hunting technology, were used to determine long-term or seasonal occupation of sites. He based this on the recovery of lithics types. The earliest expressions of these types were first manifested in the proximity of the San Dieguito River drainage areas in Southern California.

Rogers utilized the morphology of the lithics to denote changes in cultural sequencing, as datable associated materials were not present within the statigraphic records of the sites studied. He applied these same theories to his studies of ceramics, most notably by uncovering the rock shrines alongside the trails which dotted the landscape across the desert. He believed that he could trace cultures back in time by the placement of the superposition of ceramics one on top of the other.

Within what is termed as the Western Lithic Co-Tradition (Davis et al. 1969:9), the earliest manifestations of the archaic stage seem to have begun at the Harris Site in San Diego County at approximately 8500 B.P., which had been first excavated by Rogers in the early 1900s. Obviously, it would have taken time for this tradition to diffuse to the Colorado River area. The precise dating for arrival along the Colorado River delta is still debated. Ultimately, Rogers divided the artifacts of the region into three distinctive phases and called them the San Dieguito I, II, and III, based on his finds along the San

Dieguito River in Southern California. In his later writings, he changed his estimations of occupation for these areas several times, starting with 4000 to 2800 B.P. and finally agreed with other archaeologists that these might be even more ancient (Warren 1966b:18).

However, as he changed his position on the different dates of occupation, he also changed the names he provided for the same peoples. This caused confusion for the archaeologists who followed and became one of the highly contentious points of his writings. Today, archaeologists refer to the ceramic cultural phases in this area as Patayan I, II, and III, terms which Rogers long argued against. The lithics referred to in this research are based on Rogers' work in this area, so his San Dieguito I, II, and III designations will be referred to first (not his earlier "Scraper-Makers" and then Malpais), and then the Patayan identifiers will be added for further clarification, where needed.

CHAPTER 4

FIELD METHODS AND GIS

Research Methods

Accomplishing reconnaissance of the six square miles of the research area on foot was systematically addressed. At first, all main ridgelines with their accompanying trails were walked terrace by terrace to visually inspect each area for indications of human impact. The area is relatively barren and changes in coloration of soil, rock type, or placement of objects within the landscape is readily noticeable. Meter by meter, each terrace was canvassed in a north-south and east-west over-lapping of inspection to be sure that each area had been seen at all angles of lighting, so that nothing might be missed. All cave-like openings in the cliff-faces, which could be reached, were looked into, and each crevice examined. Rock piles of all sorts and sizes were minutely inspected for hiding places of any sort, looking for what Malcolm Rogers called his "trail shrines." Nothing resembling those were ever discovered. I recorded trail markers, rock features, stone tools, lithic debitage, and circular clearings. These rounded depressions in the desert pavement, presumably the remains of indigenous brush shelters, were only recorded if associated stone tools or debitage to indicate human origin were also found in the same vicinity.

In the areas where downward-cutting washes were noted through the use of a directional trail marker type, the wash area was also especially explored to seek signs of human passage as well. In some instances, additional trail markers had been set to follow across the landscape; in others, trails led to lithic procurement areas. Downward-cutting washes were marked more often closer to the river, for safe passage off of the ridgeline before the sheer cliffs were met. Some downward cutting washes were not navigable.

Next, smaller ridgelines with their corresponding terraces and washes were inspected. Each area of the landscape, which could be walked without peril, was inspected. In various places throughout the landscape, eroded hillsides of valley gravels (Chronic, 1983:34) make passage down the "slippery slopes' nearly impossible. In other areas, side canyons formed by the westward flowing waters of earlier eons have the same sheer cliffs as the current Colorado River. Each area of the terrain, which could be walked safely, was inspected.

On the first visit to a site, I recorded the data onto a corresponding field map, took photographs, and established journal entries to note any identifying features. On subsequent visits, I drew one-meter scaled maps of the sites and showed their relation to trails and markers. Taking four meter sticks, I had joined these, end-to-end, to form a square meter. The opposite meter sticks held strings set at each ten centimeter markings, so that when the sticks joined, these formed the needed grid pattern. Additionally, I drew the petroglyphs using a ten-centimeter, square grid increment scale. I took photographs, both film and digital, of all sites.

Utilizing a hand-held Magellan Global Positioning System (GPS) I first entered all of the coordinates on location of the 145 "sites" and features within the research area. These 145 "sites" have been plotted individually, as these provide the overall data needed to support the trail marker hypotheses proposed within this thesis, as well as identify this area as a well utilized east-west travel corridor, which may be linked to earlier trade routes. Under the guidelines set forth by the Arizona State Museum (ASM), the sites are the "physical remain of past human activity which are at least fifty years old" (1995:2). Furthermore, the artifacts of a single class (i.e., lithics or sherds) must be in excess of 30, stemming from one source, and contained within a fifteen meter diameter. Of these 145 "sites," approximately thirty percent will be processed for inclusion into the ASM records. Twenty-six lithic stations, seven workshop areas, seven petroglyph sites, seventeen camps, and one ceramic site will comprise the "official" list to be submitted to ASM. However, all 145 will be recorded onto the LMNRA area GIS logs, so that the archaeological data for the area will be updated. The Park Service has on ongoing effort to identify all cultural resources utilizing this technology, and this information will extend the knowledge of the South Basin area now lacking.

Field names were given by me for each of the sites, which at the time I felt best described what I was observing. I used a small, hand-held Magellan Explorist 500, with an even smaller toggle switch to use for data entry: zigging and zagging back and forth to enter the letters of the alphabet to name things. If I knew then what I know now, I would have spent more time toggling in descriptors. This data was then uploaded onto computer-generated maps to show the precise locations of sites and artifacts within the

landscape. I generated detailed maps referencing the 145 waypoints using the ArcMap software program from ESRI. These waypoints helped to locate sites and artifacts within the landscape, so that additional data analysis could take place outside of the field environment. The inclusion of this type of technology greatly enhanced information, both visually and with a higher degree of accuracy.

The use of spatial analysis within a GIS framework, moreover, provided a wealth of knowledge for understanding the travel patterns within the research area. This analysis involved the relationships between features formed from the datasets located on the layers of the digital map. Spatial analysis of these features was made within the data layer, layer to layer, and layer to topography and to other map types, which were also located within the selected GIS program. I was then able to see certain site types in relation to each other. This analysis also provided for a deeper understanding of the relationship between features and the terrain. Placement of trail markers in relation to downward cutting washes, the locations of chipped basalt boulders along the course towards procurement areas, and the staggering of petroglyphs across the landscape are just a few of the relational datasets which may now be viewed with the aid of GIS.

Determining the relationship between the zone distribution of trail types (travel, procurement, and possible vision quest), trail markers (petroglyphs, rock alignments, stacked rocks, directionally placed rocks, rocks of differentiated color, and chipped basalt rocks), and drainage patterns will help in the documentation of specific marker types. Sites along the trails, such as circular clearings, lithic scatters and workshops, and other

manmade features may all be taken into account, as well as their relation to the Colorado River and drainage features.

Different types of GIS buffering was utilized to obtain pertinent data, such as noting if chipped basaltic boulders, which I have recorded as trail markers, had indeed been used as guides to basalt workshop areas (Figure 21). GIS helped to define feature placement, denote spatial relationships, and record all of the sites within an interactive mapping program.

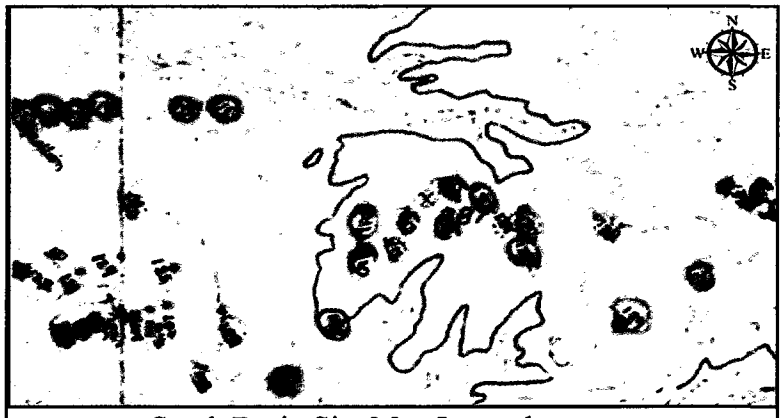


Figure 21. Chipped Basalt Trail. The chipped basalt markers may be followed like a "trail of bread crumbs" across the landscape to the lithic procurement areas. Adapted from USGS Topo,1959, http://store.usgs.gov/b2c_usgs/usgs/maplocator/(xcm=r3standardpitrex_prd&layout=6_1_61_48&uiarea=2&ctype=areaDetails&carea=%24ROOT)/.do. accessed August 18, 2004.

Placement of sites within the research area has been along a well-travelled segment of an east-west travel corridor. The Mohave traded clay figurines for olivella shells along California coast (Koerper and Hedges 1996) and Rogers (1966) mention the extensive trail systems which the Mohave utilized for their travels across Southwestern States. The study area is but a microcosm of the grander Mohave world. Based on the trail markers left as guides, a greater understanding of the people who utilized this Southwestern Desert region may be gained from the research provided herein.

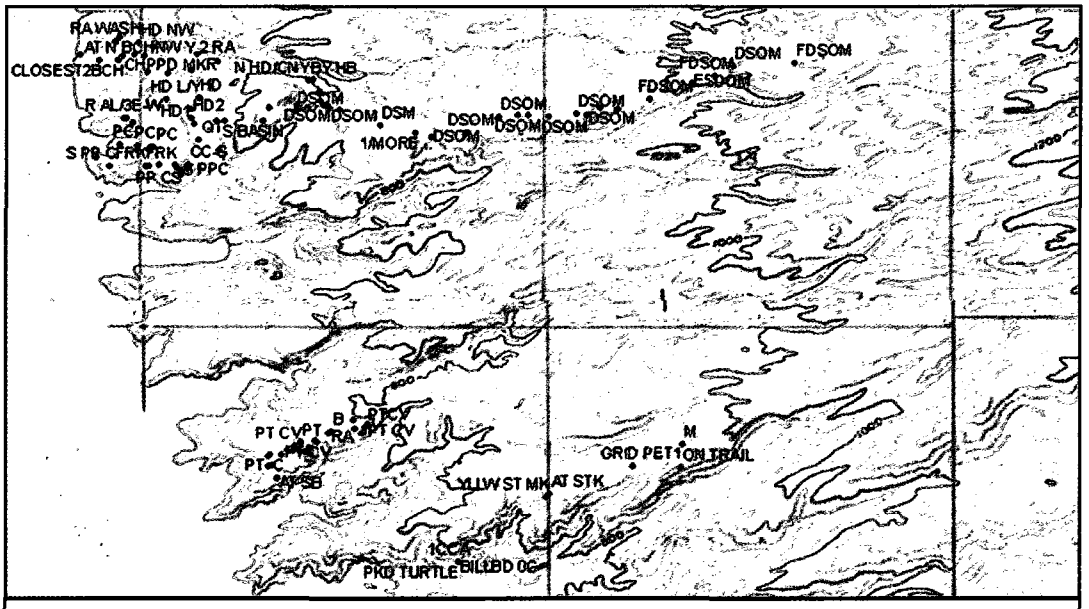


Figure 22. GIS Computer Based Map of Site Records. Although the technological advantages of using computer based programs for data analysis outweigh the tedium of some "old-fashioned" methods of site recording, the information is only as reliable as the data recorded. For example, although I had the GPS unit record more unique features site-by-site, the "dark side of the moon" (DSOM) shows only the initials for the fact that these sites are out of radio contact from the shore and not their individual characteristics. This is what makes secondary and accurate record keeping a necessity, although some pertinent data is more deeply embedded in the computer program for the waypoint's profile. Adapted from USGS Topo, 1959, http://store. usgs.gov. and ESRI.com accessed April 12, 2009.

CHAPTER 5

ANALYSIS

Introduction

With the overlapping of time periods and cultural remains, a clear and concise course must be set to outline how the data will be presented. I will be deferring to Malcolm Rogers' designations for the lithics and identifying the work as San Dieguito I (Appendix 1), where applicable. I do feel it unfortunately necessary to add the later, Patayan, terminology in parentheses, so there will be no confusion among current or future researchers as to which culture the lithic artifacts belong. Within the ceramic section, the use of the Patayan term will be incorporated as well, as the Lower Colorado Buff wares have this designation with current researchers.

Trail Markers and Iconography

The South Basin Cairn (Figure 8) sits atop one of the highest hills in the area and is located two meters south of an historical datum maker. It is approximately one meter high and as stated previously can be seen throughout the Cottonwood Valley. Located atop the mesa are several basalt workshop areas, and ten meters to the south is a main trail leading eastward to the Black Mountains. Modern use of the area is also seen. A wooden pole (now down) with two guide wires attached lays at the base of the cairn, and

and a datum marker is situated nearby. This large cairn may be seen from the other side of the South Basin and certainly could have been seen as far away as the now submerged Cottonwood Island. The relation of these trails to Calles Spring roughly six miles to the east and Chalk Springs, two miles farther eastward provides another link to strengthening the utilization of this South Basin Rock Cairn as a trail marker indicating viable passage.

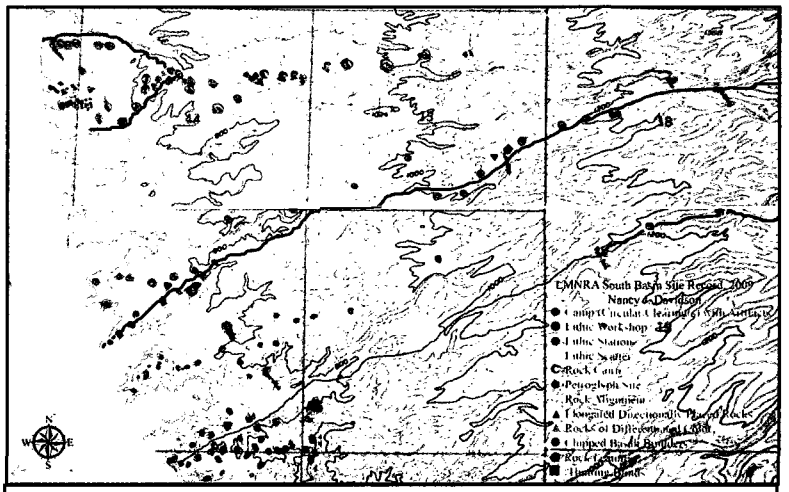


Figure 23. Site Map with Main Trails Marked. The trails marked in blue link further to the east to "Jeep Trail 7" which passes both Calles and Chalk Springs. Adapted from USGS Topo,1959, http://store.usgs.gov/b2c_usgs/usgs/maplocator/(xcm=r3standardpitrex_prd&layout=6_1_61_48&uiarea=2&ctype=areaDetails&carea=%24ROOT)/.do. accessed August 18, 2004.

Petroglyphs along the Trail to Avikwáamé

Within the study area, only major east-west trails (Figure 23) are marked with petroglyphic boulders, and these trails lead not only to the next spring, but to safe passage through the mountains in the east. On the western side of the river, these same trails may be picked up once again and followed to the top of Avikwáamé, where the Grapevine

Canyon Petroglyph site (26CK12/57, AZ F14:98), among others, is located. The Split-Rock site, which is documented here for the first time, is located along a prominent east-west trail. Close by, the cool, refreshing look of the current South Basin portion of Lake Mohave belies the hardships of the earlier centuries. Coming from Spirit Mountain and the Pacific Ocean to the west, it would have been a hard, steep descent through some treacherous canyons to the Colorado River, or a very hot, long walk around them to the north. From the Black Mountains and the Pueblo lands further to the east, a scorching, hot gradual descent across a sweltering basin would have awaited the traveler. This dissected and eroded area has little to offer by way of shelter, shade, or water.

Distribution of the visually oriented, possibly more ideologically grounded petroglyph sites (Figure 24) lay along the prominent east-west trails, which would aid the traveler in the easiest and safest passages through the mountains. As stated previously,

Figure 24. Curvilinear Meanders from the Mullion Site. It has a thirty centimeter reference scale at its base. The connected circles and seemingly aimless lines are indicative of the "archaic" style posed by Stewart back in the 1920s and are at four of the seven sites studied.

Avikwáamé is the Mohave place of mythic origin. That these sites are oriented to that mountain strongly suggests a relationship by the selection of the site and the directionality of the designs. Placement of other sites, such as these (Whitley 1996), is well-documented. That six of the seven petroglyph sites lie along this east-west trail, attests to the fact that this was an important route used by shaman or by those seeking a vision quest type experience. The seventh site is one of all scratched petroglyphs, in a well-hidden ravine, off of the main trail with no obvious connection to the other sites, nor to Avikwáamé. The Scratched Site may possibly be of Numic origin, but that debate (Christensen and Dickey; 1998; Whitley 2001) is outside the scope of this paper. This fact is a strong support of the hypothesis that the Split-Rock (Figure 25), Mullion, Grid,

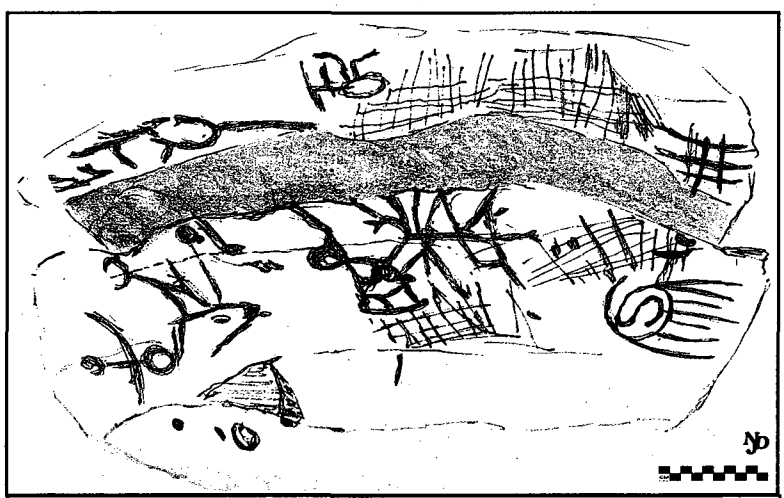


Figure 25. Split-Rock, Main Boulder. Crossing the chasm are curvilinear designs; the split is in alignment with Avikwáamé. The heavily patinated surface had been pecked in most areas. Then, where areas were not pecked, scratched grids were added, sometimes touching the older curvilinear designs and slightly overlapping some. These did not deface them, as suggested in some literature about rock art styles.

Lone Tree, and Petrified (Figure 26) sites were all made in connection to Avikwáamé. The Split-Rock boulder's heavily patinated surface had been pecked in most areas. Then, where areas were not pecked, scratched grids were added, sometimes touching the older curvilinear designs and slightly overlapping some. These did not deface them, as suggested in early literature (Christensen and Dickey 1998; Whitley 2001) about rock art styles.

Most of the petroglyphic boulders in this area had been repeatedly utilized for shamanistic purposes. Although some individual panels, such as The Mullion, were possibly created by one individual, the boulder it is located upon is covered with as many as thirty other petroglyphs, which may not have all been completed by the same individual, due to the interconnectness of designs, repatination, and superpositioning of the other motifs. Some petroglyphs were created as isolated motifs (such as the Cloven site), but most are grouped in close proximity to the main trails, view of Avikwáamé.

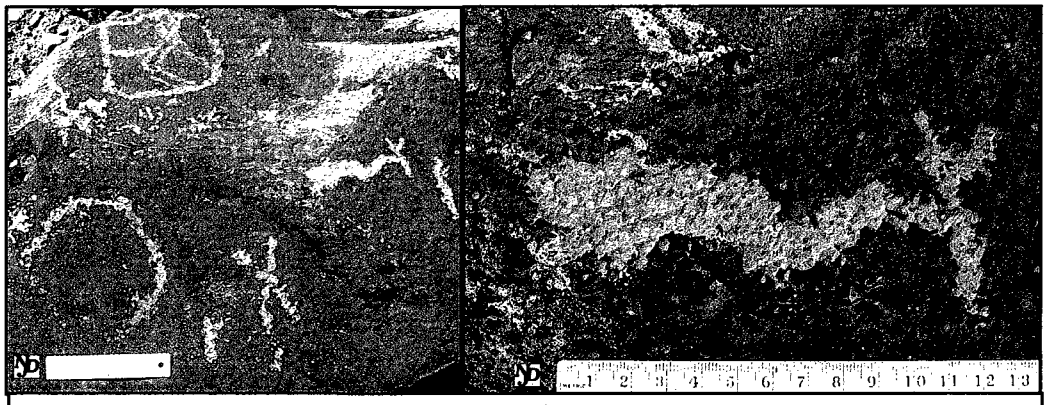


Figure 26. Petrified Petroglyph Site and Secondary Boulder Close-up. These two photos show the pecked details on the boulder, to the left of path as one is traveling eastward.

Although it may seem as though a wide variety of petroglyph types and styles were created within this research area, when one keeps in mind that all these symbols, with the exception of the circle are entoptic pattern seen within the early stages of an altered state of consciousness or trance, then the similarity of design and possible purpose begins to come to the forefront. The pecked petroglyphic panels lie along the main trail and facing Avikwáamé and speak to the significance in the selection of these sites, as well as to the importance of the chosen trails. That these likely originally made by shaman or those endeavoring a vision quest seems plausible, based on the ethnographies studied. Subsequently, the petroglyphic boulders may have been utilized as trail markers, based upon the additional findings of artifacts and features in relation to these. Rock alignments, cairns, and other signifiers of human passage dot the landscape and farther down these same trails are sometimes additional rock art sites. Vision–looking, seeing, and experiencing the landscape–were likely all a part of this experience.

The Split-Rock Site. Situated on a low saddle in a side canyon, close to the Colorado River is the Split-Rock site. It is approximately 5.75 meters north/south and 10 meters east/west in length over the uneven terrain of a downward sloping dry stream bed area. There are three petroglyphic boulders within this site. The largest boulder contains the most glyphs. It is approximately one meter long, lozenge shaped, and facing in an east-west direction. It is split down its long axis, in perfect alignment with Avikwáamé. It has both pecked and scratched marking, with glyphs criss-crossing its chasm (See Figure 24). Predominate motifs are archaic meanderings (Steward 1971) of curvilinear, thickly pecked lines. Nearly the entire surface of the rock is inscribed. Overtop of many

areas, scratched petroglyphs were made with a sharp point. Lines form parallels, some form "rakes," and others form cross-hatching in areas which were not previously covered. Minimally, areas have been scratched where designs previously existed. The rock had split prior to the surface being pecked and scratched.

There are two other boulders with petroglyphs within the Split-Rock site, both of which have scratched glyphs only. The one closest to Split-Rock, is also broken down its center. However, this cleft is not aligned with Avikwáamé It is aligned with the Colorado River, in a north-south direction. An inference may be made that in light of the many hypotheses about scratched petroglyphs being of Numic origin, this may have been possibly made with that alignment specifically chosen to be upriver. Southern Paiute, who lived in the local area, were of Shoshonean descent and of Numic origin, not Yuman. The fact that the scratched glyphs were added to the original Split-Rock and do not deface it in any manner and that this, also split boulder was chosen, when so many other whole and broken ones were available adds credence to the analysis.

There seems a reverence, not defacement, utilized on the original boulder and a specialized selection of the second, split boulder for the purpose of scratching petroglyphs on a similar surface, when other whole patinated boulders were readily available. Although it should be noted that patination dating has not been done to determine which boulder had petroglyphs first, the larger boulder, has meandering petroglyphs with scratched glyphs superimposed over-top of them. This suggests that the scratches on the second and third boulders may also be newer in age as well.

The smallest boulder (Figure 27), which is closest to the river, faces Avikwáamé, the river, and the trail with its largest, flat surface. It would have been very easy to see by though it is very low to the ground. It has eleven vertical lines and one horizontal line, making it a scratched "rake" motif. Its scratched surface is in high contrast to the darkened patina of the desert varnish covering the rest of the exposed rock.

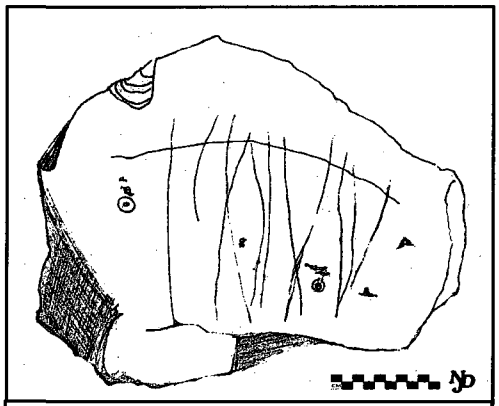


Figure 27. Scratched Rake Design (NJD01C) at Split-Rock Site. This may be Numic in origin, possibly Southern Paiute.

Lone Tree and Grid Iron. These markers are individual petroglyph panels located in prominent spots, adjacent to terraces containing circular clearings. These clearings were more than likely used for brush shelters, as described by Rogers (1966:7). Both markers are located at the side of the ridge and may be seen from the southern wash area below, as well as from the approaching western trails. In both, the Lone Tree (Figure 28) and the Grid Iron (Figure 29), visibility seems to be theriding factor in their making. Both face towards Avikwáamé. Some could argue that their

position in the landscape would make these trail markers, and others might claim that the entoptic patterning used within the designs denotes the altered state of consciousness, related to shamanistic experience. These, however, are not necessarily mutually exclusive events, as by the very nature of making the shaman or vision quest designs, the marking of a person's trail is made. Whether the mark was made for the experience or for the trail is really a moot point for these cases, as the answer for that question is unattainable.

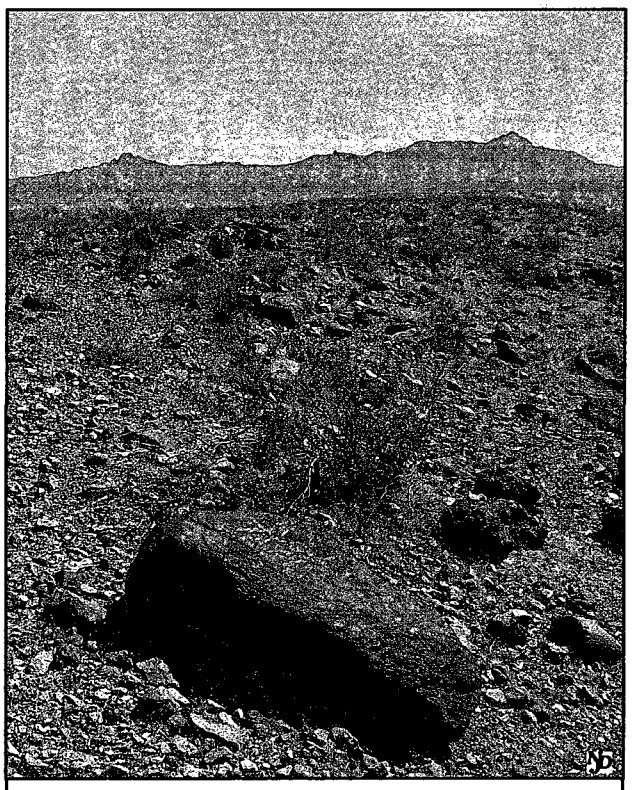


Figure 28. Lone Tree Petroglyph. Lone Tree sits along the east-west trail on the northern ridgeline, a little further east. It may also be seen from the opposite ridge, at the Petrified Rock Art site. This may not be a coincidental circumstance.

The Grid Iron panel is located farther along the same ridges as the Lone Tree panel, approximately one kilometer farther east. It contains one complex entoptic patterned petroglyph, the enclosed rectangular grid with three complete and one just started parallel, vertical lines. The work does not appear to have been completed, because the fourth line would likely have been evenly spaced within the enclosure, but remained unfinished. What the Lone Tree and the Grid Iron sites do have in common, though, is their associated campsites.

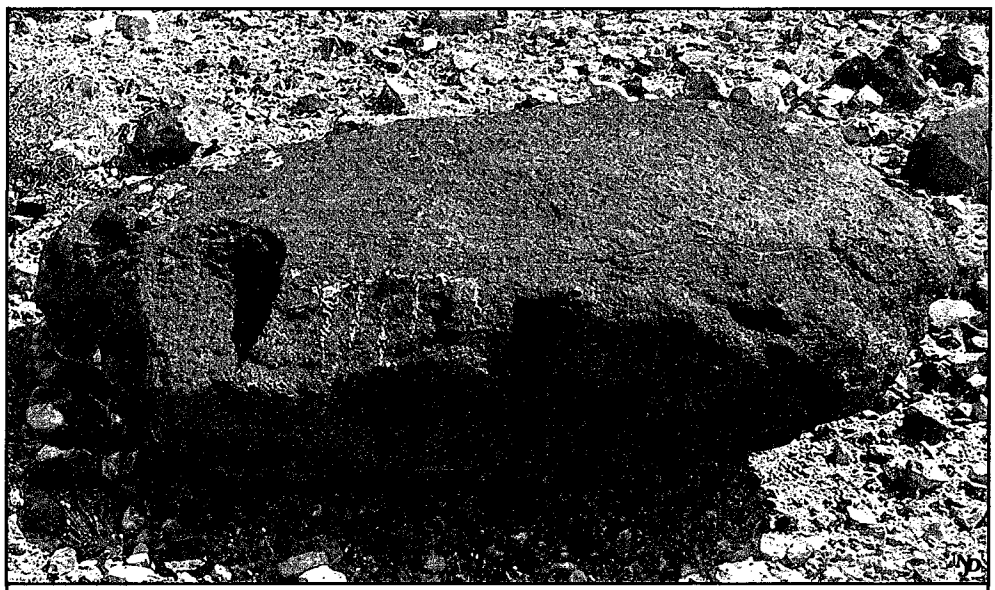
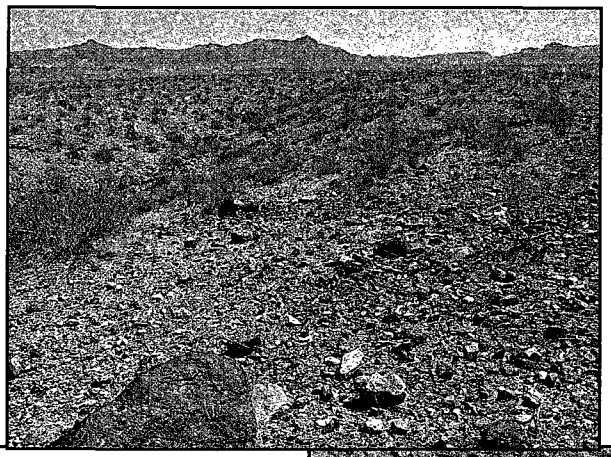
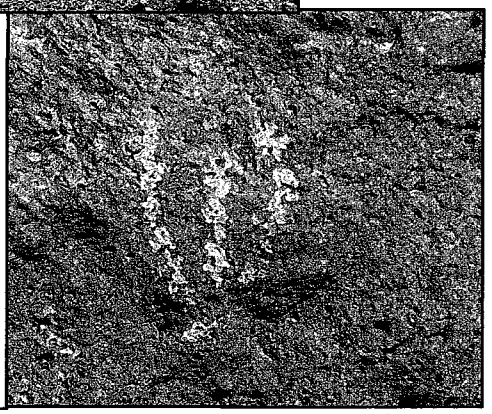


Figure 29. Grid Iron. The grid iron figure is classified as a Great Basin rectilinear pecked petroglyph, similar to those seen at the nearby Grapevine Canyon site (Steward 1971: 148). The rock art panel faces Avikwáamé and is situated at the head of a downward-cutting wash area, so may be seen from both the ridgeline and the wash below.

Cloven and the Gateway. Along the same east-west ridge as the Lone Tree and Grid Iron panels, closer to the opposite side, is the Cloven Site (Figures 30 and 31).

This lone petroglyph is relatively small and could be overlooked, if one were not observant. Upon examination, one sees two outward pecked curves, with a straighter line between them, which resembles an animal's hoof. Curves are also considered entoptic patterns.





Figures 30 and 31. The Cloven Petroglyph. The mark here at first resembles a hoof, but on closer inspection may reveal the landscape beyond. One may follow the ridgeline to the right, go down the wash, or travel along the next hill to the north; all paths will converge in the same place, making one wonder if the iconography replicates the landscape.

Whether this was meant as a "sacred" petroglyph, one cannot guess; it does not face Avikwáamé. It cannot be seen from the wash below, nor from the further ridge farther to the south. It could easily be overlooked from the passing trail. Although this seemed more randomly placed at first, on closer inspection, it seems to mirror the

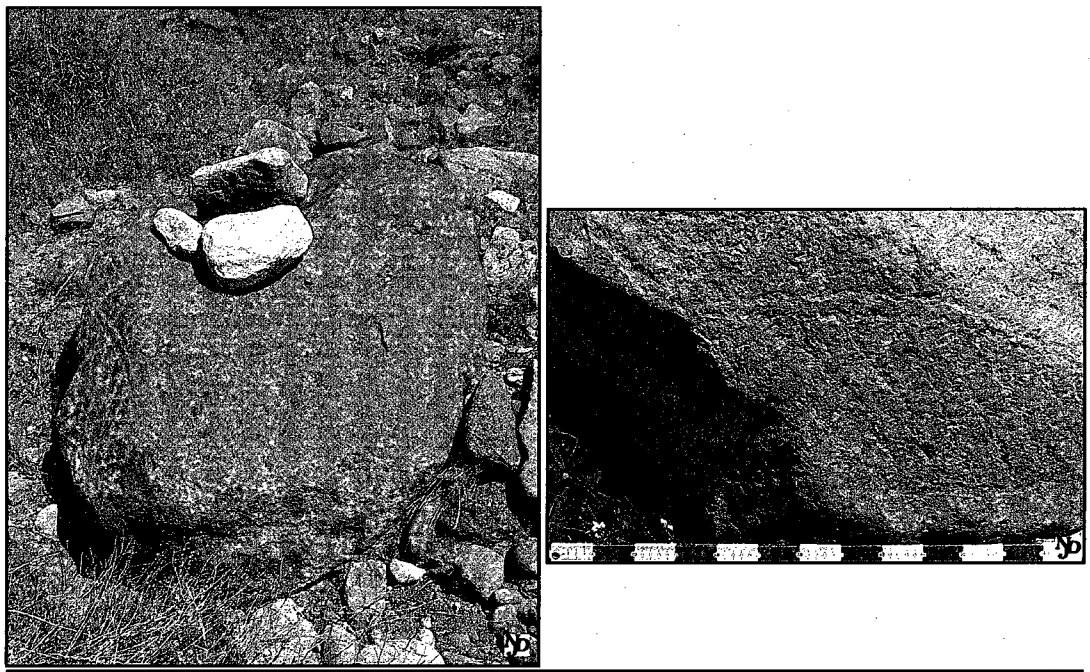
landscape beyond. Whether this was meant as a topographical map of sorts or recorded while in a trance state can only be imagined. Located fifty feet further to the east lays the Gateway site. Actually comprised of two rocks, one on each side of the trail, it seems to identify the split in the eastern trail. On the northern rock, a small "M" shape is pecked into the patina–not an alphabetic "M" but more a shape-like figure than anything. The right side has some pecking, but no discernable shape. Although these markings were placed in a prominent position trailside, the markings are not very dramatic. These seemed to have been made for a personal reason (shaman/vision quest), as opposed to being made for a statement such as a boundary notation, warning, or similar iconographic message.

The Mullion Site. About one mile further north along the Colorado River is the Mullion Site. This has an elaborately pecked rock, which would have been completed over many sessions (Figures 32 and 33). It too is in sight of Avikwáamé and within reach of the Colorado River. The rock shows signs of its longevity as a sacred site, with the evolution of designs from purely entoptic patterns into a combination of forms over time.

It has both meandering and rectangular petroglyphs, one of which has radiating lines coming out from it, which indicates a combination of designs. The elaborate, repetitive diamond shape pattern (as in a mullion window) looks to have been created by the same hand. On close examination, each percussion mark seems to be at approximately the same width, circumference, and depth. The uniformity of stroke for such a labor intensive design was certainly created with purposeful intent beyond that of

trail marking. That it would have to have been made with more ideological ramifications is strongly supported.

The site now also has white, ash-covered stones placed on top of the original pecked surfaces, indicating usage of the trail nearby by people, possibly modern, who came after the original makers of the glyphs. I do not believe the engravers would not



Figures 32 and 33. The Mullion Site and Mullion Close-up. The grid pattern on this seems to have been done by the same individual utilizing a percussion method: hammer and chisel pecking for the uniformity of width, depth, and roundness of marks. Although it was probably not completed in one session, due to the labor intensity, it may have been completed as a part of one shaman's dreaming.

have desecrated their site with the placement of these ash-covered rocks upon their images, as some of the older glyphs were covered and the initial placement of the rocks scratched the surface of the designs and the boulder.

Also, approximately three meters to the east of the Mullion Site is the start of a "chipped basalt trail" leading to a large basalt working area. If they could follow chipped basalt markings, like a trail of breadcrumbs, what need did they have for white ash-covered rocks that stood out like beacons? That the Mullion rock art site was also at a trailhead also cannot be overlooked. It could not be seen from the Colorado River. On the ridge above it, a dark basalt rock had been placed at the ridge's edge. Although it had not been marked in anyway, it clearly had been moved to this prominent position.

I argue that the petroglyphs were originally made by shaman or those endeavoring a vision quest experience, and then were subsequently used as trail markers based upon the additional marker types, camps (circular clearings) and artifacts discovered along these same trails. Sometimes, other rock art sites along the same trails provided the linkages to support the significance of placement within the landscape. This east-west travel corridor, utilized by shaman and marked by the entoptic designs (Table 2) pecked into the desert varnish on boulders, provided an easy, safe, and direct route from the Colorado River to the Black Mountains and back again.

Table 2. Petroglyph Distribution. This chart shows the distribution of petroglyphic symbol per site. Petroglyphic sites, which were along the main east-west trail, as designated by markers, also contained more pecked and inscribed symbols.

	A	B	C	D	E	F	G	H	I	J
1	GPS ID	SITE	Grids	Parallel Lines	Dots	Zigzags	Nested Curves	Meanders	Spirals	Circles
2	5	Split-Rock	3					12	3	2
3	19	Mullion			9			14		5
4		Lone Tree		1						
5	9	Grid Iron	1							
6		Petrified				2	2	1		2
7		Scratched		15						
8		Cloven				17	1			
9		West Scrt.		1						

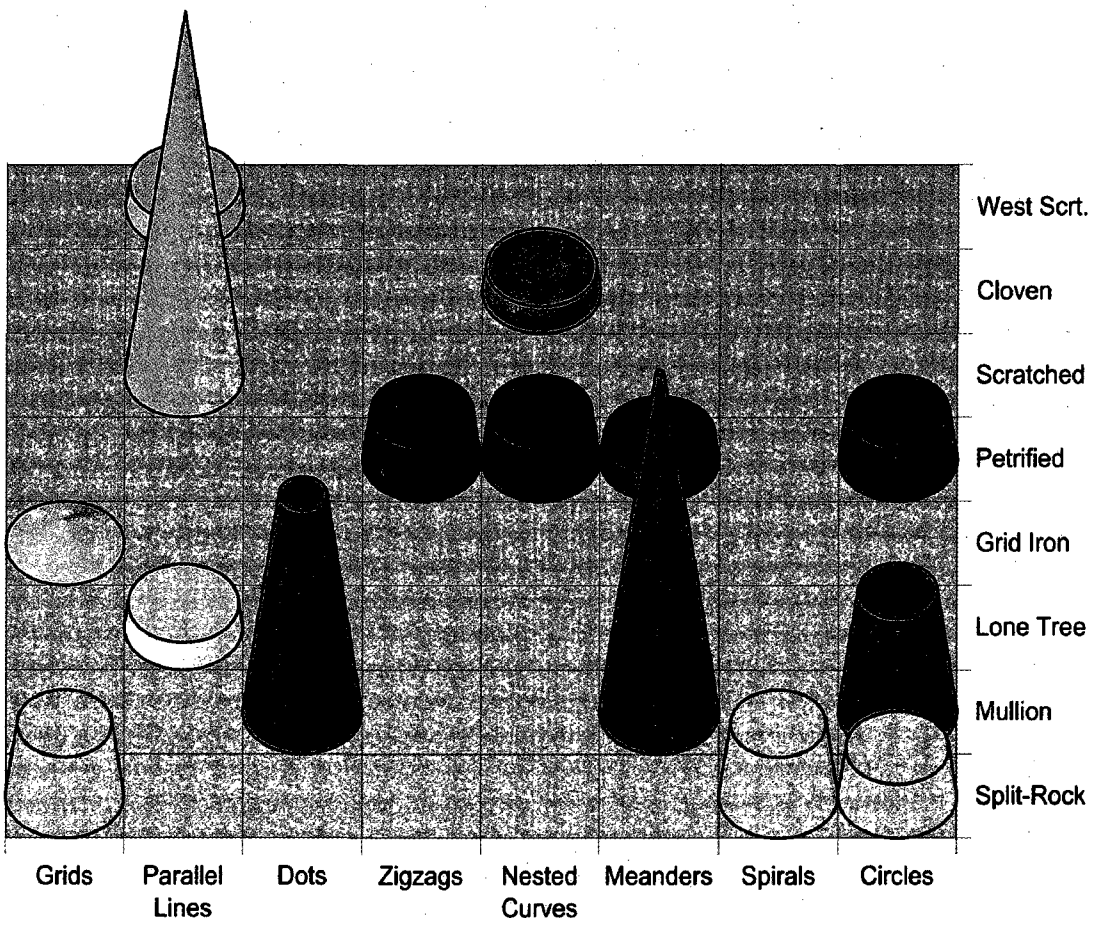


Figure 34. Representation of Petroglyph Data Sets. Graph shows the visual representation of the data sets per sites, based on the entoptic patterns seen.

Rock Alignments. Alignments within the research area may indicate a change of direction away from the main path, or may be utilized to point the way to things hidden from view. Downward cutting washes are denoted through the utilization of these markers, as one makes their way heading towards the Colorado River. These drainage areas provide the fastest and *safest* ways to reach the Colorado River. This is extremely important after a long hot trek down from the mountain passes, as the nearest spring is about ten kilometers away. All along this area of the Colorado, steep cliffs face the river. Before reaching water, palisade after palisade (Figure 35) create impediments, yet rock

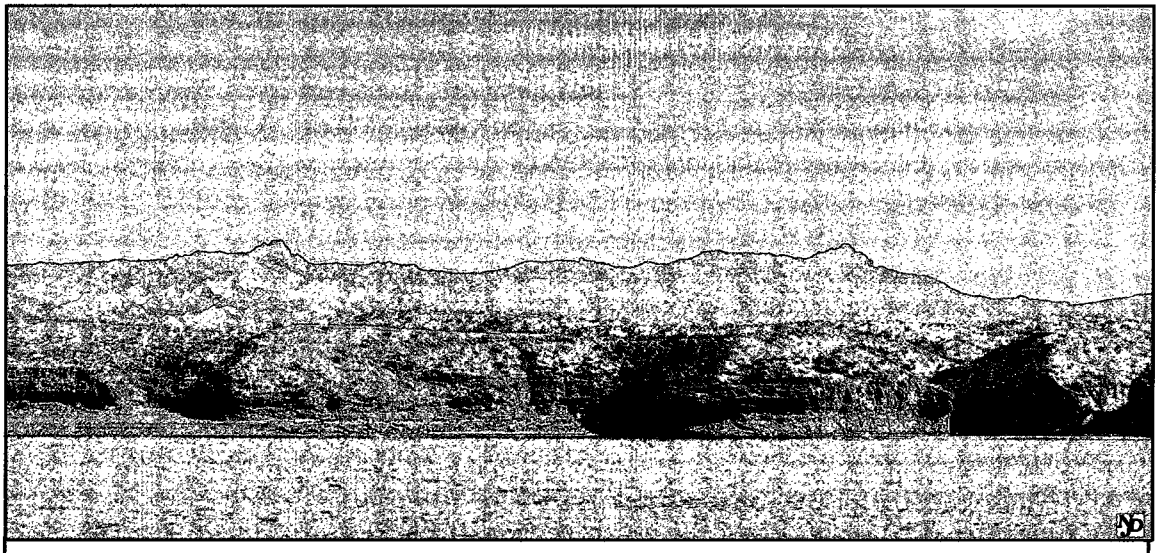


Figure 35. The Palisades. This section of the South Basin portion of the Colorado River located on Lake Mohave provided dangerous descent areas to the river. In order to avoid these, rock alignments were placed in strategic areas along the ridge lines further inland to warn travelers and indicate which downward cutting washes were available for safe passage to the river.

alignments seem to have been made to direct the traveler to the easier paths, which were available, before the cliffs were reached. These deliberately placed rocks, appear to have

been placed to draw attention, marked the ridgelines within the research area for a variety of purposes.

Documentation of the rock alignments in relation to the topographical features provided support for this hypothesis. The primary reason for using rock alignments to indicate changes of direction for the traveler to easier pathways, or these may aid by directionally steering the traveler away from dangerous areas. Rock alignments guide one to the safest passage to the Colorado River via the downward cutting washes that may not be readily apparent to the traveler. A secondary reason rock alignments seem to have been utilized is to direct the traveler towards unseen objects, such as camps or procurement areas. Typically, the main trails were created along the east-west ridgelines of this alluvial valley.

Drainage patterns from the Black Mountains to the Colorado River have eroded the landscape into a maze of isolated mesas covered with solidified volcanic tuff, simple ridgelines which rise and fall according to the course of the north-southward cutting waterways, and deeper east-west canyons where water flows now only with the heaviest monsoons. In many instances, the rocky debris of earlier epochs is strewn across the landscape (Figure 36), making it more difficult to follow the paths, which elsewhere had been worn into the desert pavement and is readily apparent. Where debris-filled landscape areas occur, rock alignments were created to show the way. Thirdly, the undulation of the landscape has in many areas, made places in the landscape, which may be close in proximity, out of sight from the main trail. In these cases, rock alignments were also utilized to designate the path to sites unseen. Alignments were placed

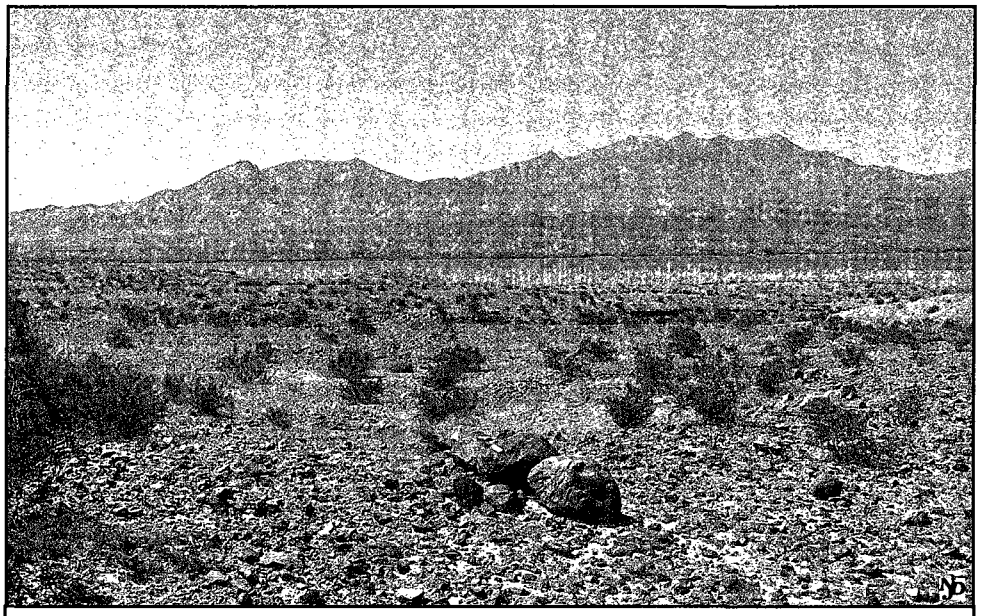


Figure 36. Rock Alignment on NE "Hill and Dale" Trail Facing Southward. The rock alignment at this point in the trail directs the travelers to the nearest downward cutting wash, so that they may exit the ridge to the Colorado River, without having to backtrack from a cliff area to the wash, possibly wasting precious resources.

directionally, so that the traveler could follow the line of the rocks (Figure 36) in the manner in which they were intended to go.

Rock alignments within the research area, however, do show a more realistic reason for their inclusion as a trail marker type. Alignments may indicate a change of direction, which may be away from the main path, or may be utilized to point the way to things hidden from view. Most notably, rock alignments (see Figure 10) show the way to camp sites. If one follows the directionally placed rocks across the landscape, this will lead to a hidden camp site (NJD128), approximately one hundred meters away. There lay five circular clearings, along with stone tools and lithic debitage from core reductions.

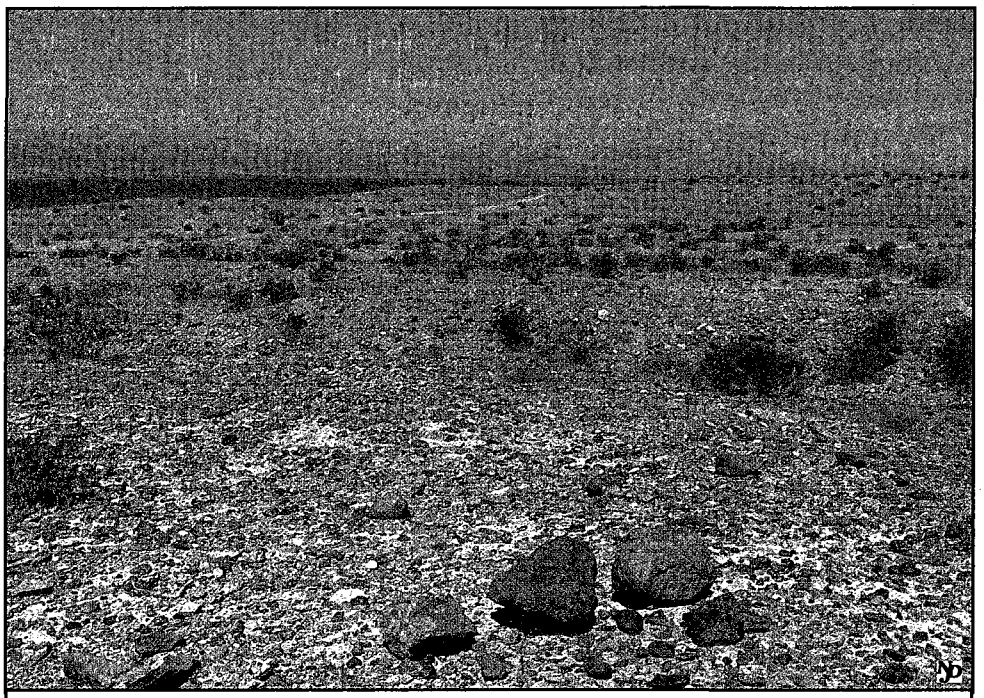


Figure 37. Rock Alignment on NE "Hill and Dale" Trail Facing North. In looking at the terrain, it is also noticeable that the area here is a little rockier and the trail shows less in the desert pavement. The rock alignment has been used to help identify direction.

Selected rocks include yellow jaspers, red carnelians, white ash-washed cobbles, and red volcanic basalts to catch the eye and draw the attention to a point in the landscape that may have gone otherwise gone unnoticed. These may sometimes have been used as warnings, especially to show that there was danger at the Palisade segment of the Colorado River. These also drew attention to the downward cutting washes, where procurement areas may be reached, or where alternative trails could be taken.

Sometimes the brightly colored rocks were selected to show where objects or objectives were out of sight from the main trail and could be reached by following the alternative route indicated. At times these routes lead to hidden campsites. That passage

is viable at that juncture in the landscape is denoted through the use of the rock cairn's marking of safe passage. Not all downward cutting washes are navigable, as some end in sheer cliffs of twenty to thirty feet in height. The use of cairns for maximum visibility: sometimes at the start of a trail, at the head of a wash, at a trail junction, at a prominent point in a ridge, or just to be certain that the traveler would maintain a particular path.

Ceramic Analysis

The sherds found at the Northridge Site presented some very challenging puzzles. How the sherds of two seemingly unrelated vessels could come to rest at the base of the same slanted rock may forever remain a mystery. Was this a place, free from wind, which two people used to shield a meager fire from the wind to use for cooking; or perhaps two separate people on two widely different occasions lost their pots due to an uneven heat distribution over the surface of their vessel? Did someone, pack weary, decide to rest it upon the rock, only to have it slide off and break its precious cargo? Was the ceramic ware so broken as to be discarded and of no value for reuse? Or did two different people arrive at this same rock at two very different time periods, not noticing that the other had broken a pot, both lose pots independently? These types of questions may be impossible to answer.

The purpose of this portion of the research was to try to discover the ceramic origins, which may provide clues to the use of the trails in the local vicinity, where there are petroglyphs, rock alignments and other features, lithic workshops and scatters,

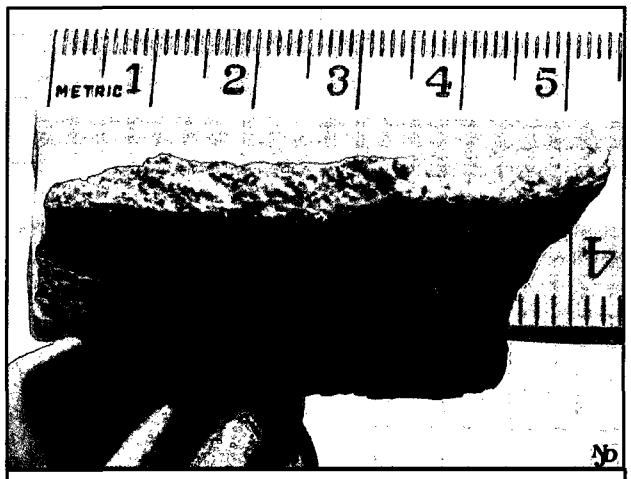


Figure 38. Sherd from Vessel One. Quartz, feldspar, and mica matrix with a direct rim.

and other signs of human passage. These ceramics and their cultural affiliations may provide pertinent information as to the time period in which the region was in use.

The decision to use petrographic analysis for the sherds was based upon Stark and Heidke's work (1998) on the study of ceramic manufacturing in the Southwest. Their site specific analysis of mineral typologies (Figure 38) was used to determine the origins of clay bodies used in all modes of ceramic manufacture. In their study, petrographic analysis of local stream sediments was undertaken to determine if tempers could be identified as to specific resource procurement zones. According to the ethnographic accounts, potters typically collected clays within a three kilometer radius of their home, while they went a greater distance for rock temper or sands of a higher quality. The specific sourcing of sand materials may in some cases then be determined. Using this information, one should ideally be able to tell if the ceramics in the research area would have been trade goods or local materials. To be able to show the possibility that travel or

exchange with those who were travelling through the area may have occurred in is an important aspect of this thesis. It has already been documented (Rogers 1966, Schroeder 1961) that the Mohave migrated up the Colorado River delta and that pottery technology (Schroeder 1961, Waters 1982) was already in use. The river was already utilized for passage north and south. Linking east and west through pottery trade has already been established by petrographic thin section analysis may be used to link pottery to the bedrock geology of its place of origin, which has been now utilized successfully within the archaeological field (Stoltman et al. 2005). Petrographic analysis has been shown to be a more effective method of showing quantifiable results for ceramic analysis. When there are only the broken remains of two ceramic vessels to use as clues, the more reliable a method that may be used to determine the origin of these, the more likelihood there will be of success.

Enigmatic as it may seem that the sherds of two vessels only lie at the base of one slanted rock within the study area, the search for the places of origin for manufacture of both have been equally perplexing. In order to analyze the ceramic sherds that I had discovered, I first narrowed down the field of possible ceramic typologies to which these could belong. I contacted a leading expert in the field of ceramics, Gregory Seymour, through the Lake Mead National Recreation Archaeologist, Steve Doron. Preliminary observations had been made while mapping the site, and these, along with digital photographs, were sent to Seymour via e-mail for his perusal. His opinion was that these could be Lower Colorado Buff ware (personal communication, 2006). I did discuss, also via e-mail, my concern about the mica content. But we both came to the conclusion that

the photographs were inconclusive evidence from which to make the final judgment call, but that Lower Colorado Buff ware was still the prime typology suspected, based on temper, paste, and color ranges present in both vessels.

Permission was requested through the United States Department of the Interior for an Application for Permit for Archeological Investigations, so that I could collect the samples and do data analysis within the Lake Mead National Recreation Area. Permission had previously been granted for me to do the data collections and mapping of the area as a part of my volunteer archaeological field study, what I have called the Gemini Project, on-going in the South Basin portion of Lake Mohave. The collection of the sherds was to be done under the auspices of California State University, Fullerton and overseen by my thesis advisor, Dr. Carl Wendt, in order to fulfill the requirements set forth by the Department of the Interior.

Approximately thirty-six sherds comprise the overall count for the two small bowls. Excavation in this area has not been done, so there may be more sherds lying beneath others or under the debris build up from the centuries of winter rains and summer monsoon seasons. On first inspection, it seemed that larger, Vessel One, had a temper comprised of mostly white, opaque quartz crystals which were more angular (Figure 39). The color is mostly orange to tan with what looked like a scum-coating on its exterior surface. Fingerprint markings still show within the coating, although this does not show a glossy surface of any sort. It is dull in color and no fire clouds were readily discernible.

Vessel Two, I thought, had higher mica content in its temper. The shine from the biotite mica particles were noticeable on the exterior surface of the pot, on the interior,

and within the breakage points as well. Mica seems to be well-distributed within the overall matrix of the piece. If it is part of the original composition of the clay or added as part of the temper, it is difficult to discern without the aid of a microscope, but through thin-section analysis it should be readily apparent. The distribution within the matrix should also show a different pattern for the paste inclusion versus the temper addition.

Starting with those three outstanding features, the angular white quartz crystals and scum coating for the first vessel and the mica tempering for the other, I began culling the literature for ceramics within the greater Southwestern Desert Region to see if I could find ceramics with matching descriptions (Appendix 2 and 3). General histories, local ethnographies, site reports, Bureau of Land Management records, documents from the Lake Mead National Recreation Area, maps, books, and articles were read and pertinent data was recorded where found.

By the process of elimination, I had been able to cancel out any ceramic type that did not include a temper or ones that had a decorative addition on the outside. Vessels which contained sherd or shell within the temper were also at first excluded. I had thought to rule out ones with obsidian, red jasper, or green olivine within the matrix as well. Although color by itself does not determine ceramic type, it did act as a guide for reading the clay's compositional features or fabric. White-bodied clays could also be eliminated as well, since the clay body contained minerals which acted as a staining agent in the paste. The field was narrowed to a handful of similar types, which could then be examined for possible matches.

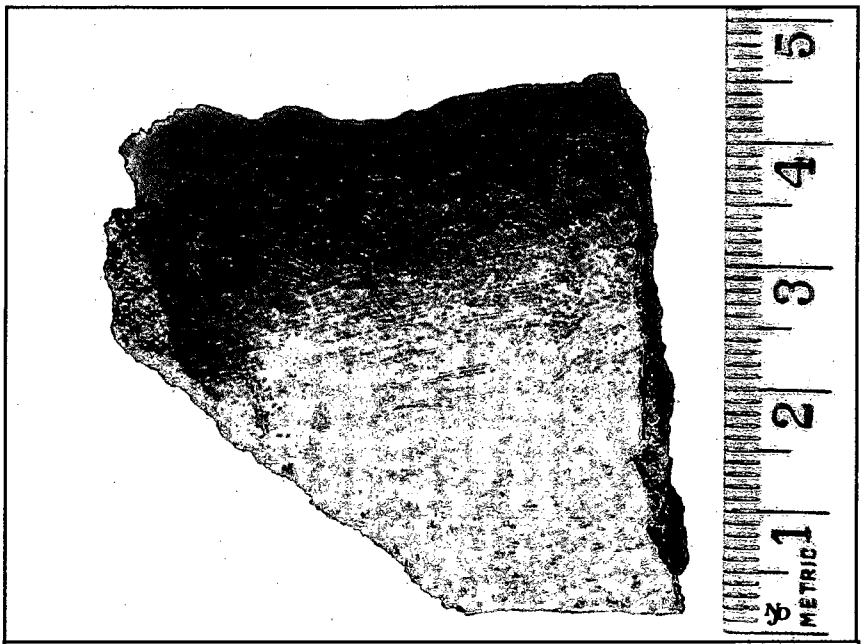


Figure 39. Fingerprinting. Neck area, Vessel One, showing fingerprinting detail for smoothing the surface. The more or less regular indentions along the inner wall also provide data to support a paddle and anvil method of manufacture as well.

One of the most salient features, I thought, of the ceramic Vessel One (petrographic slides A and D) was that it had the traces of the fingerprinting details (Figure 39) embedded on the surface of the vessel. It does not, however, present a lustrous surface. The employment of paddle and anvil technique for manufacture is recorded through the regular indentions along the inner wall, where a stone or similar object would have been utilized against an outer percussion force for thinning the vessel. The temper is primarily a quartz-based, angular mix with some particles of feldspar and minute amounts of mica present. The surface varies in color from orange to buff (Munsell 7.2 YR), however areas of soot are present. Although fire clouds are recorded for the outsides of vessels for the original firing process and for cooking, the charcoaled

area appears on the inner curvature of some sherds. Parching, a type of dry heating, had been utilized in this area as a cooking method and may have been the source of these blackened interior marks. The temper is very granular and the paste has a beige tinge to it, going to a warmer orange color at the exterior due to an oxidizing atmosphere when originally fired. The color is in keeping with that of both Parker Buff and the Fort Mohave Variant. On visual examination, it seems that the temper per paste is consistent with the approximate 40% ratio recorded by Michael Harner for these ceramic types as well. This visual inspection, along with the previously mentioned correspondence, led me to search through the literature for all types of the Colorado Buff Wares for a match to this vessel. On closer examination, however, Vessel Two (Petrographic Slides B and C) did not seem to fit into this ceramic classification. The second vessel seemed at first to be very rich in mica content. The depth of color was in keeping with the parameters for

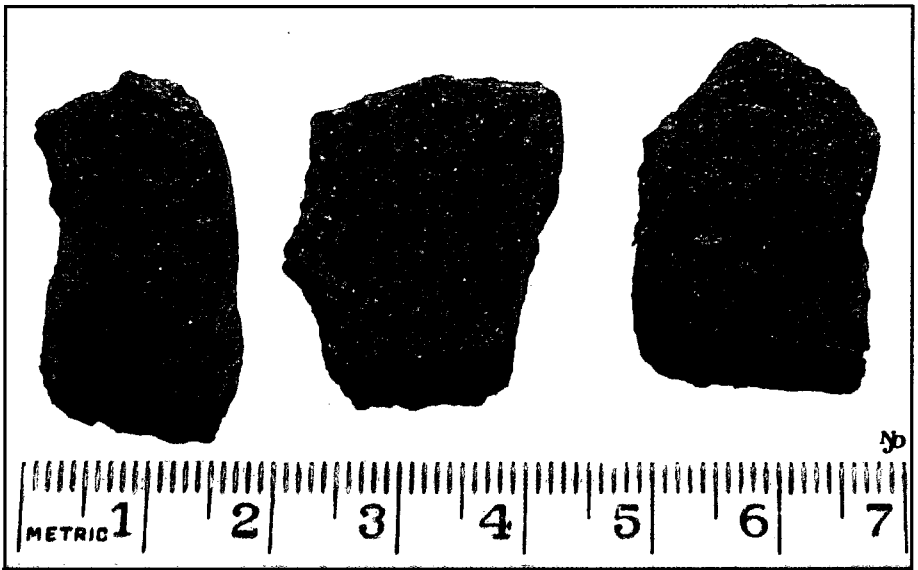


Figure 40. Sherds from Ceramic Vessel Two. Above is shown the outside of the of some sherd pieces of Vessel Two. The temper is smaller, more evenly distributed, and the mica shines forth on the surface, showing its "flat faces."

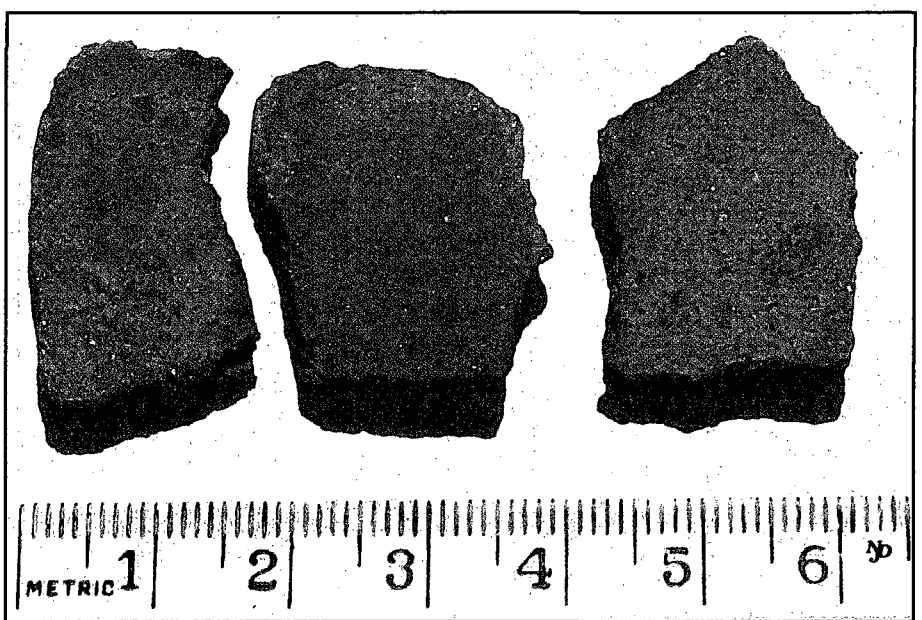


Figure 41. Interior View of Sherds from Vessel Two. The inside curvature of vessel two is shown here, with vugs showing where particles of the matrix have worn away. Here too, the mica presents itself flatly against the inner surface of the vessel. Typically, fingers, stones, or paddles align mica to the surface in this manner as they rub, glide, or strike the surface of the clay.

Pyramid Gray ware, which was assigned to the *Hakatayan* cultural group. This was Schroeder's term for the Yuman people living at the Willow Beach site, which was the farthest northern habitation for this Yuman cultural group. There, the Colorado River's waters are constricted by the Black Canyon and rapids impede travel. Overland trails, both to the east and west, may be started and continued from this location. The record of human habitation along this section of the river was recorded by Schroeder (1961), among others. It was at the Willow Beach site that Schroeder conducted numerous experiments to see if he could replicate the Pyramid Gray ceramics. He gathered and fired local clays. He tried various finishing techniques and documented all

his findings (Schroeder 1961:50-53). He discovered that this ceramic type was also manufactured throughout the Southwestern Desert Region, due to the self-tempering nature of the granitic clays he was using.

The angularity of the temper and the inclusion of mica and quartz within the temper seemed to provide me with a fit for Vessel Two and this typology. According to Schroeder, "quite frequently biotite is adhered to the quartz temper and is sometimes visible on the surface of the vessel." It seemed plausible then, that the ceramic sherds I was looking at may belong to this classification, as mica was clearly present on the outside and insides walls. Another candidate, however, was Tizon Brown Ware. This ceramic ware was first described by Colton and others refined his taxonomy by adding or adjusting his original analysis of this self-tempering clay body.

The mica, quartz, feldspar, and other lithic materials within the clay are extremely difficult to identify regionally, due to the very nature of the Mojave Desert's sands. The utilization of these granitic bearing clays to create what is termed Tizon Brown Ware has spanned the ceramic cultural horizons in this area (Schaefer 1988), thereby compounding identification of specific places of origin and time periods for manufacture. Tizon Brown Ware was sub-divided into two more distinctive categories by Schaefer, calling the second ware a Salton Brown. He claimed that the Salton Brown contained sub-angular to rounded grain of lithics with much less mica in the matrix. This was common to the Lake Cahuilla region during the Patayan II and III (Seymour and Perry 1998:41) and the ceramic forms were influenced dramatically post-contact. Although the type was

sub-divided, it is the main Tizon category which is of interest to this research, as the mica content of the second vessel is greater.

Petrographic slides for Vessel One (A and D) and Vessel Two (C and D) were examined using an Olympus BX41 microscope. The eyepiece was a 10x powered lens, and the objectives were changed from 10x to 20x, and 40x magnification, depending upon what was being observed within the thin section at the time. I first looked at the pluralism of the minerals: that is how the minerals may change in color when the slide or platform was rotated I noticed the relief of which individual particles, whether these stood out or if these did not. Noted too was the angle of cleavage for the individual granules. The birefringence, or changes in light rays, as they passed through the minerals was a significant factor for determining inclusions for temper content. Birefringence changes were dramatic in some of the minerals in the first slides that I looked at, especially for the micas, as these changed colors. The startling differences took place with the addition of polarization to some of the minerals as well (Figures 40, 43).

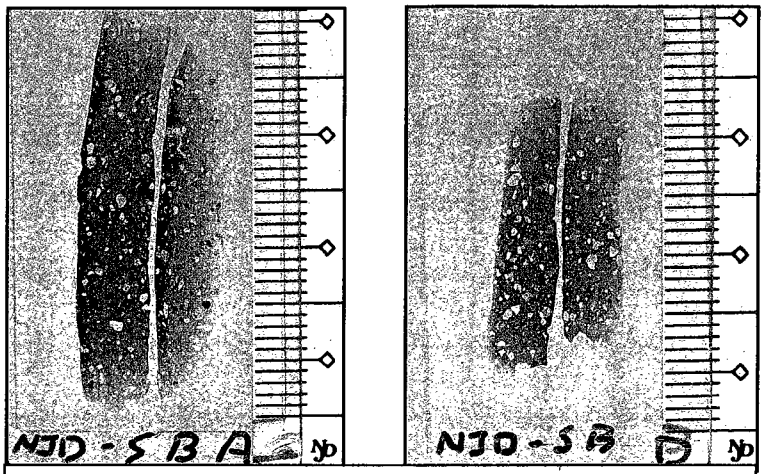
Digital images were taken of all of the slides using my Canon EOS 10D digital camera with a 100mm macro lens. Images taken before and after polarization show the changing affects of light rays of the surface of minerals. Digital photographs were processed and some are shown here side-by-side, as accurately as possible using Photoshop only to align and sometimes lighten, but not to enhance the images.

Although the sherds had originally been marked and sent to Vancouver Petrographics sequentially, the slides did not return in the same order, so now A and D actually represent Vessel One; B and C represent Vessel Two. The matrix of both vessels

is distinctive between one another in both temper size and paste. The outside coloration is also unique and is unmistakable. Analysis of data and format of material similar to that completed by Seymour and Perry (1998) incorporated ceramic information from all pertinent sources. Time and range references were indicated primarily using Roger's and Schroeder's data from their field experiences in the local area. My own remarks were added when pertinent and further clarification was needed. Analysis was kept as clear and concise as possible for ease of reading and replication.

When analysis had concluded, it was readily apparent to me that Tizon Brown ware could be excluded as a possible candidate for Vessel Two. The temper did not include the telltale volcanics as previously thought, and it was not as granular as is typical of the Brownware. Although the mica content on the outside of the vessel at first led me to believe that it may have proven to be Tizon, the Petrographic analysis truly showed the temper and paste for its real content. The fabric of Vessel Two falls well within the characteristics for the Pyramid Gray ware that Schroeder created his experiments for in the Willow Beach area back in the 1950s, and it is also know as Topoc Buff by contemporary ceramic analysts using Michael Water's classification system. Ruling out Tizon Brown as a trade ware or import does not support the east-west corridor argument, as originally thought. However, the establishment of the identities of both vessels: one as Parker Buff and the second as Pyramid Gray reaffirms the north-south migration patterns documented by Rogers (1966) and Schroeder (1961). Travel through the area is still a viable argument. The Colorado River is one travel route; but it is not the only one, as it was not always navigable.

Petrographic Analysis Vessel One (Slides A and D).



Figures 42 and 43. Petrographic Slides A and D.

Description: based on the information gathered to date, this vessel best fits into the sub-type Parker Series within Colorado Buff Ware classification known as *Parker Buff.* Unfortunately, classifications are just that, a broad spectrum or umbrella under which to place similar entities. After the original category was outlined by Colton in 1932, other researchers refined, reclassified, restricted, or expanded these typologies as new information or scientific techniques were established. Using the resources available at present, Vessel One (Figures 42 and 43, Slides A and D) should be considered the type of Colorado Buff Ware designated in the literature as *Parker Buff.*

Construction: is paddle and Anvil and may be noted by the small indentions in the fabric of vessel. Color and consistency of the clay matrix are also in keeping with this type of ceramic manufacturing process.

Clay: core is an oxidized paste with a 7.2YR (Munsell yellow-red value and chroma), blending to a 7.10 on its outer surface in some areas.

Temper: is comprised of a mixture of medium to fine grained granules of quartz ranging in size from less than .5 mm to 1 mm in diameter (approximately 30% of matrix) and medium to fine grained granules of feldspar (25% of matrix). Biotite (5%) and muscovite micas (1%) are also included. Hornblende (2%) is present as both a larger granular inclusion and as particle of a crushed sherd that has been added to the temper.

Surface Finish: is wiped and smoothed with fingerprint marks still visible on the surface. Surface coloring is buff (6.6 YR) to a more reddish (4/8YR).

Fire clouds: are present on both the inside and outside of most sherds. These may have been caused by parching, a traditional cooking/roasting method for this area or could have possibly also been by campfires or brushfire after the original pot(s) had been broken.

Range: Northern end of the Mohave Valley, which is approximately fifteen miles south of the research area, and southward along

the river to below Parker and the Colorado River delta (Harner 1955:19). Basically, this area was within the range of the historic Mohave at contact. Occasionally, it is found south of Ehrenberg and along the lower Gila River, although it was not common to this area.

Time: Schroeder dates the beginning manufacture of this ware with his early Hakatayan period, A.D. 900. It is listed as Patayan I (before A.D.1000) to Patayan III (A.D. 1500+), according to Waters.

Remarks: Contemporary archaeologists prefer the Patayan terminology. As discussed previously in this volume Hakatayan and Patayan are different designations for the same cultural group with slightly different meanings given to the words themselves, but that is no determination of the dating for this ceramic topology. Additionally, crushed sherds have been reported to be added as temper more often during Patayan III (Schaeffer 1988:140). Vessel One shows several sherd inclusions upon petrographic examination.

The presence of both the hornblende and the mica within the matrix help towards discovering the possible identity of the Parker Buff ware. It was, however, not an easy task. There were some inclusions within the matrix, which were puzzling at best and led to many misleading trails as to what type of ceramics it could be. It was not until numerous e-mails and a personal communication with Greg Seymour (March, 2009), in

which he assured me that the categories *are* broad generalities, when I began to realize that the stray inclusions were just that: anomalies.

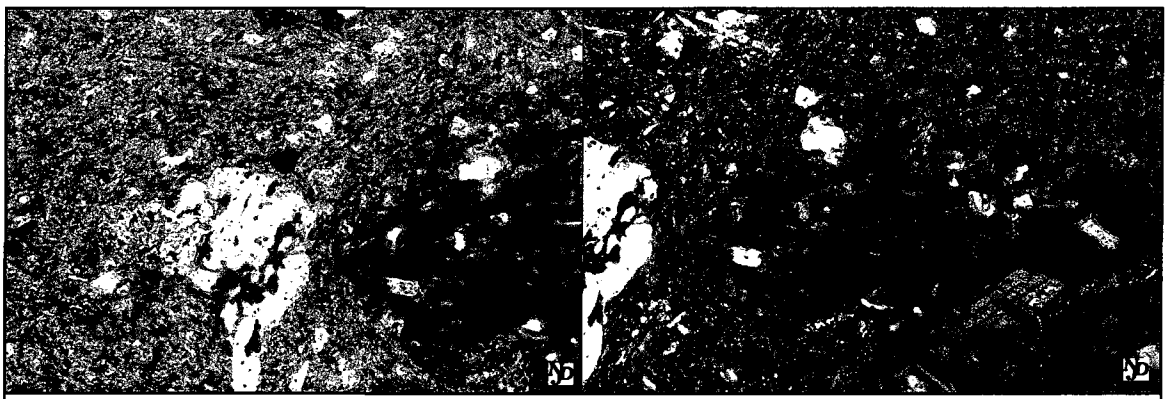


Figure 44. Hornblende in Matrix. In this section close-up, hornblende, $Ca_2(Mg, Fe, Al)_5 (Al, Si)_8 O_{22} (OH)_2$, which is present both as a mineral in the overall matrix of the clay body, as well as in a piece of sherd that was used as temper within side of the mixture. Slide on the left shows the image without polarization and on the right is a slightly shifted view with a polarized lens in place.

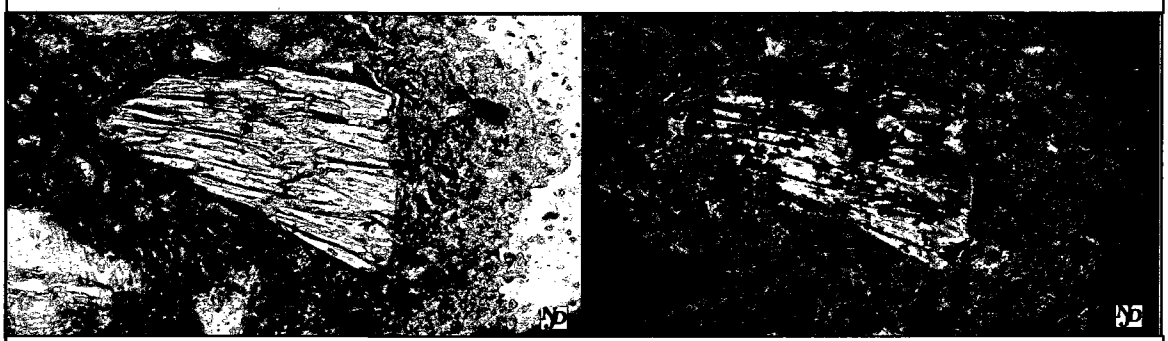


Figure 45. Muscovite Mica on Edge in Matrix. This area of the thin section shows a piece of muscovite mica, $(KA1_2(AlSi_3O_{10})(OH)_2)$, which is an aluminum containing silicate that separates into thin sheets and shows biaxial birefringence when rotated under the microscope's light/lens. Above on right it is shown with polarization.

had completed much of my background research on the mineralogy of the ceramics to be studied prior to looking at any of the thin sections. I thought I knew what to expect. I do have to thank a fellow graduate student, Edgar Huerta, who helped tremendously in showing me many of the finer points of petrographic analysis. Edgar's deeper

understanding of the birefringence of the minerals and their reactive characteristics to polarization aided in the identification of some of the smaller inclusions. Olivine proved to be an interesting addition.

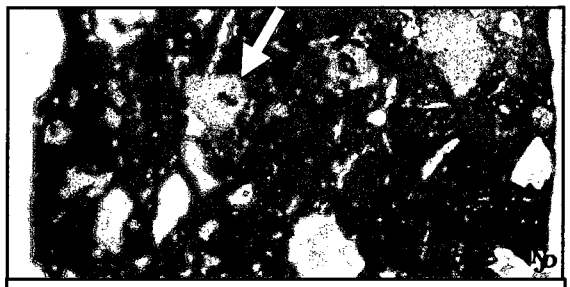


Figure 46. Olivine in Slide A. The arrow points to the olivine in this slide.

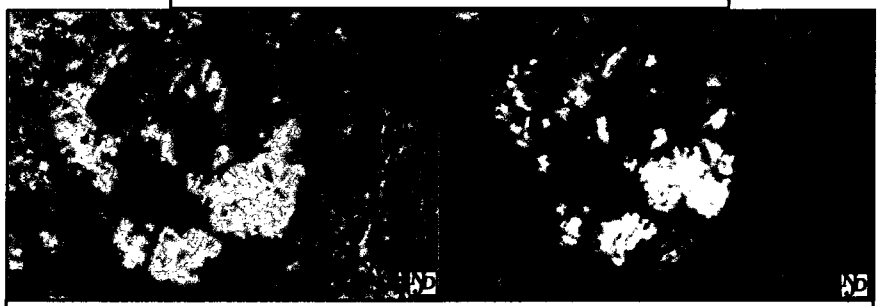


Figure 47. Olivine in Matrix. The olivine $(Mg, Fe)_2(SiO_4)$ shown here, seems to be more a intrusive sand particle, as opposed to the inclusive addition of olivine temper used in ceramics, such as in the Moapa Black-on-gray (Schroeder 1961:50) and Moapa Gray Ware (Lyneis 1992:30) further to the north, also along the Colorado River.

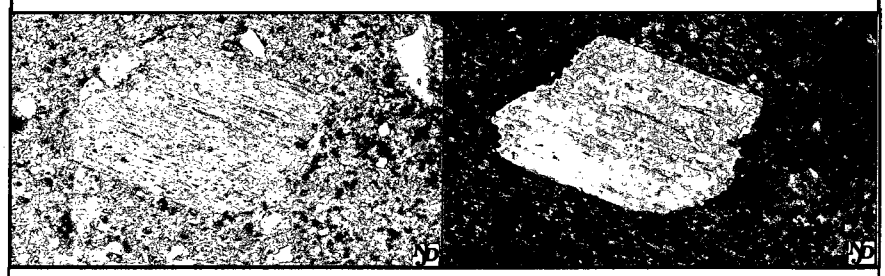
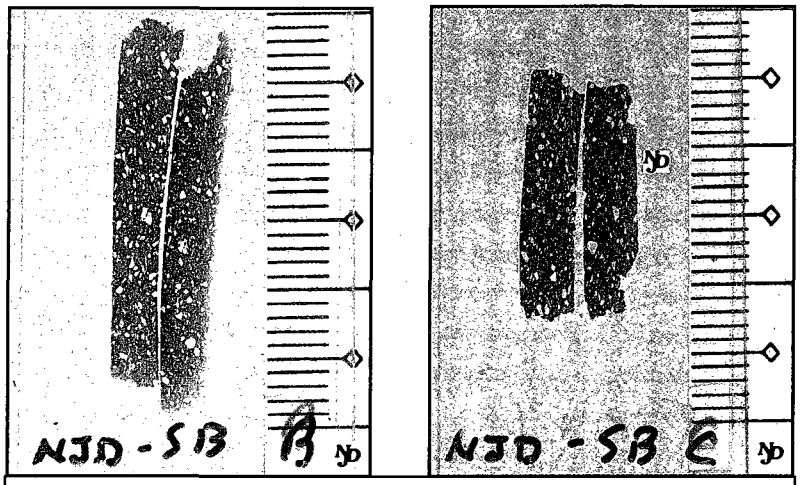


Figure 48. Muscovite Mica Flat in Matrix. Muscovite mica, $(KAlS_2(AlSi_3O_{10})(OH)_2$ which has a pearly luster due to its aluminum content. On the left is the .25mm magnified muscovite and on the right is the same particle with polarization.

Petrographic Analysis Vessel Two (Slides B and C)



Figures 50 and 51. Petrographic Slides B and C.

Description:

Finding the closest ceramic match for Vessel Two (Slides B and C) proved to be similar to the proverbial needle in a haystack. Schroeder describes sherds of Pyramid Gray (1961:50) with large, sub-angular to rounded quartz. Biotite mica is present and frequently seen of the surface.

Construction: Paddle and Anvil

Clay: is a 7.2YR relatively fine grained paste. Firing may have been produced in a reduction atmosphere, as the core of the vessel appears gray; hence the name: Pyramid Gray.

Temper: is relatively uniform matrix of approximately 20% quartz, 15% feldspar, and 3% biotite mica with some volcanics.

Surface Finish: Biotite mica is presented on the surface of the vessel, but may be more noticeable here due to weathering. There is no shine (other than the mica) and no decorative elements. It has a direct rim.

Figure 51. Vessel Two in Situ. The mica is seen here glimmering in the sunlight. Petrographic analysis revealed that the mica content was much less than the outer appearance would lead one to believe, at approximately five percent.

Range: According to Rogers, Pyramid Gray may have come from the Mohave Valley or as far away as the Mojave Sink area in the California Desert. Schroeder believed that this type was to be found along the Colorado River by Boulder Dam (now Hoover) and southward and west into the desert by Lake Havasu City.

Time: According to Schroeder, Pyramid Gray was limited to an early Hakatayan phase (equivalent to Patayan I) A.D. 900 and continued to be made until A.D. 1150. Rogers gave it a later, Yuman II,

designation, with the Pyramid Gray falling between A.D. 1100 to 1400. Unfortunately, there are no other associated time markers within the research area by which to measure the ceramic sherds at this site.

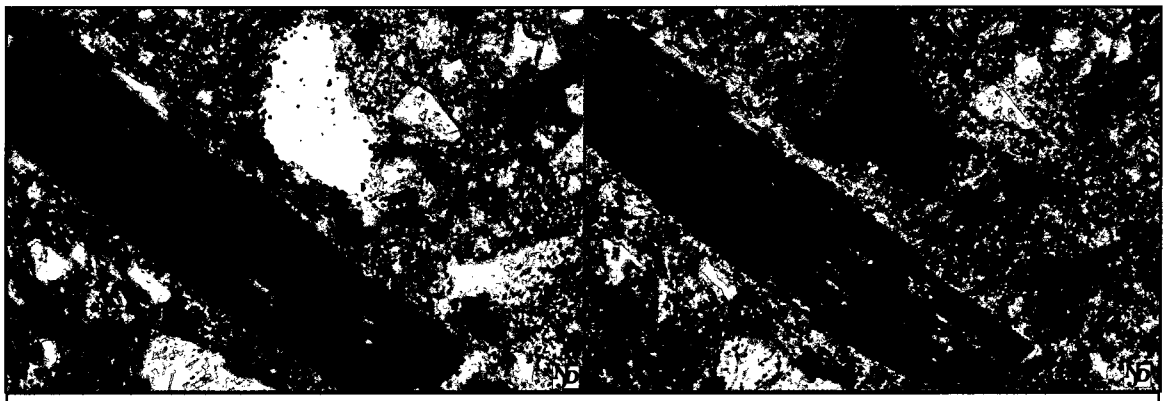


Figure 52. Biotite Mica, Feldspar and Crushed Quartz. When seen here, the mica looks huge in relationship to the rest of the temper, creating its dominate appearance on the outside of the vessel, when it reality it only comprised approximately 3%.

Remarks: In the work by Waters, this ceramic type is combined with Topoc Buff (Seymour and Perry 1998:37), which has led to conflicting data for range and time sequences among the various author's works. Again, as Greg Seymour reminded me (personal communication 2008), one has to keep in mind that these typologies are broad classifications of ceramics with similar characteristics and not specific criterion circles into which wares are to be sorted.

According to Rogers, it may also have small amounts of hornblende, mica, and magnetite, along with the "quartzose rock" temper. Schroeder's temper description consists of abundant, large to medium subangular and rounded quartz sands with some mica and obsidian (Seymour and Perry 1998:37).

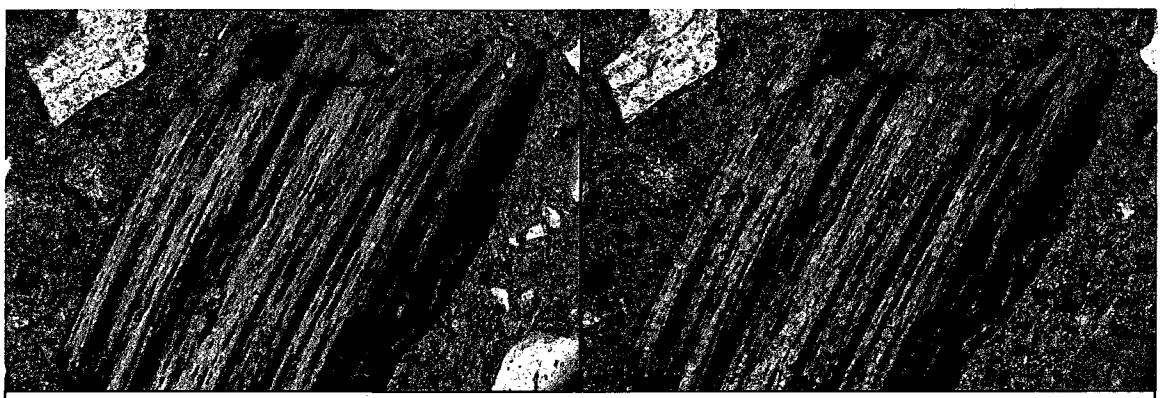


Figure 53. Biotite Mica. This inclusion of biotite mica ($K(Mg,Fe)_3AlSi_3O_{10})OH_2$) is present is seen on edge in the Pyramid Gray ware. Quartz and feldspar are also present.

The more I examined the slides (B and C) for Vessel Two and researched the data for Pyramid Gray, the more convinced I was that the parameters for this classification best suited what I had been observing through petrographic analysis. I had found data on Tizon Brown wares, which included larger temper granules, crumbly textures, and darker fabrics. The microscope showed something completely different.

I had hoped to show a connection between long distance travel and these ceramic sherds. Instead, I have found that quite possibly both sherd types were manufactured within a fifty mile radius of the research study area. Although this, too, would imply travel of sorts as it would all have been on foot, it was not outside the realm of the normal

foraging patterns for seasonal procurement. Quite possibly both ceramic vessels had, indeed, been manufactured by the local Mohave.

Lithic Analysis

In this area, several materials were gathered: fine-grained, crystalline basalt, andesite, carnelian, jasper (both yellow and red), and chert. In looking at the material, identification was made as to its hardness, color, luster, texture, inclusions, translucency, and patination (Bell 1953:299). Knowledge of the raw materials was essential in regard to understanding areas of procurement and patterns of debitage placement with the creation of stone tools (Figure 54). Based on a correlation between the lithic record and trail marker utilization, I propose that travel patterns may be ascertained, if chipped basalt boulders were incorporated as trail markers to workshop areas for lithic procurement.

The lithic record (Appendix 4a-c) was examined from the various sites discovered, to ascertain the level of interaction between the artifacts, its location, and possible trail markers leading to the site. Located at eastern portion of the "Chipped Basalt Trail" by the South Basin Rock Cairn, numerous basalt workshop areas lay. The use of the chipped basalt trail markers to show the way to the workshop areas, where basaltic "boulders of choice" were available, indicated that this area was a well-used lithic procurement area. Although this basalt was not quarried, per se, it was a known resource and used in a repetitive fashion, thus termed within this document as a workshop area.

Figure 54. Basalt Workshop. Located at eastern portion of the Chipped Basalt Trail by the South Basin Rock Cairn. Note the large bi-face quartzite hammerstone at the top right. The fifteen-centimeter ruler is used to show relative size. This is just one on the numerous workshop areas located at the end of the Chipped Basalt Trail.

Trail markers were not utilized for scatters or stations. Within the research area, 12 workshops, 5 stations, and 12 lithic scatters lay alongside various trails. Some paths are larger and marked by varying types of directional indicators; others are mere depressions in the desert pavement. Local quartzite cobbles, utilized as hammerstones, dot the landscape and are believed to be remnants from the Colorado River (Chronic

1983:35) as it meandered its way downward from the Black Mountains in the east. It was also the variety of cobble types that made this a leading procurement area. Tools located at many of the South Basin sites are similar to the plano-convex models, which were described by Rogers (1966:164). The conchoidal markings on the edges, the angle of the blade, and especially the retouching, as seen in the drawing at the far left (Figure 55), are indicative of its use as a lithic tool, as opposed to being a reduced core or debitage flake.

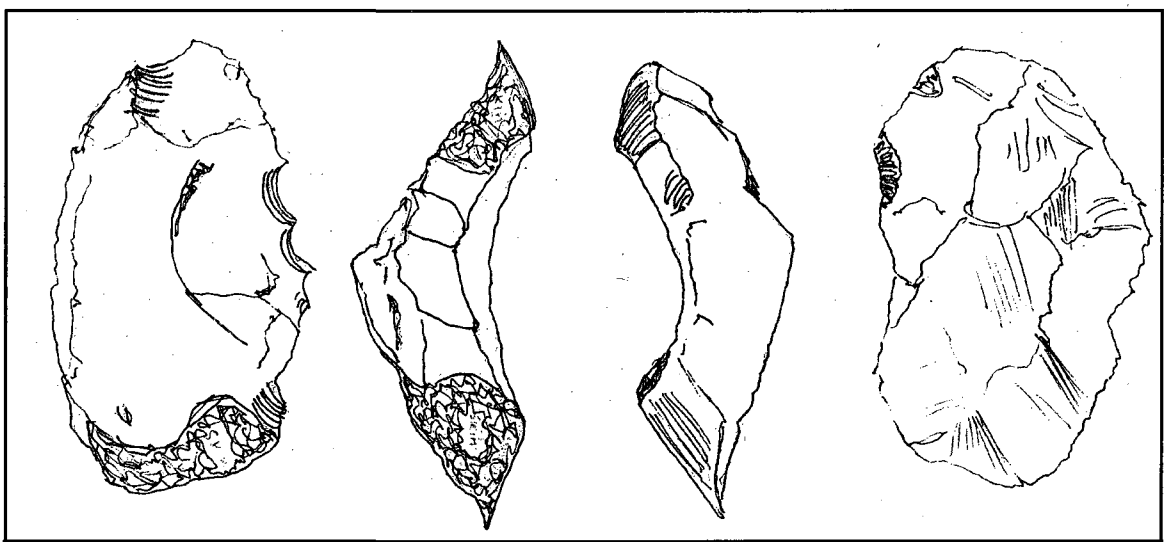


Figure 55. Concave Scraper. This lithic tool, located at one of the South Basin sites, is similar to the plano-convex models, which were described by Rogers (1966:164).

In recording circular clearing sites along trails, tools or similar artifacts needed to be present in order to qualify as a "camp," adding support to the argument of a travel corridor.

Within the research area, as well as all along this Lower Colorado River delta, artifacts were deposited during various time periods; some of which overlap spatially and others that remain unique to their original cultural affiliation. The relationship of these

artifact types may be linked to other sites in the area and across California, which has been well documented by Malcolm Rogers (1966), Albert Schroeder (1953, 1961), and others. I have analyzed the lithic debitage or resultant flakes of stone artifact manufacture (Patterson 1983:299), specifically addressing three levels of human interaction: lithic scatters, lithic stations, and lithic workshops. Tools were also identified utilizing the normative typologies.

Lithic Site Analysis

Based on the recommendations of the Arizona State Museum's definitions for minimal inclusions required for site recognition (fifty years of age and 30 artifacts of a type), as well as those by the National Historic Registry (identifiable artifactual remains, assignable to a culture or timeperiod), locations were documented. Where isolates were discovered, however, these too were also included, as to give a more complete picture of the relational aspect of trail marker type to procurement area, as I had noticed that the chipped basalt boulders led to lithic workshops. Through the documentation of all sites, isolates included, the placement of scatters and "stations" were shown to have occurred, and support for the hypothesis that the chipped basalt boulders were utilized as trail markers was demonstrated.

All lithic sites were indicated first in field journals and on topographical maps, and additionally using GPS coordinates. All significant information was added to assess the travel patterns across this landscape, as well as to identify major and minor

procurement areas. The three levels of human lithic impact (Figure 56): scatter, station, and workshop, provided clues as the landscape utilization of the past.

Lithic Scatters. Predominately, these sites were made along trail sites, seemingly as if the worker were waiting for someone or something. Most often, the scatter could have been made from a crouching position, with the flaking radiating from a centralized position. Lithic scatters generally occupy less than one-and-a-half meters in diameter. The debitage from this flint-knapping event may be refitted into one or two, but not more than three worked cores. A greater number of cores would be indicative of a longer time

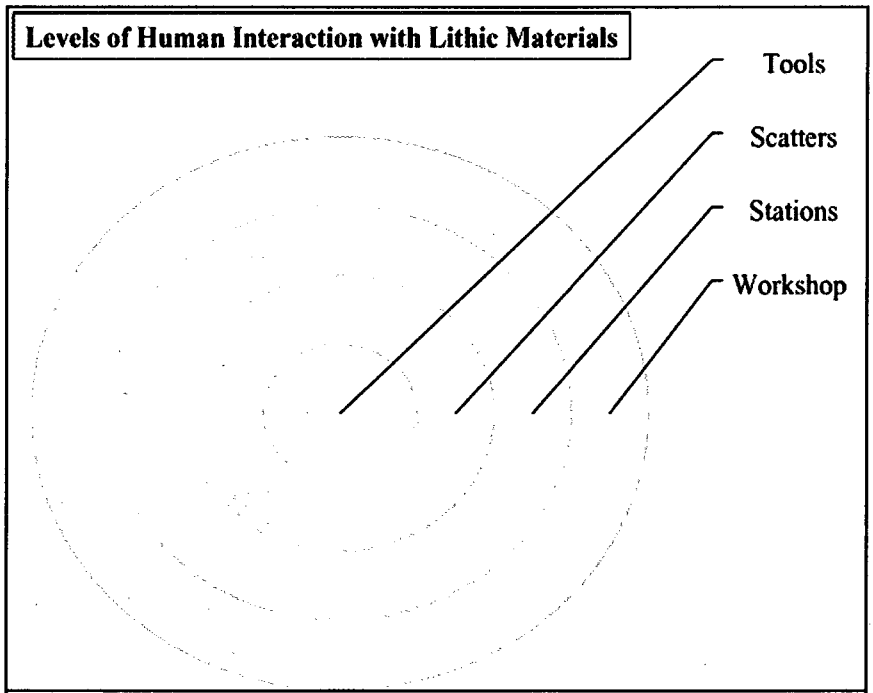


Figure 56. Levels of Human Interaction with Lithic Materials. Tools and scatters were presumably made by one individual. Stations are procurement areas of three to seven cores with a movement of knapping positions notable within its perimeter. Workshops contain ten or more cores, with the debitage of these accumulated and in some instances reused. NJD, 2008

period for involvement or additional knappers at the task. Scatters typically are not recorded through the Arizona State Museums's site management process, unless there are diagnostic tools or associated materials which lend a greater significance to their deposition. For the purposes of this study, all lithic scatters were recorded to show every area of procurement

Lithic Stations. These lithic stations are intermediary sites between scatters and workshops and are introduced here to more accurately define and record procurement activities within this area. Lithic stations (Figure 57) record the debitage of three to seven cores, which are also presumably made from a crouching or kneeling position. Flaking also radiates from a centralized position, but these radiations shift within the station area. Although this might indicate that the knapper had moved several times during the session; it could be attributed to more than one person or the same on varying occasions. Various cores and hammerstones were utilized.

Figure 57. Large Basalt Station. The level of work here may be indicative of one or more individuals at one given time, as more than one hammerstone had been utilized. These may also indicate usage over time by just one individual; the record is difficult to read.

Lithic Workshops. Unlike quarries, lithic workshops in this area rely on cobble deposits from the meanderings of the Colorado River or volcanic debris as their primary source of lithic materials. The debitage record is an overlapping progression of flakes and cores, sometimes randomly tossed about. In some areas, flaking radiates from a centralized position, for specific cores; in others, the debitage seems ransacked for its valuables. This, of course, may have been the case. It is clear that the site was visited by more than one person or by the same one numerous times. The evidence is also preponderant that the area had been work over many sessions by the amount of core materials and layering of debitage.

Resource procurement in this area was clearly an activity accomplished by individuals and groups, possibly seasonally and for many years. The lithic record shows repeated use of naturally occurring deposits of cobbles, left by the meanderings of the Colorado River as it progressed to its current resting place, nesting here between the Newberry Range in the west and Black Mountains to the east. The repeated search for basalt blanks and the markings of the specific trails by which to do this, make this area noteworthy for further study on tools of basaltic composition.

To date, finished tools of basalt material have not been found within the research area, just cores and some pre-forms. Many of the chert and quartzite tools fall within the categories which Malcolm Rogers (1966) designated for the Malpais (San Dieguito I) category; others made from yellow jasper fit the Pinto typology (Figure 58) outlined by the Campbells (1937). Some of the hammerstones and other lithic processing materials may actually be indicative the more recent inhabitants of Cottonwood Island and Tavuku

(A.D. 1600-1950). Until patination testing may be undertaken, finding more exacting dates for these may prove illusive.

There are no manmade terraces within the study for agriculture, irrigation canals, nor other remnants of a more sedentary subsistence means. The lithic record shows only twenty-nine tools for the entire area and two barely used ground-stone mortars. To try to outline a subsistence pattern for a thousand years of scattered occupation with so little information would be absurd. For now, one may only show where camps were located, lithic materials procured, and the tools and mortars lay in-situ. Trails to workshop areas only were marked with chipped basalt boulders, showing the way to sites which were used repeatedly. The introduction of the term lithic *station* to denote a small group of travelers, who chanced upon the necessary lithic type and reduced cores for ease of carrying flakes, is an important addition to the archaeology of this area. The correlation of procurement level and trail marker type may become a paradigm shift in the research of the Southwestern Desert Region.

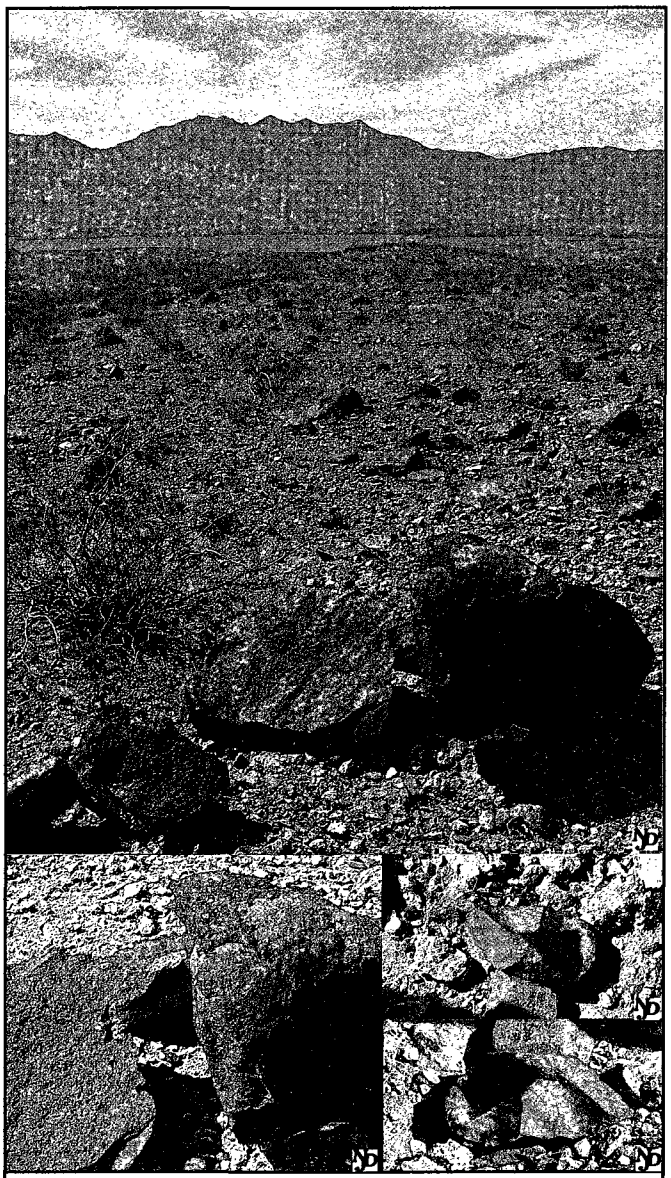


Figure 58. Possible Pinto Projectile Point. Yellow jasper, leaf shaped projectile point is Pinto Point in style. This site is located just off the main east-west travel corridor (5.2 X 3cm).

CHAPTER 6

CONCLUSIONS

The literature regarding this area is a twisting labyrinth of overlapping time periods and confusing jargon. Data provided by the archeological record, however, revealed a relationship between site features and the terrain. Three key factors were discovered: trail markers (*elongated/directionally placed rocks*, *rocks of differentiated color*, and *chipped basalt boulders*), previously undocumented in archaeological literature were strategically placed within the landscape for possibly a thousand years. The study area lies along a well-traveled east-west corridor, which may have been utilized by shaman who created the symbols on boulders along the main trails to *Avikwáamé*. Lastly, the inter-relationship between the chipped basalt boulders and levels of procurement activity: scatters, stations, and workshops, have provided for a direct correlation between trail marker type and the lithic record.

The documentation of 145 sites (Site Records on file at LMNRA, Boulder City Office) showed that landscape utilization for this area and the incorporation of various trail marker types: cairns, petroglyphs, rock alignments, directionally placed rocks, rocks of differentiated color, and chipped basaltic boulders, providing indications of how one may proceed across it. The utilization of specialized trail markers helped to indicate (1) changes of trail direction or (2) objects within the landscape which were out of visual

range, (3) acted as a cautionary device, (4) aided in selecting the safest course upon which to proceed, or (5) showed downward cutting wash areas for passage from ridgelines. This was noted for each of the types listed. All types did not indicate the five preceding directives, but each had been selectively utilized for its best advantage. This information was denoted through topographical mapping and satellite imagery, which helped to define the characteristics of each trail marker's utilization within the landscape, lending support to the argument.

Additionally, site placement along the primary east-west drainage corridor supports the argument that the southern part of the Cottonwood Valley may have been utilized in conjunction with the Mohave Trail. If the trails, which are deeply etched into the desert pavement, along with their respective marker types, provide easy access to the Black Mountains and the resumption of these trails rise to the summit of the Newberry Mountains and link farther to the west with the Mohave Trail, then this area ought to be considered a well used east-west travel corridor. Noting the placement of sites along this travel corridor, again using satellite imagery, and the dearth of sites to the north and south of it, it became apparent that these main ridgelines did provide the easiest access routes to the Black Mountains. These were distinguishable from the surrounding area, not because these were the highest ridges, but because these were well marked with the various combinations of trail marker types and other man-made features.

Entoptic, inner eye, trance induced designs, which from ethnographic accounts may be linked to shaman, dominate the motifs seen on petroglyphic boulders within the research area. In only a few cases, scratched designs exist side-by-side with the

repertoire of those which are abstractly pecked. These rock art sites, which had been unrecorded prior to this study, have been identified now through GPS and satellite imagery, as well as more conventional mapping techniques. Nearly all the petroglyphs lay in sight of Avikwáamé, and these were placed along the main east-west travel corridor. If the path were to be continued on the western side of the Colorado River, it would lead the traveler up to the Grapevine Canyon petroglyph site, well known throughout the Southwestern Desert. As stated previously, the connection of the curvilinear and rectangular designs to those found at Grapevine Canyon and importance of the mountain within the Mohave origin myth strengthens the argument that these petroglyphs were made either for or because of Avikwáamé. Indication through artifact remains shows that these petroglyphic boulders were also utilized afterward to guide others across the same landscape.

Picking one's way through boulder-strewn ridgelines, as one crosses the desiccated alluvial fan from the Black Mountains to the Colorado River, is challenging at best. I have proposed that if rocks were directionally placed, the traveler would spy the placement within the landscape first and then follow the direction of its implied line. These act as guides throughout the research area. Typically, a directionally placed rock is spied, when one has been a distance great enough to warrant reassessment of course. The elongated rock sits upon another in a place where it may be easily seen. These are not spaced close together, these are as far apart as one can go and wonder if the trail has been missed, depending on the terrain. These are like a gentle reminder that you are *on the right path.*

Additionally, rocks of differentiated color were utilized to capture the attention, draw focus, or demand attention. Then, when one was aware of the color, one was also aware of the iconographic message it conveyed: (1) to stop, (2) change, or (3) turn, so that the movement through the landscape becomes easier or less perilous. Whether these markers were utilized to (1) draw attention to downward cutting washes, (2) change trail pattern, and (3) note options such as procurement areas, and these ought to be added to the repertoire of trail marker types. The idea of using brightly colored signal markers should not seem so foreign to us, when we see them every day on roads and freeways. That these were used so long ago and in a different fashion should not be so surprising either. Color in the desert captures the eye and draws the focus to that point and demands attention.

Chipped basalt boulders seem to have been undocumented within the literature as well. Boulders struck, in a specific manner: (1) to show high contrast, (2) to indicate direction, and (3) to act as an iconographic indicator of basalt procurement area in the distance, then when the direction is followed a procurement area ought to be found lay strategically placed. These were not the random strikings of a harried basalt procurement seeker. In some cases, basaltic boulders had been moved trailside and then struck to give the necessary mark indicating which direction to proceed. Through this study, it has been shown that these trail markers are a viable means of identifying procurement areas.

Three levels of lithic procurement were outlined for this area: lithic scatters with one-three cores, stations with four-seven cores, and workshops with eight or more cores. The artifact remains of human subsistence activity is very sparse for this region, as is the

record for human habitation. In order to identify varying levels of human interaction in stone tool technologies, levels of procurement activity were projected based on the number of tools, cores, or debitage at each site. Unassociated lithics with no organic time markers and few diagnostic types made searching for quantifiable, data-driven answers about cultural variables extremely challenging. There were just not enough of the right types of lithic data within the research area to answer those questions.

Extraneous debitage and a few stone tools could not provide the necessary information. Trails to workshop areas, only, were marked with chipped basalt boulders, showing the way to sites which were used repeatedly. The introduction of the term lithic *station* to denote a small group of travelers, who may have chanced upon the necessary lithic type and reduced cores for ease of carrying flakes, is an important addition to the archaeology of this area. The correlation of procurement level and trail marker type opens a new area of research for the Southwestern Desert Region and may be applicable to areas beyond.

Petrographic analysis provided another avenue to search for clues about the utilization of the research area. Within the six square mile area and 146 sites, the sherds of two ceramic vessels only had been discovered, lying at the base of the same slanted rock. Vessel One, I discovered was a Colorado Buff ware, further classified into the Parker series, identified by its fabric composition as Parker Buff. I had originally thought that Vessel Two was possibly an imported Brown Ware. A positive identification as a Tizon Brown ware of the pottery sherds from Vessel II would mean that trade with the people from or travel to areas outside the Cottonwood Valley would have occurred.

Although this fact alone could not prove that the area was a major travel route, it would help to support the hypothesis.

Through Petrographic analysis, I have positively identified Vessel Two as a Pyramid Gray ware, also called Topoc Buff. Although I had hoped to show a connection between long distance travel and these ceramic sherds, it is quite possible that both sherd types were manufactured within a fifty-mile radius of the research study area instead. However, that these were both manufactured Mohave wares and used while in the process of procurement practices seems plausible. Unless associated artifacts might "come to the surface" or further testing may be done through different methods, definitive answer as to who made these pots and when, may never be fully realized.

Three key factors are supported through this research. Trail markers (*elongated/directionally placed rocks*, *rocks of differentiated color*, and *chipped basalt boulders*) were strategically placed within the landscape to guide travelers through an iconographic messaging system. Secondly, the research area lies along a well-traveled east-west corridor, which may have been utilized by shaman who created the symbols on boulders along the main trails leading to *Avikwáamé* and subsequently followed by other travelers. Lastly, the inter-relationship between the chipped basalt boulders and levels of procurement activity, lithic workshop, has provided for a direct correlation between trail marker type and the lithic record. Research in the Southwestern Desert Region, as a whole, may shift to this type of closer inspection of trail markers and petroglyphs to discern correlations between these and the landscape.

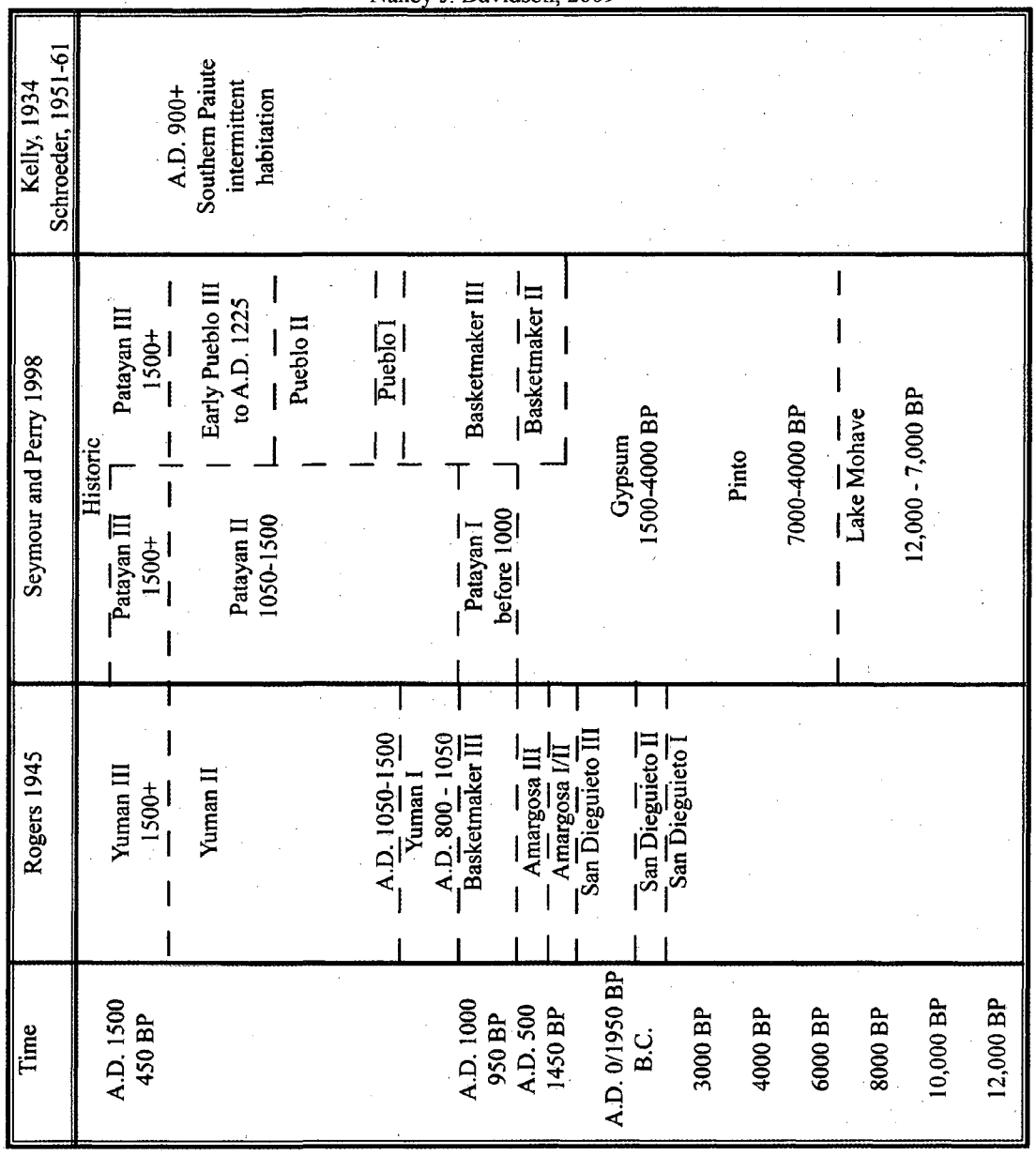
APPENDICES

APPENDIX 1

Making the Connections: An Archaeological Survey of Prehistoric Trails and Trail Markers Along the Lower Colorado River

Nancy J. Davidson, 2009

Chronological Sequence of Habitation for South Basin (LMNRA) Research Area



Descriptions of Lower Colorado Buff Wares: Albert H. Schroeder (1958)

Schroeder's (1958) typology was developed in part on the basis of a reexamination of Rogers' collections and notes. Waters (1982:278-280) strongly objected to the way Schroeder interpreted Rogers' materials, citing criticisms from Rogers himself.

Series	Major Type	Temper; Related Types	Chronological Range	Geographical Range
Parker	Parker Buff	moderate to abundant quartz, hornblende, feldspar, mica; types include Parker Red-on-buff, Parker Black-on-red, Parker Stucco	pre A.D. 900 to post 1900	on the Colorado River, from Needles to Ehrenberg and sporadically farther south
Parker	Colorado Beige	medium to abundant quartz, hornblende, feldspar, mica; types include Colorado Red-on-beige, Colorado Red	post A.D. 1150 - historic	on the Colorado River from the Bill Williams River to the Colorado River Indian Reservation
Palo Verde	Tumco Buff	scarce sherds, quartz; types include Tumco Red-on-buff, Tumco Stucco	pre-A.D. 900 - post-1400	on the Colorado River from the Colorado River Indian Reservation to the delta
Salton	Topoc Buff	scarce to abundant sand; types include Topoc Red-on-buff, Topoc Fugitive Red, Topoc Stucco	post A.D. 1150 - ?	on the Colorado River from Needles to Ehrenberg
La Paz	Needles Buff	abundant rounded sherds, quartz; types include Needles Red-on-buff, Needles Stucco, Needles Beige, Needles Red-on-beige, Needles Red, and Needles Black-on-red	A.D. 1150 - ?	on the Colorado River from the Colorado River Indian Reservation to Yuma

Note: Types well outside of the Baja California borderlands and not listed below include Gila Bend Plain, Gila Bend Stucco, Gila Bend Beige, Gila Bend Red, Black Mesa Red, Black Mesa Polychrome, Topoc Buff, Palomas Buff, Palomas Stucco, and Pyramid Gray.

APPENDIX 3

Descriptions of Lower Colorado Buff Wares: Michael R. Waters (1982)

All of Waters' (1982a, 1982b) types except Colorado Red also include varieties with painted red designs; i.e., "Black Mesa Red-on-buff," etc. Waters' chronological periods were Patayan I, ca. A.D. 700-1000; Patayan II, A.D. 1000-1500; and Patayan III, after A.D. 1500. In addition to the types listed here, Waters distinguished two types, Topoc Buff and Palomas Buff, with ranges lying well outside of the Baja California borderlands.

Major Type	**Temper; Related Types**	**Chronological Range**	**Geographical Range**
Black Mesa Buff	direct rim; untempered; inclusions (very sparse) are quartz, feldspar, rock, shell	ca. A.D. 700 to 1000	on the Colorado River from 50 km north of Yuma to the delta; Laguna Macuata
Colorado Beige	direct rim; inclusions (5-55%) are quartz, feldspar, rock, mica, shell; types include the red-slipped Colorado Red	ca. A.D. 700 to 1050	on the Colorado River from north of Blythe to the Gila River; intrusive in the delta, on the eastern shore of Lake Cahuilla
Tumco Buff	recurved rim; untempered; inclusions (very sparse) are quartz, feldspar, rock, shell	ca. A.D. 1000 to 1500	on the Colorado River from Blythe to the delta; intrusive west of Laguna Macuata
Salton Buff	recurved rim; inclusions (15-50%) are well-rounded quartz, feldspar, cryptocrystalline silica, shell	ca. A.D. 950 to 1500	on the shores of Lake Cahuilla; intrusive on the Colorado River
Parker Buff	recurved rim; inclusions (medium to abundant) are feldspar, quartz, hornblende	ca. A.D. 1000 to post-1900	on the Colorado River from the Bill William River to Yuma
Colorado Buff	recurved rim; inclusions (1-10%) are quartz, feldspar, shell	ca. A.D. 1500 to post-1900	on the Colorado River from Nevada to the delta and into the California deserts; intrusive as far west as San Diego

APPENDIX 4a
LITHIC RECORD
Making the Connections: An Archaeological Survey of Prehistoric Trails and Trail Markers Along the Lower Colorado River

Nancv J. Davidson. 2009

GPS ID #	SITE TYPE	SITE	DESCRIPTION	TOOLS	Scatter	Stations	Workshops
38	PROC-1	CB	CDSOM		1		
39	PROC-1	2 Andesite	DSOM		1		
42	PROC-1	Basalt at Big	DSOM		1		
43	PROC-1	Small Basalt	DSOM		1		
53	PROC-1	Cobble with CF	N-HD IN CANYON		1		
67	PROC-1	Rock Features with Basalt	S. PAPA'S COVE		1		
68	PROC-1	Lithic Scatter-3/2 MT	S. PAPA'S COVE		1		
71	PROC-1	Lithic Scatter / 3 Quartzite	S. PAPA'S COVE		1		
72	PROC-1	Basalt Lithic Scatter / Quartzite	S. PAPA'S COVE		1		
73	PROC-1	Quartzite Lithic Scatter/ 3 Cores	S. PAPA'S COVE		1		
78	PROC-1	Rock Alignment/ and lithic scatte	R AL/1LS		1		
84	PROC-1	Basalt Scatter (1)	HD UPPER		1		
89	PROC-1	QT	QT		1		
120	PROC-1	LS/4 AT PT	LS/4 AT PT		1		
127	PROC-1	Basalt Lithics	PT C		1		
132	PROC-1	Basalt at East Wash	PTCV		1		
135	PROC-1	B (basalt ?)	B		1		
137	PROC-1	Basalt	PT		1		
138	PROC-1	Long Quartzite Hammerstones	PT CV		1		
139	PROC-1	RE and Fine	FRANKS		1		
141	PROC-1	Red Andesite (2)	FRK		1		
123	PROC-2	L ST/3W C CH	L ST/3W C CH			1	
7	PROC-2	Lithic Station with Yellow Jaspar	YLLW ST MK			1	
18	PROC-2	Basalt Station in Wash (45)	RA WASH			1	
32	PROC-2	Basalt	PC/BBACK			1	
40	PROC-2	Basalt Beyond 2andesite	DSOM			1	
44	PROC-2	Dark Basalt @ Pennisula Junction	DSOM			1	
45	PROC-2	Basalt before T-Junction	DSOM			1	
52	PROC-2	Basalt Station with R	HD			1	

APPENDIX 4b
LITHIC RECORD
Making the Connections: An Archaeological Survey of Prehistoric Trails and Trail Markers Along the Lower Colorado River
Nancy J. Davidson, 2009

GPS ID #	SITE TYPI	SITE	DESCRIPTION	TOOLS	Scatter	Stations	Workshops
86	PROC-2	Basalt Station/Cobble Hammer @SB	C BSLT/MESA TOP@SB			1	
88	PROC-2	CHPSLT /QT	CHPSLT /QT			1	
92	PROC-2	BSLT ST /CHP	BSLT ST /CHP			1	
103	PROC-2	BSLT ST/PT PT	BSLT ST/PT PT			1	
104	PROC-2	BSLT ST 2 /PT PT	BSLT ST 2 /PT PT			1	
105	PROC-2	3RD BSLT ST/PT PT	3RD BSLT ST/PT PT			1	
106	PROC-2	4TH BSLT ST /PT PT	4TH BSLT ST /PT PT			1	
107	PROC-2	6TH BSLT BY2 CC PT P	6TH BSLT BY2 CC PT P			1	
121	PROC-2	BSTL/QST WST	BSTL/QST WST			1	
122	PROC-2	Basalt Station	PT CV			1	
124	PROC-2	BST Station	BST ST			1	
128	PROC-2	Basalt Station at Terrace	PT CV			1	
130	PROC-2	Basalt with Quartzite Hammerstone	PT CV			1	
131	PROC-2	Basalt with 4 Quartzite Hammersto	PT CV			1	
133	PROC-2	More Basalt and Quartzite	PT CV			1	
134	PROC-2	Black and Brown Basalt Station on	PT CV			1	
142	PROC-2	Red Carnelian Station	WST SIDE			1	
7	PROC-2		Lithic Station with Yellow Jaspar			1	
34	PROC-3	Basalt Workshop	DSOM=Far side of SB Rock				1
35	PROC-3	1/MORE...	1/MORE...				1
50	PROC-3	Cobble Workshop/Dif Color Trail M	DSOM				1
62	PROC-3	Large Basalt Workshop / Quartzite	DSOM				1
90	PROC-3	ANDESITE QUARRY	ANDESITE QUARRY				1
115	PROC-3	BSLT WKSP LG IN WASH	BSLT WKSP LG IN WASH				1
125	PROC-3	BSLT/QST WKSP	BSLT/QST WKSP				1
22	TOOL	Possible preform Mortar at Mullio	AT MULL WSH SPLIT	1			
101	TOOL	EHAND 2AX	EHAND 2AX	1			
22	TOOL		Possible preform Mortar at Mullio	1			
27	TOOL		Tool	1			

APPENDIX 4c
LITHIC RECORD
Making the Connections: An Archaeological Survey of
Prehistoric Trails and Trail Markers
Along the Lower Colorado River
Nancy J. Davidson, 2009

GPS ID #	SITE TYPE	SITE	DESCRIPTION	TOOLS	Scatter	Stations	Workshops
54	TOOL		Bi-Face	1			
55	TOOL		Hunt DL	1			
56	TOOL		1blade CC	1			
58	TOOL		PE Lithic / Chert	1			
63	TOOL		Leaf Arrow Point	1			
75	TOOL		Scp Dl (?)	1			
77	TOOL		CC / Hill and Dale Trail	1			
80	TOOL		1 CC on South Side, 2nd pennisula	1			
101	TOOL		EHAND 2AX	1			
116	TOOL		BEAUTIFUL TOOL	1			
127	TOOL		Basalt Lithics	1			
140	TOOL		Chert Tool	1			
11	TOOL		Scraper and PF (2 lithics)	2			
48	TOOL		1 cc camp	2			
66	TOOL		1 CC S. Papa's at Trail Junction	2			
70	TOOL		2 CC/ 3 T	3			
118	TOOL		3 1/2 CC	3			
64	TOOL		9 Circular Clearings/ S. Papa's C	5			
				33	20	26	7

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