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Valley of Fire Petroglyphs: A New Perspective on an Old Idea

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VALLEY OF FIRE PETROGLYPHS: A NEW PERSPECTIVE ON AN OLD IDEA

By

Eric Pacl

A thesis submitted in partial fulfillment
of the requirements for the
Master of Arts Degree in Archaeology

Department of Anthropology
College of Liberal Arts
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May 2012



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CHAPTER 1

INTRODUCTION

If variety is the spice of life, then rock art is somewhere around habaneros level of spiciness. Because of the ever expanding diversity of glyphs, constantly changing number of classifications, and wide-ranging approaches to interpretation from both the public and academic realms, rock art studies have been known for most of its history as being on the fringe of anthropological studies with a hodgepodge of varied information, interpretations, and approaches. Whether it stemmed from its labeling as 'art' in the middle 20th century with the introduction to the world of the Lascaux cave paintings or the public fascination and subsequent published input, initially, especially in the United States, rock art overwhelmingly used a subjective approach. Even in many early academic writings, if rock art was included, a subjective interpretation was usually presented either by the author, again of varying educational background, or a 'local informant's' personal view. It is only recently, approximately in the past two or three decades, that rock art has been taken seriously as a contribution to the study of regional cultures in the anthropological field. Since Schaafsma's publication of *Indian Rock Art of the Southwest* (Schaafsma, 1980) rock art has academically begun to use anthropological approaches and theories in its studies. Although only a couple pages in length, in the section entitled "The Study of Rock Art: A Theoretical Framework" Schaafsma parsimoniously presents an archaeological approach to understanding and studying rock art as an important cultural trait. Since then, an ever-growing number of highly critical publications have been published in academic journals (Berrocal and Garcia, 2007; Hyder, 2004; Llamazares, 1989; McCall and Richards, 2008; Quinlan and Woody, 2003). Yet, showing its infancy in the world of academic archaeology, there are few widely accepted standards established to either classify or record rock art sites. Optimistically, as anthropology and its sub-disciplines begin to realize the importance

rock art brings to the overall understanding of past cultures, the more rock art studies will be accepted as a significant and engaging cultural trait. This will only occur if the approaches to understanding rock art are seen as objective and part of the larger set of scientific processes.

This research paper enhances the approaches used in the interpretative methods of petroglyphs, in particular those located in the Valley of Fire State Park in Southern Nevada. Along with the actual content, the contextual element of elevation, in relation to ground level, will be used in an analysis of the petroglyphs located in the park. Intermittently throughout the park petroglyphs are visible at various elevations, from current ground level to the top of the rock formations hundreds of meters vertically. It is this contextual element of elevation that will be key in the attempt to begin interpreting both function and meaning of glyphs. The conceptual framework begins with the idea that different members of society created petroglyphs for their purposes in particular places. In other words, the “who” (socially defined) is in direct relationship with the “where” petroglyphs were produced. Analyses will divide the elevation or vertical plane into distinct levels and compare the petroglyphs in each level in an attempt to answer who created them from a social perspective and for what purpose. Specifically, I will investigate the hypothesis that the petroglyphs found at the highest elevation levels are associated primarily with shamanistic activities; that those in the middle elevation levels are associated primarily with hunting activities and rituals, and that those in the lowest elevation levels are associated primarily with everyday, or domestic, activities. The end result is to objectively approach glyphs without indirectly guiding the reader with suggestive labels that might sway them into interpretations or conclusions before the data are analyzed. Jablonka and Lamb (2006) stated, “What symbols are, how they form and develop, and how they are used are among the most complex issues in the study of man.” With this thought in mind, it is important to remember that these

petroglyphs are a symbolic system. And with any symbolic system there are patterns that develop in its use because of cultural constraints and guidance. It is up to the anthropologist to develop an understanding of the patterns that occur and apply this knowledge to the overall understanding of them.

CHAPTER 2

ENVIRONMENTAL AND CULTURAL CONTEXT

Physical Environment

The Valley of Fire State Park is located in southern Nevada approximately 50 miles northeast of Las Vegas. It was dedicated in 1935, which makes it Nevada's oldest state park. The size is approximately 34,880 acres. Its boundaries are encased in the larger Mohave Desert region. The park received its name from the red sandstone formations throughout the area. When contrasted to the surrounding desert conditions, these rock formations appear to be enflamed when lit by the midday sun. The ecological system is defined as that of low desert with mild winters, hot summers with consistent temperatures well over 100 degrees, and bi-modal rainy seasons (summer and winter), which produce approximately four inches of rain annually. Mild temperatures for most of the year create a 180 day growing season. Although there are a few small springs located within the Valley of Fire State Park, the area is generally quite arid. The Muddy River is the nearest major water source located adjacent to the park on the east and flows continually until its confluence with the nearby Virgin River approximately 35 km south. The Virgin River flows from the south, where it merges into the larger Colorado River, in southern Utah. Major floral resources include creosotebush, bursage, pine nuts, oak, cactus, wild grass, cholla, and several varieties of mesquite including screwbean. Important faunal resources include desert bighorn sheep, mule deer, rabbit, chuckwalla, and desert tortoise.

Previous Archaeological Research in the Valley of Fire

Initial research completed in the park was in the late 1970s and was led by Claude Warren for the Archaeological Research Center Museum of Natural History at the University of Las Vegas – Nevada (Warren et al., 1978). During this time, his team

excavated three sites in the park identified as Atlatl Rock, South Shelter, and Turtle Bone. Atlatl Rock and South Shelter were defined as rock shelters and Turtle Bone was an open midden site. The report included a detailed listing of artifacts and site maps of the three excavations. A summary analysis of the pottery was completed by layer. A more detailed analysis was completed of the Atlatl Rock site (Warren, 1982). Statistical data included analyses of flotation samples, pollen residue samples, radio-carbon dating, and rock art. This analysis presented a chronology of the park divided into five broad periods, which were defined by cultural remains such as lithics and pottery, floral, and faunal remains. Periods one and two were defined as “Archaic hunter/gatherers” and are differentiated primarily by the tools that were produced. Period three was defined as occupation by the Anasazi, primarily referencing not the park itself but the adjacent Muddy River archaeological data. Period four which included the Turtle Bone site and period five, which included the South Shelter site were primarily defined with pottery type changes.

Since 2003, Dr. Kevin Rafferty of the College of Southern Nevada has conducted field schools in the Valley of Fire State Park (Rafferty, 2010). Through these field schools, approximately 4.25 square miles of the park has been archaeologically surveyed, resulting in recording 54 prehistoric and historic archaeological sites. The oldest sites are estimated to date between 10,000 B.P. and 7,500 B.P. (Rafferty, 2010). The historic sites date to the early 20th century. The surveyed sites have been grouped in three clusters; 25 near the north end of the park by St. Thomas Wash, 20 around a feature of the park named Mouse’s Tank, and the remaining 9 adjacent to Atlatl Rock (Rafferty, 2010). Chronological dating of the sites references both the shelter type and the surface cultural remains such as lithic assemblages, petroglyphs, and historic remains such as glass.

Cultural Context

Paleoindian /Archaic Period. The environmental changes that occurred during the late Paleoindian period throughout the entire Southwest produced diverse regional subsistence strategies. In the region of this thesis, the southeastern portion of the Great Basin, the primary environmental feature was shallow pluvial lakes. Strategies regarding subsistence were primarily based on the gathering of plant foods and hunting of small, non-migratory game around these lakes. As this change of subsistence occurs into the Archaic period, approximately 10,000 – 7,000 B.C. to 1 - 500 A.D. (Cordell, 1997; Huckell, 1996; Kelly, 1997), so does the archaeological record. As with many other Southwest locations, the southern Nevada Archaic period is primarily defined by a series of projectile point styles. As part of the larger Great Basin record of this period regional sequences primarily included Pinto and Gypsum (Beck and Jones, 1997; Jones and Beck et. al., 2003) and during the late Archaic period Elko (Warren and Crabtree, 1986). Besides the Great Basin region there were other areas that had cultural effects on southern Nevada. These influences are supported during the late Archaic Period in other cultural material besides lithic tool production. First, the connection of split-twig figurines in conjunction with Gypsum points has been located at sites in southern Utah, northern Arizona, and the Mohave Desert in southern California (Huckell, 1996; Lyneis, 1992a, 1992b). Secondly, rock art regional styles or at the very least, certain glyphs can be traced to influences stemming from both the Coso Range region of southern California and the Fremont region of southern Utah. This outside influence is consistent with both the prehistoric regional labeling to Lowland Virgin area connecting it to the Virgin Anasazi to the east and the historic labeling with the Southern Paiute who extended both east and south along the Colorado River into southern California.

It is towards the end of this period that the oldest cultural remains are found located in the park boundaries. These come from rock shelters near the Atlatl Rock area

excavated by Warren. (Warren et al. 1978; Warren, 1982) An analysis of the site has dated it to the late Archaic period, which for local time classifying or Pecos Classification would be during the Basketmaker II (Moapa phase) period which stemmed from 300 B.C. to 400 A.D. The dating and remains, both cultural and natural, of this site are consistent with the increasing Archaic sites found along the adjacent Muddy River and Virgin River. For this period, the use of either rock shelters or pit house sites was standard. Along with these types of shelters the Basketmaker II (Moapa Phase) sites are primarily defined as containing atlatl points but no pottery (Cordell, 1997; Larson, 1996; Lyneis, 1995).

As the Archaic period came to a close the hunter-gather lifestyle showed several changes in the region. First, group size and location patterning changed. Earlier sites, where Pinto assemblages were located, were usually small with meager remains which suggest sparse and short time use. Later sites, like those containing Gypsum assemblages, became much more extensive in both overall size and density of assemblages which suggests a longer use by larger groups. Second, looking at the archaeological record, starting around 2000 B.C and steadily increasing to the end of the Archaic, the numbers of plant processing tools located at sites became more prominent. Coincidentally, it is also during the Basketmaker II phase that the appearances of maize have been identified in the southern Great Basin at both sites along the Muddy River just north of the park (Cordell, 1997; Lyneis, 1982) and in the Las Vegas Valley (Ahlstrom, 2007) just west of the park.

Formative Period. From the middle of Basketmaker II (Moapa phase) or approximately 1 A.D. through Pueblo III phase (Mesa House phase) or approximately 1250 A.D., the valleys adjacent to the east of the Valley of Fire State Park around the Muddy and Virgin rivers were continually occupied by cultures defined as the Anasazi, or more specifically the Lowland Virgin Anasazi, and more recently relabeled as the

Ancestral Puebloan (Cordell, 1997; Lyneis, 1995). The key cultural characteristics that have tied this area to the Anasazi located to the east were related to the architectural designs (locally minus kivas), the pottery styles that included black on white design, and the distinctly tempered Moapa Gray ware, and geographic proximity to similar populations (Lyneis, 1992b). Although slab-lined, sub-surface pit houses were continually found through all of the above phases, surface structures in the form of pueblos were introduced appropriately during the Pueblo I phase (partial Lost City phase) between 700 and 1100 A.D. (Harry and Watson, n.d.; Larson, 1996; Lyneis, 1995). The largest concentration in the vicinity of the park is located directly east along the Muddy River. Lost City, as this area is known, peaked between 1000 and 1150 A.D. with an estimated maximum population of somewhere between 700 and 1,000 residents. Because of a constant supply of water from the spring fed Muddy River and temperatures that allowed for a 180 days of growing season, which is long enough for some crops to grow more than once annually, intense agriculture developed and thrived as an important subsistence strategy in the region. In turn, the region supported a large population. Domesticated forms of maize, beans, and squash mixed with a continuation of hunting of local fauna and gathering of available foods such as pine nuts, agave, and rice grass were the main subsistence strategies during this phase (Harry and Watson, n.d.; Larson, 1996; Rafferty, 1990).

The Lost City area, which is located on the far western edge of the Anasazi region, was part of an intense intraregional trade with other "Anasazi" groups including the Kayenta, Upland Virgin Anasazi, Northern San Juan, and Plateau regions to the east (Lyneis, 1995; Rafferty, 1990). Although there was some trade to the west as seen in the archaeological record in the form of sea shells from southern California, traceable cultural material such as pottery was primarily traded with other Anasazi groups with only sparse amounts showing up in other cultures like the Fremont to the northeast and

Patayan to the south (Cordell, 1997; Lyneis, 1992b). This does not mean there was not substantial trade between the groups, it just means that commodities such as salt which was mined near the Muddy River and Virgin River confluence, textiles, domesticated foods, or other items that would not show up in the archaeological record were also traded. This is supported by the necessity to exchange commodities such as firewood, which was scarce in the area, pottery, and possibly temper, which primarily was made in northern Arizona with a distinct green olivine temper, all of which were required to support such a large population.

Prehistoric/Historic Period. Explaining the end of the prehistoric inhabitants in the Lost City region is still a much debated topic. The transitional period from Virgin Anasazi to Southern Paiute that took place between the 12th and 18th centuries has had both very little archaeological remains and a multitude of theories attached to it. Whether it was a larger, regional environmental change, a sudden internal social or political change, a mass migration, unknown external social factors from neighboring peoples, overtaxing of the wild faunal and floral resources, or simply assimilation into the later Southern Paiutes, almost complete abandonment of the region occurred rather abruptly around 1150 A.D. (Harry and Watson, n.d.; Lyneis, 1992a and 1995) At the time of abandonment, the entire Virgin Anasazi branch region was going through approximately a 30-year drought, there was large-scale social instability at the eastern end of the Anasazi region, and migrations were occurring in other adjacent non-Anasazi Southwest areas because of similar social and environmental factors (Larson and Michaelsen, 1990; Larson, 1996; Lyneis, 1992). Although the Lost City region had a continual water source and the local resources to continue to settle in the area, it is clear that a combination of large external and/or internal unforeseen pressures caused a substantial population to abandon this area in a hurried manner.

At time of Euro-American contact in the 18th century in the adjacent Moapa Valley region, the Native Americans labeled as the Southern Paiutes were the sole occupants. They were primarily irrigation agriculturalists using the Muddy River using the same water source and growing similar foods as their predecessors including maize, beans, and squash with the addition of sunflower. Like their predecessors they supplemented their subsistence with hunting and gathering local resources. According to Warren Southern Paiutes resided in and near the park until around 1800 A.D (Warren, 1982). The first non-Natives to settle the adjacent Moapa Valley were the Mormons in the mid 1800s. They were there for less than a decade before forced abandonment because of a tax dispute with the state authorities. Remnants are visible in the current archaeological remains of St. Thomas now highly visible because of the river substantially decreasing in elevation. Present day populations in the adjacent Moapa Valley area have continued this past influence with a large Mormon percentage occupying the area.

Rock Art Affiliations

As mentioned above, as regions began to be culturally defined through time (Great Basin, Anasazi, Fremont, etc.), the southern Nevada region was located on the periphery of several of these areas, which may account for the variety of past rock art studies in the area having multiple cultural styles attached to them. It is also very important to remember that each of these larger cultural areas contained multiple smaller regions of variation within them. Several of these cultures and their connection to Southern Nevada rock art will be discussed below.

Great Basin (Archaic). The Great Basin Abstract style of rock art, as originally described by Steward (1929), is both the oldest defined, broadest covered in relation to area, and most consistently occurring with other styles of glyphs in the southwest. Part



Figure 1. Cultural map of the American Southwest. <http://upload.wikimedia.org> (partial)

of the developing theory suggests that the earliest Great Basin populations used rock art as part of various social rituals to ‘socialize the new landscape’ primarily around either habitation sites or new areas of interaction with possibly unknown entities (Quinlan and Woody, 2003). Consisting of elemental abstract designs, numerous examples have been found throughout the Great Basin and eventually extend southward and eastward through Arizona and New Mexico along the Rio Grande drainage system (Schaafsma, 1980). Quinlan and Woody (2003) suggest that this elemental “abstract imagery allows for the possibility of a hierarchy of meanings and interpretations, controlled by a minority and thus a potentially important source of power.” This ‘source of power’, in relation to socially unique members within a group may very well be the reason for its long-term use. Secondly, it is theorized as regional cultures began to develop, these abstract

glyph types began to develop into more representational types in both anthropomorphic and zoomorphic forms. This change, in turn, may “reflect changes in social and ritual practices” (Quinlan and Woody, 2003; Schaafsma, 1980).

Virgin Anasazi. The Anasazi culture stemmed from Southern Nevada eastward through most of New Mexico, north of the Colorado and Little Colorado rivers in Arizona, approximately the northern half of New Mexico, and the southern most parts of Utah and Colorado. The center of this culture was located around the four corners region of the American Southwest. The Virgin branch was located on the far western end of the larger group. In particular, the Lowland branch of the Virgin Anasazi resided where the Valley of Fire State Park is located (Lyneis, 1995). Besides the Lowland branch, the Virgin Anasazi region also included the St. George Basin to the northeast following the Virgin River and the plateaus of northern Arizona north of the Colorado River. As mentioned above, the time frame in which this cultural region was from about 1 A.D. to approximately 1250 A.D. Throughout this entire period, hunting and gathering remained the prime means of subsistence. Even though the later periods showed an intense agricultural lifestyle in areas, especially in the Moapa Valley region, the consistent use of a temporary architectural model remained in varying degrees. The Basketmaker III period which took place from 400 – 800 A.D. marked a key period for this entire region that linked it together in the archaeological record. One feature that distinguished the Basketmaker III period from previous time frames suggested two major changes in substance patterns throughout the region. First, the introduction of the bow and arrow in the archaeological record represented a significant change in hunting strategies. Second, a subsistence change which involved gathering of wild foods was the intensification of agriculture seen by the introduction of pottery among the cultural remains (Larson, 1996). One of the prime pottery styles found from Basketmaker III through the end of the Virgin Anasazi occupancy was the Moapa Gray ware. With the

use of a distinct green olivine temper found near Mt. Trumball in northern Arizona, its production was in the plateau region (Harry and Watson, n.d.). Although produced in northern Arizona, it received its name from the Southern Nevada area of Moapa Valley, adjacent to the Valley of Fire State park, because of the considerable quantities found there in the archaeological record. This pottery would be traded among the three areas of the Virgin Anasazi branch through the Late Pueblo II time period or approximately 1150 A.D (Rafferty, 1990). The trade of this pottery peaked during these later periods because of the intense agriculture that was occurring adjacent to the park in the Lost City area. Although the Virgin Anasazi in this region had been growing maize and beans since the late Basketmaker II period (300 B.C. to 400 A.D.) the climax of agricultural productivity occurred during the Early Pueblo III period, 1150 to approximately 1225 A.D. This was demonstrated by the presence of the large number of architectural remains especially in the number of both dwellings and storage facilities and intensity of pottery and groundstone remains. This large amount of cultural remains suggests more than sufficient production of agricultural products for trade. Whether it was for items that do not occur in the archaeological record like foods items or items we do detect like turquoise, shells, and other burial objects, trade and therefore interaction occurred among both Anasazi and non-Anasazi cultures near the current location of the Valley of Fire State Park.

In general, during the earlier periods, exaggerated anthropomorphs dominated the majority of Anasazi rock art. This style gradually declined in frequency and was eventually replaced by small, more elaborate anthropomorphs in the Basketmaker III period. As the size of anthropomorphs equaled the remaining glyphs on panels during this phase, the number of actual panels also increased (Schaafsma, 1980). Whether it was an increase in population of the region, a shift in settlement patterns, or a change in use or function of the petroglyphs is unknown. Two types of glyphs that did become more

important during the later periods for the Anasazi were lizards and the very highly published humpbacked flute player known today by the Puebloan name of Kokopelli. Although the lizard glyph has been highly published throughout the Virgin Anasazi region, the humpbacked flute player becomes less visible as one leaves the center of the Anasazi region and almost obsolete as one transitions from the Kayenta into the Virgin Anasazi areas.

Kayenta. The Kayenta branch of the Anasazi was located due east of the Virgin Anasazi. Located in Northern Arizona and Southern Utah, they separated the branches of the Virgin Anasazi to the west from the remaining branches of the Anasazi to the east. Although the Virgin branch traded ceramics with the neighboring Kayenta, trade routes extended from the center of the Anasazi region to the east or central region westward with Kayenta-made Tsegi Orange ware showing up in all three of the Virgin branches at a vastly higher percentage than the green olivine tempered wares traded eastward (Lyneis, 1995). This branch of the Anasazi underwent similar population changes as the Virgin branches. Both developed larger populated locales in conjunction with an increase in agricultural production in their regions. Similarly abandonment of many of these areas took place approximately the same time in the early- to mid-13th century. Ironically, during this period the Kayenta aggregated toward favorable agricultural regions while the Lowland Virgin Anasazi abandoned theirs suggesting other social influences. It has been suggested that the Virgin Anasazi branch was absorbed into the Kayenta branch during this transitional period. (Lyneis, 1995; Larson, 1996) If this is eventually found to be accurate, it would mean that the two branches shared much more than a trading arrangement, it would show both a high level of social compatibility and very similar world views which would solidify their Anasazi connection with their neighbors.

Kayenta rock art is regularly associated with habitation remains, which offer a possible date range to place it. In staying with the above population changes, the Kayenta region seems to have peaked with the population during the Pueblo II phase. Overall, this regional rock art style is typified with high numbers of a distinctive type of mountain sheep, zoomorphs of local animals like lizards, snakes, and birds, and triangular shaped anthromorphs with or without enlarged appendages. Birds in multiple aspects such as tracks, heads of anthromorphs, and in their natural surroundings are also representative of this regional style. The above mentioned hump-backed flute player is first found during the Pueblo II phase and continues through the historic period.

Fremont. The Fremont culture of central and western Utah occupied the area to the northeast of the Virgin Anasazi cultural branch. This culture developed much later than the previous two, around the late Basketmaker III phase approximately 700 A.D. (Schaafsma, 1980) but dissolved approximately the same time as the Kayenta and Virgin Anasazi. Similar to the previous two cultures the subsistence pattern transitioned from a consistent hunter/ gatherer lifestyle into a more maize-based agricultural culture. Settlement size mostly consisted of small centrally located villages along favorable environmental zones, with Parawan Valley in southern Utah near the Anasazi border being one of the very few exceptions of a large settlement (Madsen, 1979). Although the Fremont shared the Wasatch Mountain range on the Nevada/Utah border with the Virgin Anasazi, the two groups seem to have had little interaction with each other. Although neighbors geographically, trade via ceramics was minimal at best with usually a minute percentage of Anasazi made pottery found even in bordering Fremont sites.

Anthropologically, a unique indicator to defining the Fremont as a distinct culture has been their rock art. Although they share the older Great Basin Abstract style with the Anasazi the Fremont quickly developed several distinct regionally-named styles that have been geographically lumped into one larger culture. In reference to the Valley of

Fire State Park, northward along the adjacent Muddy River, within 30 miles of the park, there are Fremont cultural sites with the distinctive eastern Fremont style glyphs of anthropomorphs with their broad-shoulder, narrow-waisted figures. They also continued to share many glyph types such as concentric circles and spirals with their Anasazi neighbors.

Coso Range. The Coso Range region of southern California was centered around the Coso Mountain Range on the western side of the Sierra Nevada mountain range. During the Middle Archaic period the majority of this area changed their subsistence pattern to one of more intense hunting (Hildebrandt and McGuire, 2002). Except for a few sites identified along the Colorado River drainage that changed to agriculturists, the archaeological record shows an intense increase in lithic weaponry, symbolic expression in the form of split-twig sheep, and suggested increase in representational rock art (Hildebrandt and McGuire, 2002; Quinlan and Woody, 2003; Whitley, 1994; Whitley and Dorn, 1987) This hunter/gather lifestyle continued until they were either eventually absorbed into the Northern Paiute culture, Mojave Desert culture, or Southern Paiute culture depending on the accepted theory (Madsen and Rhode, 1994, Quinlan and Woody, 2003; Whitley and Dorn, 1987). Like the Fremont culture, the Coso Range region has also been largely defined based on their rock art. Their rock art style has been reported along coastal California, northern California, and throughout Great Basin areas. Fueled by trade, believed primarily to be obsidian from California northward and coastal seashells eastward, the Coso people left examples of their rock art throughout the West.

Consisting mainly of large numbers of distinctly created bighorn sheep and a variety of dressed anthropomorphs, the Coso Range Rock Art district is unique that there are tens of thousands of Coso Range style glyphs in a small area. Due to this previously unseen high density of glyphs in such a small area several theories have developed.

Linking the glyphs to the subsistence change which occurred in the Archaic, several theories have attached them to shamanistic ritual and hunting ritual activities (Hildebrandt and McGuire, 2002; Whitley and Dorn, 1987). The vast majority of the writings over the past century or so regarding the Coso culture have focused on this small area. Like the previously discussed cultures, this region also contains the Great Basin Abstract style so prominent in the Southwest.

Patayan. The Patayan, situated to the south in eastern Arizona, appeared approximately the same time as the Fremont culture to the northeast around 700 A.D. Primarily along the Colorado and Salt Rivers, they developed floodplain agriculture similar to the Hohokam to the south (Huckell, 1996). Along with their agricultural similarities, their pottery was nearly equivalent to that of the Hohokam both in creative methods and design. Unlike their northern neighbors, the Patayan culture lasted well into the 16th century before being engulfed into one of the larger historical groups/tribes. The Patayan maintained trade with both the Coso Range people directly to the east and Virgin Anasazi to the north, with these trade routes being a more likely scenario whereby seashells from southern California were carried to the Moapa Valley rather than directly crossing both the Coso Range and the Sierra Nevada Mountain ranges (Rafferty, 1990).

Their rock art most definitely stems from the Great Basin Abstract style with the dominant types being large abstract designs. The Patayan appear to view particular spaces for the creation of their petroglyphs due to the often densely packed number of them, usually superimposed upon each other, in certain locales. Another unique glyph that has been assigned to its style is a unique anthromorph with extended appendages. This has been recorded along the Colorado River system both to the north and south of the Patayan region (Schaafsma, 1980).

Southern Paiute. The Southern Paiute is the name given historically during the 18th century to the group of Native Americans sharing a similar language located in

southernmost Nevada, southern Utah, and Northern Arizona, and along the Colorado River basin in southeastern California. Like all of their predecessors, this group was a mix of nomadic hunter/ gatherers and agricultural farmers who primarily grew maize. This is the culture that the first Europeans encountered in the Moapa Valley region. During the 18th and 19th centuries, interactions with Europeans/Americans eventually resulted in the vast majority of these lands being overtaken and eventually, the resettlement of most of the tribal members.

Any petroglyphs in the Moapa Valley region of a historical nature, such as those with a horse and rider, are believed to be created by the Southern Paiute peoples.

CHAPTER 3

APPROACHES TO THE STUDY OF ROCK ART

Informed vs. Formal

Looking at several current interpretative approaches used in deciphering rock art such as archaeoastronomy, ethnographic, symbolic/semiotic, and neuropsychological, there are a variety of both informed and formal methods. According to Chippindale and Nash (2004) informed methods are those that take into consideration the ethnographic and historic records of the area while a formal method looks at the rock art with a culturally uninfluenced view. Examples of the informed method would be ethnographic and symbolic/semiotic approaches, while archaeoastronomy would be an example of a formal method.

The main critique of the informed method has been that it relies primarily on historic and, many times, very current ethnographic data of modern tribes for interpretation. This idea in itself has several criticisms. First, in any oral history, the words, symbolic meanings, ideas, and even the language itself can change over extended periods. A second criticism of this method is attributed with problems from whom the oral history is recorded. Besides the fact that the vast majority of petroglyphs are not datable, it is impossible to pinpoint which current peoples are the cultural descendants of the people who created the glyphs. European contact resulted in the destruction of an estimated 74 to 95 percent of the indigenous population of North America through disease, warfare, and genocide (Butzer, 1992; Denevan, 1992; Dobyms, 1993; Thornton, 1991). Along with an untold number of Native Americans, a large number of unrecorded languages attached to those peoples likely also disappeared. These factors, along with colonialism, acculturation, slavery, reservationization, and diffusionism, which have occurred during the last 500 years, result in a convincing argument that much of the ethnographic data and modern Native

American oral histories are not useful to the interpretation of rock art in currently settled Native American reservations. Chippindale and Nash (2004, pg. 14) support this by stating, "Practically no rock-art traditions continue into the present, and there are precious few of which there is a good ethnographic or ethnohistoric record."

Because of these issues, the approach taken in this thesis will be primarily that of a formal method. This thesis will analyze elevation and how it is applied to petroglyph production. Using elevation as a variable not specifically determined by Archaic southern Great Basin cultural practices but by a wider range of cultures strengthens the formal method approach. I use the word primarily because at the same time, I need to take into consideration the context of the larger surrounding area and the current anthropological theories regarding its Archaic inhabitants, of which ethnography, as discussed in more detail below, is a key variable used in developing current theories.

Context, Context, Context.

Almost a half century ago Robert Heizer and Martin Baumhoff (1962) proposed "hunting magic" as an explanation for the presence of prehistoric rock art. Their approach was one of the early interpretive theories that tried to explain rock art as a whole. This improper use of an all-inclusive approach, particularly when disregarding context, resulted in major criticism of their approach. Heizer and Baumhoff presented their theory as being uniquely connected with a particular social group, specifically male hunters, and was separate from other societal segments, particularly females and children. Their proposal also did not consider social contexts such as households and other occupied areas where various social and ecological activities took place such as plant processing. Shortly after the "hunting magic" theory was presented, multiple researchers noted the conflicting association of rock art with sites that showed a high proportion of other artifacts that included groundstone, architectural debris, and other

signs of domestic activities. The concept that the presence of rock art throughout the Great Basin was unique in reference to site properties has been deemed as being flawed in both its approach and interpretation. Although the theory was overly simplistic and contained a narrow view of both the structure and function of rock art, pieces of it have lingered and continue to be influential in part or at least as a basis in many current interpretations of rock art. One such theory that has stemmed from the “hunting magic” concept is the suggestion that some petroglyphs were used as landscape markers for “trails” or “maps” (Flood, 2004; Bradley, 1997; Hartley, 1992; Gortner, 1988 and 1989); i.e. that they marked hunting trails, water sources, territorial boundary markers, regional guides, and/or trading routes. Ross (2001, pg. 546) stated, “The context of landscape for hunter-gatherer peoples includes consciously navigated journeys across the land and therefore rock art should always be questioned as to whether or not its presence and meaning is related to these journeys.” This idea of context in direct relation to culture and landscape is one of the key bases for this thesis and a variety of approaches that have been developing over recent decades.

Tacon and Chippindale (1998) have supported this idea by inferring that regarding symbolic analysis the prime ideas of interpretation and meaning stem from context. This significance of context is in turn modified using the approach of ‘landscape archaeology’. This approach looks at the site level and examines the surrounding environment from cultural, ecological, and social perspectives and evaluates how these factors influenced life there, whether from a group or individual level, thousands of years ago. To understand the utility of an individual adding petroglyphs to their environment, a holistic view of using petroglyphs as a tool to define the environment or one to control or change the environment is needed. Schaafsma (1985, pg. 241) captured the importance of this approach by stating, “that the contextual relationships between figures, panels,

rock art, other cultural remains and its topographic situation are crucial for understanding meaning and function“.

Recent modeling ideas

Early Theoretical Changes. With the publication of Heizer and Baumhoff's publication *Prehistoric Rock Art of Nevada and Eastern California* (1962), which suggested rock art as “hunting magic”, rock art, for some time, had an accepted interpretative model. Despite its questionable interpretations, Bostwick (2005, pg. 68) suggested, “this work set a standard for recording and reporting of rock art in North America.” Through its use of maps, drawings, photographs, graphs, cross-tabulated charts, ethnographic data, comparative methods, and attempted dating of the sites, a very detailed and concise interpretive view was presented. An example of this type of recording technique in Southern Nevada was done in the early 1960s when Shutler Jr. and Shutler (1962) performed a rough survey of petroglyphs at 14 sites in the Valley of Fire State Park and presented a cross-tabulation comparison with petroglyphs in the Red Rock Canyon area. There were 53 distinct design elements noted as either present or absent between the two regions. The conclusion drawn from the comparison was that they were both typical of the Great Basin type of petroglyphs.

However, shortly after Heizer and Baumhoff's (1962) publication the processual approach came to dominate academic archaeology in the western United States. This movement, initially at least, had a detrimental effect on rock art studies. From White's (1949, 1959) presentation on environmental adaptation, based on Steward's (1955) concept of cultural ecology, processualism did not view rock art as a variable used in direct relation to culture and its ability to change and adapt to the environment. In the early days of processualism, rock art was linked as having a hypothetical relationship to religion. This in turn placed it in the psychological/humanistic realm. From a scientifically

based theory looking for a reconstructable cultural process, rock art was seen as irrational at best. Processualism was looking for analytical data that could be physically viewed and tracked through time as having a direct impact on a culture's adaptive ways of dealing with the environment and not a social/religious one that not only could not be tracked because of dating limitations. This theory also didn't fit in the predictable cultural-evolutionary model being developed at the time. This non-scientific view concerning rock art was so deeply instilled in anthropology, and in particular archaeology, for a quarter century that in many academic publications rock art was either entered into the record as a side note under religious explanations or ignored altogether because it was conceived as unknowable and therefore of no value (Warren, 1978).

Development of Current Theories. One of the better sources for interpreting data collected during this time came from the non-academic government projects. With the passage of the National Historic Preservation Act (NHPA) in 1966, rock art was legally identified as a cultural resource that was to be included in all archaeological records. Important studies began to emerge during this time included Christy Turner's (Adams et. al., 1961) work conducted as a part of the Glen Canyon Salvage Project; this study attempted to define the styles, chronologies, distribution, and relationships of petroglyphs in the Glen Canyon basins and surrounding areas (Bostwick, 2005). Later Schaafsma (1963) recorded 22 rock art sites "as part of a salvage project for the Museum of New Mexico and the National Park Service. Schaafsma recorded Pueblo, Navajo, and historic Spanish American rock art, sometimes on the same panel" (Bostwick, 2005).

Although recording regional styles continued through most of the 1980s, this was done more for regional comparisons than for interpretive purposes. Regardless, this approach became the basis for a wider range of both topics and perspectives. One of

these topics that emerged during the late 1960s and into the 1970s was a more cognitive approach, especially from a shamanistic point of view. As post-processualism grew and ideologies were taken into consideration when viewing cultural change and development, religion was again seen as a variable that could be used to understand cultures and how they viewed and interacted with their environment. With a more subjective, post-processual approach, this shamanistic viewpoint took two main paths of development. The first attempted to study experimentation with medicinal substances, (i.e. hallucinogen), and then application of these data to both ethnographic and archeological data. From these experiments, a broader idea of previously written ethnographies mentioning 'trances' or an 'altered states' began to develop. Whether it was through verbal incantations, physical action such as petroglyphs, dreams, or any combination with or without the use of a medicinal substance, the shaman, while in an altered state of consciousness (ASC) with the aid of these substances or physical activities such as fasting, would perform various social roles. Although this connection between shamans, petroglyphs, and a medicinal substance (i.e. hallucinogens) has been around since at least Kroeber's suggestion in 1925 (Kroeber, 1925), it was during the drug experimentation era of the 1970's that researchers supported the concept explaining some of the iconography represented in both Native American art and previous anthropological works. This cognitive approach to petroglyphs and their connection with medicinal substances has continued through today with Southwest anthropologists like David S. Whitley. His early approach to understanding petroglyphs developed from the idea that their creation came from two possible sources; shamans or persons involved in a social ritual, both of which were in an altered state of consciousness. (Whitley, 1992) The second path that the shamanistic model took was in relation to context from the idea that petroglyphs were produced by shamans in particular settings such as domestic or remote areas for the purpose of a socially defined

ritual (Whitley, 1999). Whitley (1994) expands theoretically on these shamanistic models stating that petroglyphs were part of a wide range of ritualistic occurrences in that “art and social relations occurs within a larger cultural system of ideological symbols.” Thus, utilizing the context in which petroglyphs are produced is absolutely crucial to understanding its production, meaning, and eventual function.

Ethnographic Data. In relation to rock art research, the view and use of ethnographic data has changed during the past several decades. Early on, ideally pre-processualist, ethnographic data were analyzed with similar archeological techniques such as serration and stratigraphy. The idea being that the most recent sites, those from the historical period that actually could be dated, contained the latest versions of rock art and the older sites that could be placed on a relative time line with other archaeological data contained relatively older rock art. However, starting in the 1970s the ethnographic data were reexamined and produced conflicting results regarding this approach. First, there were multiple accounts from the historical data that stated the current inhabitants believed that ancestral ‘spirits’ created the rock art. Second, the ethnographic data showed that there were people who stated that their ancestors recently inhabited the area. In other words, the rock art was already in the area before the peoples in the ethnographic reports and the majority of them had no idea how it got there. One approach to reexamining this ethnographic data that was both productive and has become highly accepted stemmed from the neuropsychological model by Lewis-Williams and Dowson in 1988 (1988, 1989). Subsequent studies suggested that because of the neurological structure of the brain and optic systems common to all humans, cross-culturally, people experience similar visual and physiological response to altered states (Francis, 2005). Combining earlier ethnographic data and experiments in the 1970’s this model developed a robust theory explaining similar geometric elements and other designs produced by cultures in vastly different times and places. Another approach to

reexamining the ethnographic record was to use it to assist in creating a cultural model that began to explain the meaning and function of rock art. This approach is not to be confused with a subjective post-processualist view. Beginning with early ethnographies written by people from varied educational backgrounds and reaching a high point during the early years of post-processualism, rock art interpretation as it pertains to both current and past cultures has been wide-ranging to say the least. The vast majority of these interpretations have reflected a multitude of biases, interests, misrepresentations, lack of knowledge, and/or concerns of the authors. Taking a relativist view on the thousands and thousands of glyphs would create far too many interpretations to be scientifically useful. Conversely, ethnographies referred to rock art as being produced by shamans, in one aspect or another (holy-men, priests, doctors, healers, etc.), in an altered state of consciousness for a particular social purpose, i.e. ritualistic in nature, would be beneficial in constructing a shared cultural trait. Whitley provides several examples of this second approach in his writings beginning in the 1980's. For example, a 1994 article (Whitley, 1994) theorizes the continued production of hunting scenes in the Coso Range by traditional Numic speaking cultures stems from cultural symbolism and worldview. Using the archaeological evidence for the region, he first showed that although the subsistence patterns changed from hunter/gatherer to that of a seed gathering culture, the production of rock art hunting scenes, especially mountain sheep, continued proportionally. The ethnographic record showed that mountain sheep were associated with rain magic or power to control the weather. To obtain this magic or power, in an altered state of consciousness, the shaman would kill the mountain sheep to take control of its power and magic to produce necessary rain.

Also in the 1980's, 'landscape archaeology' emerged and was to influence rock art studies in two ways. First, as defined above, by removing the emphasis from the site concept, it encouraged archaeologists to take into account local and regional

manifestations in interpreting rock art. More importantly, not only did this approach look at environmental landscapes but also cultural ones. In comparing regional styles and types of glyphs regionally, other traits of these regional cultures were also taken into consideration such as subsistence patterns, social structure, and possible interaction and/or influence of neighboring cultures through various social reasons such as marriage, trade, or warfare. Second, Ross (2001, pg. 544) suggested it assisted in broadening the anthropological views of both hunter-gatherers and agriculturists to be “more commonly seen as master ecologists, people with sophisticated relational social structures and advanced environmental relationships...”. A particular aspect of this can be seen in landscape archaeology in Europe as they have taken “a more embodied view of landscape” (Chippindale and Nash, 2004, pg. 13). In this post-modernistic approach, the archaeologist attempts to try to experience what an ancient person might have experienced. One might physically survey the landscape around a site to get an idea of how it was used economically, socially, and resourcefully by hunter-gathers and/or agriculturists. In doing so, the concept of landscape is both individually and socially constructed, conceptualized, and defined ideationally, either emically or etically, from a mental perspective (Ashmore and Knapp, 1999).

Landscape Archaeology. Derived from many of the concepts mentioned above in landscape archaeology, the study of rock art has presently developed three distinct analytical approaches. These methods include spatial analysis, locational analysis, and contextual analysis. *Spatial analysis* primarily takes an emic view concerning internally defined ideas of space mainly from a site perspective. Whether through the use of ethnographic data of a particular group defining a specific area as spiritual, holy, magical, etc. or a view of a distinct type of area such as a cave being used for petroglyphs, the analysis would include the data that emically defines space at a particular site in interpreting the glyphs function and meaning. *Locational analysis* is

more in direct connection with landscape archaeology and the idea of looking for generalized patterns from a broader area whether it includes multiple sites, regions, and/or cross-cultural perspectives. The idea that rock art is permanent in its placement and that there is a culturally and/or socially defined reason for that placement is key to this approach. *Contextual analysis* views the relationships of rock art in relation to itself, other archaeological remains of the site, and the natural environment. It is this type of analysis that was mentioned earlier debunking hunting magic as an all inclusive interpretation. This approach views rock art as a cultural artifact located within a site to interpret a cultures use and meaning of rock art. A combination of these approaches will be applied in this thesis. The physical placement of the petroglyphs will be defined both from a socially defined member (emic) view and by the landscape (spatial) from an elevational perspective (locational). Lastly, to label my approach as one of the above analyses mentioned, in the loosest sense, contextual analysis is appropriate if you define other cultural remains as other petroglyphs **and** divide the natural environment in elevational layers.

Along with the idea of elevational changes as a key contextual variable an application of the above approaches was presented by McCall and Richards (2008). They investigated 17 sites over a several kilometer stretch at Ndedema Gorge, South Africa with the idea of location and landscape in mind. Location was defined both in terms of sites used as shelter habitations and elevational distance from the top to the bottom of the river valley basin. They divided the gorge (landscape) into three distinct elevational levels; high or top of the basin, low or midway to the bottom of the gorge, and river or the lowest part of the gorge. Their data showed the highest concentration of petroglyphs to be in the low region which coincidentally contained the highest percentage of residential areas. Looking at the other two levels from a contextual view two distinct patterns appeared: first, they were all produced near pools of water, and second, the

glyphs occur in areas farthest from the residential areas. Some interpretations included work of individual shaman or space used for particular rituals not deemed for social purposes, both of which included the importance of water whether for its cleansing purpose, its natural life giving purpose (rain), or other supernatural or significant idea that water possesses in the ethnographic data of the region.

A second example of a multi-level locational approach was produced by Francis and Loendorf (2002), who analyzed engravings in Wyoming and Montana. From ethnographic data, both historic and modern-day Numic-speaking people divide their supernatural world into three realms identified as above, middle, and below. As Gelo (1994) stated when analyzing Comanche narratives, "topographic references produce direct associations between particular events and ritual." The symbolism attached to these places, whether specific or generalized, was attached to the social worldview and expressed in oral narratives and other expressions of their culture (Gelo, 1994). As Francis and Loendorf discovered, according to the cosmography of the groups that inhabited the area, these three realms are inhabited each by uniquely different animal spirits. In turn, these three realms are represented spatially in the natural world by the distribution of these animal spirits in the form of petroglyphs at coinciding elevations throughout the region. Analysis of the petroglyphs show that the Sky People (animal representations from the above realm) are seen only above the 6000' level, the Ground People (animal representations from the middle realm) are seen only between the 5500' and 6000' levels, and the Water people (animal representations from the lower realm) are seen below the 5500' level (Francis and Loendorf, 2002).

CHAPTER 4

HYPOTHESIS AND RESEARCH DESIGN

Hypothesis

The proposed research will investigate the hypothesis that different types of rock art characterize the different elevational levels in the Valley of Fire. Specifically, it is proposed that the highest elevation levels will contain rock art associated with shamanistic activities; that the middle elevation levels will contain glyphs associated with hunting motifs and rituals, and that the lowest elevation levels will contain glyphs associated with everyday, or domestic activities. This approach produces two key points this writer wants to emphasize. First, rock art was multi-functional. Whether it was used from a social or individual perspective, the effects the glyphs were to have on someone's world are believed to be varied. Second, rock art was produced by multiple social members. Different levels of ideological beliefs, abilities, and comprehension are seen currently and historically in every culture. To attach production of glyphs to one particular social person or one particular social event would be to ignore ethnographic data all together.

The idea that shamans utilize high elevation areas for shamanistic activities is nothing new. Whether it is the isolation factor, the view from a mountain top overlooking one's total environment, or simply being at a sacred place, mountain tops have been used through history for both sacred and secular purposes. For example, Ross (2001, pg. 546) theorizes that "shamanic sites were located in 'natural' situations that provided alignments with the summits of sacred and conspicuous features (i.e. mountain tops or valleys) and that these alignments are related to 'natural' events, especially celestial astronomical events." Gulliford states through research primarily using ethnographic data, "Indians have built most vision quest sites on high precipices with panoramic 360° views; these "are among the most common forms of sacred geography in North

America, according to Deward Walker (Guilford, 2000).” On the other hand, Hyder (2004) warns the expectation that high areas were utilized by shamans may be biased more on our modern-day expectations than actual data. As he states, “The association of higher elevations with religious expression is culturally familiar to us – we expect our clerics to go up high mountains to experience religious revelation – and, therefore, likely to go unquestioned or untested.” It is this last quote that reiterates the need for an objective approach to part of the analysis of the data at all levels which I intend to use as part of the interpretation. Although the idea of a multi-level worldview is prominent throughout Numic speaking areas (Gelo, 1994), this assumption can not automatically be extended back in time to include Archaic groups in the same areas.

The middle level is neatly summarized in Ingold’s (1986) statement “From their point of view both moral and physical movement, the religious journey and the economic quest for food, are part of the same process: namely living.” It is exactly this connection, hunting and religion/magic that I am theorizing will present itself in the form of petroglyphs. From a hunting perspective, the middle level represents a height ideal for a small group hunting game. The ideal height perspective is to be high enough to be able to visually see game from a greater distance than ground level either approaching or stationary yet low enough to audibly cue the other members, join them in the hunt without spending too much time descending from the side of a mountain, and/or be seen by the game while you are descending.

As for the lower level, Quinlan and Woody (2003) argue that much of the rock art is in direct reference to settlement patterns. They agree with this writer that the majority of rock art was created and viewed in a more ‘domestic context’. “This domestic association opens the possibility that rock art’s intended audience and use was not restricted to hunters or vision questers; potentially a large section of the cultural group viewed and interacted with it regularly.” (Quinlan and Woody, 2003) Add to this last

quote not only viewed and interacted but also 'produced'. This 'domestic' or highly social level is viewed by the greatest number of people with the widest variety of social roles. It is for this reason that I argue that at this level there will be both the greatest number and greatest variety of petroglyphs.

Methodology – Collecting & coding

Field Methods. The data gathering included a detailed survey of the petroglyphs in the Valley of Fire State Park in southern Nevada. Although there have been dozens of publications and a multitude of on-line reproductions of the petroglyphs located in the park, there has yet been a formal and complete survey (Hammons, 2009). The petroglyphs at the lower levels were located using a system of transects approximately 10 meters wide encompassing all of the rocky outcrops in the park. Individual boulders separated from the larger outcrops were also investigated. The petroglyphs at the higher elevations were located visually with the aid of binoculars both from ground level and multiple elevations during the initial survey. If rock formations impeded the visual line of inspecting higher elevations then climbing to the appropriate elevations took place. Caves and rock shelters at all elevations were examined. The visual portion of the survey primarily consisted of photographs. If a photograph was not a viable option because of poor lighting such as in a cave or extensive weathering of the physical glyphs then a hand drawn rendering was completed. Direct contact with the rock art was not done to avoid causing any further damage to an already fading cultural artifact. Numbering of the photographs was done digitally with the camera that was used.

All photographs and drawings were accompanied by a detailed data form (Appendix A). The form included the following information: GPS coordinates, directional facing of the petroglyphs and the photograph, approximate meters above ground level at which the lowest glyph on the panel occurred, current state of petroglyphs which

included notations of deterioration whether naturally or through vandalism, and description of surrounding area which included both the natural and cultural environments. GPS coordinates were obtained using a hand-held Garmin global positioning unit model e-Trex Legend H and were generally accurate within 3 meters. The “High – Mid – Low” information referred to the elevation of the glyphs above the actual ground level at the site. In approximate meters, high refers to glyphs over approximately 50 meters, mid refers to glyphs appearing between approximately 15 to 50 meters, and low refers to glyphs created below 15 meters.

Naming and Coding of the glyphs. After completion of the field survey, all photographs were examined and additional attributes recorded. In particular, for each glyph the following attributes were recorded: (a) type, (b) cultural affiliation, and (c) relational context.

The glyph types were initially placed into one of five general categories; (a) anthropomorphic, (b) zoomorphic, (c) geometric, (d) representational, and (e) abstract. Anthropomorphic refers to glyphs that represent a human. This section also included theriantromorphs which are combination of both the human and animal forms. Zoomorphs refer to the animal forms represented in the glyphs. Geometrics refer to easily recognizable and codable geometric shapes such as circles or straight lines. Representational glyphs include any other recognizable form other than those already listed. These can either be natural in origin, such as plants, or cultural in origin, such as an atlatl. Abstract/unknown refers to glyphs that were both unrecognizable and did not fit in the previous four groups. The glyphs were then further placed into one of 49 specific types, which are presented in Table 1.

Table 1. List of glyph types used for coding and analysis.

#	Specific Type	Example	General Category
1	Abstract / Unknown		Abstract / Unknown
2	Abstract Anthro		Anthromorph
3	Abstract Zoo		Zoomorph
4	Antelope / Sheep / Elk		Zoomorph
5	Anthro		Anthromorph
6	Anthro w/Shield		Anthromorph
7	Atlatl		Representational
8	Centipede		Zoomorph
9	Circle		Geometric
10	Circle Bisected		Geometric
11	Circle w/Mult. Bisections		Geometric
12	Circles Concentric		Geometric
13	Circle w/Dot		Geometric
14	Circles Connected		Geometric
15	Circles Conn. w/Line		Geometric
16	Circle Tailed Conn.		Geometric

#	Specific Type	Example	General Category
17	Cross /X		Geometric
18	Crosshatch		Geometric
19	Diamnd Hang. Chain		Geometric
20	Dog / Coyote		Zoomorph
21	Dots in a Row		Geometric
22	Enclosed U		Geometric
23	Enclosed U Concentric		Geometric
24	Foot		Anthromorph
25	Hand		Anthromorph
26	Line Straight		Geometric
27	Line Wavy		Geometric
28	Lines Wavy Group		Geometric
29	Oval Bisected		Geometric
30	Paddle Wheel		Geometric
31	Phoenix		Zoomorph
32	Plant		Representational

#	Specific Type	Example	General Category
33	Prong w/2		Geometric
34	Prong w/3		Geometric
35	Prong w/4		Geometric
36	Rain Scene Open		Geometric
37	Rain Scene Closed		Geometric
38	Rake Open		Geometric
39	Rake Closed		Geometric
40	Rake Convolutd		Geometric
41	Sawtooth		Geometric
42	Shaman		Anthromorph
43	Shell w/Lines		Geometric
44	Snakes		Zoomorph
45	Spirals		Geometric
46	Spirals Connected		Geometric
47	Square Bisected		Geometric
48	Sun		Representational
49	Turtle		Zoomorph

Secondary approaches to analyses will include regional style or cultural affiliation. Petroglyph style has largely become defined in relation to the physical region that it is primarily or most densely located and the cultural affiliation attached to that region. At the individual type level, for the most part, there are just a few distinct types of glyphs that are unique to every regional style. Two of the more commonly used and distinctly recognizable types of glyphs in the Southwest used to define a particular region

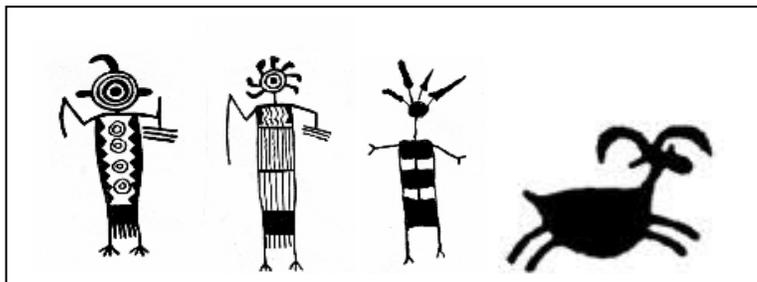


Figure 2. Examples of glyph types of various shamans and a sheep representing the unique regional Coso Range cultural style of southern

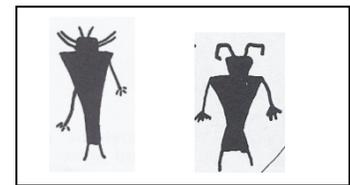


Figure 3. Examples of glyph types of shamans representing the regional Fremont cultural style of southern Utah.

are shaman / holy men and sheep. As part of the coding process, each shaman / holy man and sheep was individually analyzed and labeled with a regional style. Being on the far western periphery of the larger Anasazi cultural region, other cultures may have been able to influence or at least interacted with the Virgin Anasazi inhabitants of the park. Looking at the petroglyphs in the park other cultural influences such as Fremont to the northeast, Great Basin to the north, Coso Range to the west, and possibly Patayan to the south may be present. Figures 2 and 3 depict examples of shaman and sheep type glyphs of various regional styles that have been found throughout the Southwest and may be present in the Valley of Fire State Park. Although all of these southwestern cultural groups have many glyph types in common such as zoomorphs of animals in the area like lizards and geometric shapes like spirals, as mentioned above each also contain unique glyph types that distinctly connect them to a particular cultural area. If multiple groups can be identified as either inhabitants or visitors to the park, it may be possible to expand the hypothesis of this thesis to a multi-regional approach.

Relational contexts include both natural and cultural variables such as distance from water source, enclosed or open area, visibility of petroglyphs from ground level, and relationship to other panels using both distance and elevation. Relational contexts provide support for opposed concepts such as private/public, social/personal, and representational/practical uses of space. An example of this might appear in the middle level regarding hunting. A panel at the mid-level with clear visibility and near a water source would be a practical setting for hunting glyphs compared to a mid level panel overlooking an area covered in large boulders with poor visibility to the ground below and not near a water source which could be deemed being created at this elevation for possibly representational qualities.

Data Expectations

When analyzing the petroglyphs the hypothesis predicted that patterning in the form of certain social identities and their expectations of use would be seen. The highest elevation was expected to produce a higher percentage of petroglyphs related to shamanistic rituals and practice dealing with the supernatural realm for purposes like healing, weather control, and successful food hunting and gathering. These journeys into this supernatural realm start with a trance brought out by various means like sleep deprivation, self-mutilation, or hallucinogenic drugs. While in this trance or altered state of consciousness knowledge is revealed to the shaman by spirits from that realm. Through both ethnographic data and studies altered states of consciousness produce a high percentage of mental images such as a variety of geometric shapes or entropics such as spirals or grids, spirit animals that act as guides or protectors in this supernatural realm such as birds, and anthromorphs in multiple forms both as accompanying and/or partially resembling the spirit animals (VanPool, 2009).

The middle elevation was expected to produce a higher percentage of petroglyphs related to hunting, such as those depicting hunted zoomorphs such as sheep or elk, tools used in hunting such as an atlatl, and spirits ideologically related to hunting which may be depicted in multiple forms such as other hunting zoomorphs like coyote. The need to increase the percentage of successful hunts by appeasing whom- or whatever means possible, has been a staple in the ethnographic data. Examples of this would include using one specific tool to produce arrowheads, using a particular type of feather in arrows, placing particular inclusions on shafts, or even swapping arrows with fellow hunters.

The lowest elevation level was expected not only to have the largest number of glyphs but also the widest variety. The larger number primarily stems from ease of access to persons of all ages and social standing. Secondly the large number comes from its placement at an easily visible area to everyone in that society. These two reasons should also account for a large variety of petroglyphs that take into account the vast number of requests of both shamans and non-shamans with the spirits of the supernatural realms, the sheer number and variety of unknown social needs or want and private rituals, and a number of activities that had no specific purpose for social interpretation like a child simply imitating an elder.

CHAPTER 5

RESULTS AND CONCLUSION

The Data

As the data collection process advanced into the photographic analyses and eventual table of data it was interesting to note of the extreme rarity of any written material that included in the analysis all petroglyphs of a region or area. The majority of the analyses in the field of rock art either use a few specific types like animal representations or focus on a very small number of panels. Theoretical models for rock art studies need to be supported, modified, or dismissed through the use of complete and accurate data, not just presentable data that fits the model. Without a complete aspect of context to evaluate, natural or cultural, rock art will have a difficult time being viewed as an integral trait of a culture's past.

At the end of the survey a total of 52 panels were tallied and photographed. Of these, thirty-eight were assigned to the lower elevation level, nine to the middle elevation level, and five to the upper elevation level. The tally of glyphs at each level was 1,410 at the lower level, 142 at the middle level, and 259 at the higher level for a total of 1,811 glyphs. Regarding the labeling of glyphs, there were 49 separate variable names used in the analysis. All but the variable labeled as abstract/unknown could then be subsequently reduced to a handful of general ideas such as anthromorph, zoomorph, geometric, and representational (Appendix A).

Reiterating an earlier paragraph on subjectivity and objectivity, when analyzing nonrepresentational data, i.e. petroglyphs labeled 'abstract' or 'unknown', it is up to the author to consistently define all elements that are tallied. Although the idea of abstract is subjective in itself, kind of like a Rorschach test, the uniformity of the grouping at the same time allows for objectivity in the later analysis. A visual example might make this a little clearer. When counting and labeling the elements in the accompanying

photograph a consistency of both in the labeling and counting of abstracts is kept throughout this thesis.

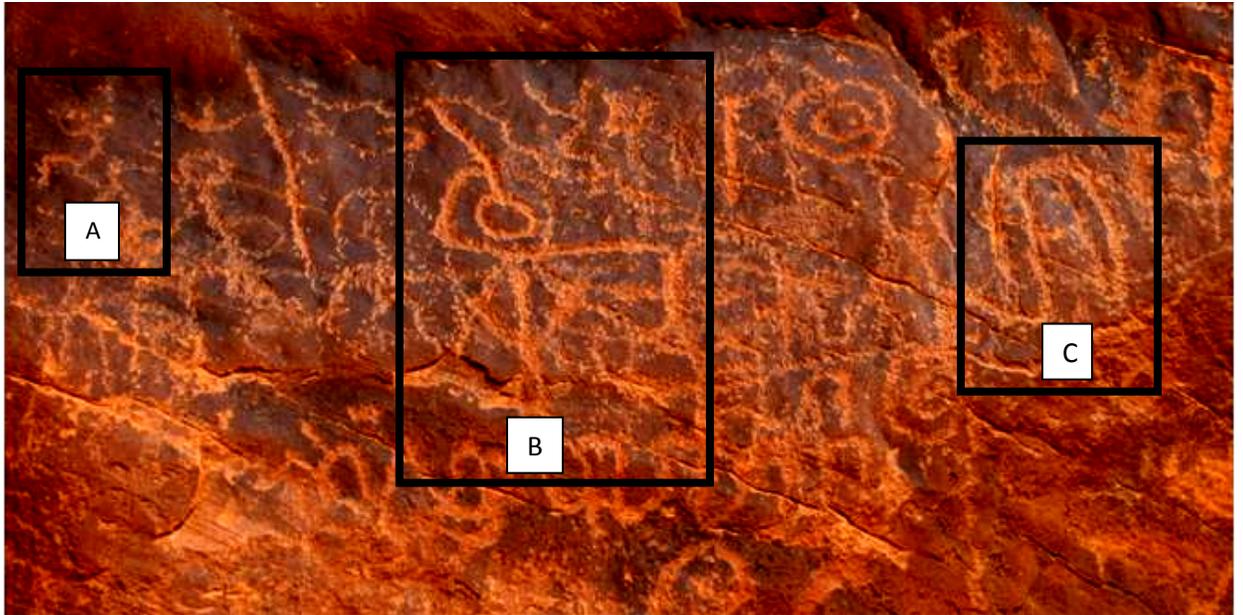


Figure 4. Example of a panel present in the Valley of Fire State Park. Glyphs (A) and (C) are abstract/unknown while (B) is labeled as consisting of several geometric shapes like lines and circles.

In the center of the above picture (Figure 4), is that a large abstract of a Kokopelli flute player (Slifer & Duffield, 2007) or a circle with a line connected to it? For this thesis it is the latter. For the remaining glyphs, known labels are tallied, i.e. circles, wavy lines, and spirals, and the remaining elements are labeled abstracts, for example the two smaller outlined glyphs.

Correlation of Glyph Type by Elevation

To evaluate whether there was an association between general glyph type and elevation, a chi-square analysis was conducted. In order to obtain adequate sample sizes as required by the statistical test, only thirteen of the glyph categories were used in this analysis. All glyphs assigned to the abstract/unknown variable were omitted from the analysis because (a) the category was a catch-all group of a variety of glyphs whose meanings are most likely diverse; and (b) because these glyphs were distributed

relatively evenly across the three elevational levels, their removal should have minimal effect on the statistical results. In addition, all glyphs comprising less than two percent of the total number of glyphs at each elevational level were also omitted. A chi-square test of independence indicates that the association of these three glyph types with elevational level is statistically significant ($\chi^2 = 117.921$; $df = 24$; $\phi = .341$; $p < .0005$).

Table 2. Number of glyphs by Elevational Level.

Glyph	Elevation			Total
	High	Medium	Low	
Anthromorph				
Abstract Anthromorph	11	10	31	52
Anthro	10	1	37	48
Animal				
Abstract Zoomorph	5	8	51	64
Antelope/Sheep/Elk	17	39	101	157
Plant	17	0	72	89
Water-related glyphs				
Line Wavy	15	9	118	142
Lines Wavy Group	16	0	44	60
Rake Open	15	4	74	93
Geomorphic Abstract				
Circle	4	4	41	49
Circles Connected	19	5	37	61
Circles Connected with Line	17	9	56	82
Cross/X	6	4	31	41
Line Straight	6	0	71	77
TOTAL	158	93	764	1015

Tables 2 and 3 present the distribution of glyphs for these thirteen categories. Several patterns emerge from these data. The first of these is shown in the middle level. The glyphs labeled Antelope/Sheep/Elk comprise 41.9% of the glyphs analyzed in that

level. This is not only the largest represented glyph in terms of percentage in any of the three levels at 41.9% but it is also the largest differential between the three levels at

Table 3. Percentage of glyphs by Elevational Level.

Glyph	Elevation			Total
	High	Medium	Low	
Anthromorph				
Abstract Anthromorph	7.0	10.8	4.1	5.1
Anthro	6.3	1.1	4.8	4.7
Animal				
Abstract Zoomorph	3.2	8.6	6.7	6.3
Antelope/Sheep/Elk	10.8	41.9	13.2	15.5
Plant	10.8	0.0	9.4	8.8
Water-related glyphs				
Line Wavy	9.5	9.7	15.4	14.0
Lines Wavy Group	10.1	0.0	5.8	5.9
Rake Open	9.5	4.3	9.7	9.3
Geomorphic Abstract				
Circle	2.5	4.3	5.4	4.8
Circles Connected	12.0	5.4	4.8	6.0
Circles Connected with Line	10.8	9.7	7.3	8.1
Cross/X	3.8	4.3	4.1	4.0
Line Straight	3.8	0.0	9.3	7.6
TOTAL	100.0	100.0	100.0	100.0

more than three times the other two levels. The middle level data also showed a void of two glyphs which were the Plant, Lines Wavy Group, and Line Straight. The Plant glyph is interesting in the fact that both hunting/ gathering and agricultural societies who lived in the area viewed floral aspects of the environment as an absolute necessity. The lack of the glyph labeled Lines Wavy Group in the middle level can be expanded to the smaller percentage of water-related glyphs in the middle level as a whole. With the high

and lower levels showing a combined percentage of the three water-related glyphs of 29.1% and 30.9% respectively, the middle level is less than half with a combined percentage of 14.0%.

Type and Style: Of Sheep and Shaman

As mentioned above, with the array of academic and public input into rock art studies, the ideas of type and/or regional style have been developing as a classification system. Academically, 'style' has come to define the glyphs in an area where a particular rock art is physically located, usually named for either a cultural affiliation or possibly a regional landmark. This is then more acutely defined as a combination of the overall types of rock art, i.e. quadrupeds or abstracts, and its unique types, i.e. duck-headed anthromorphs, included in them. More often than not, these regional styles overlap with other adjacent ones. This, of course, leads to the primary unanswered question concerning dating and whether the physical overlapping in regional styles was contemporaneous. Secondly, larger anthropological questions refer to when and why did regionalization occur? 'Type' has more or less been defined as qualities or uniqueness of a particular glyph in reference to style and/or, as a more general term of

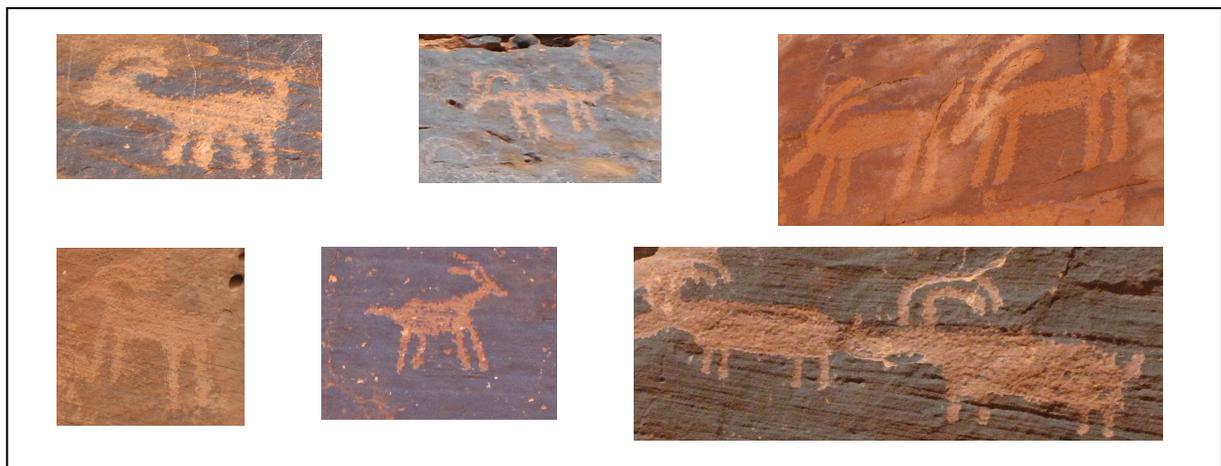


Figure 5. Great Basin Abstract Style examples of mountain or bighorn sheep present in the Valley of Fire State park and seen throughout the American Southwest.

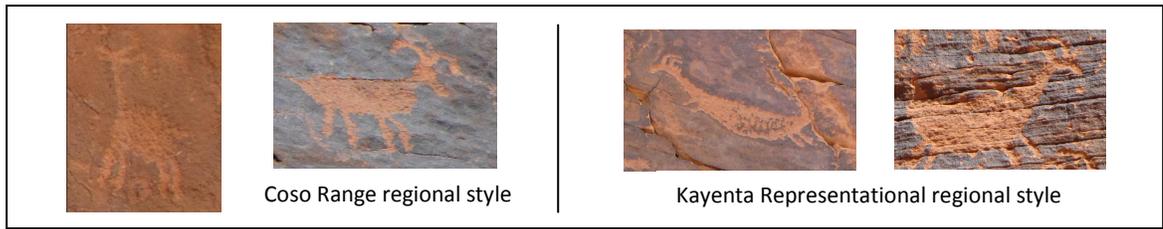


Figure 6. Examples of Bighorn Sheep glyphs present in the Valley of Fire State Park.

classification, such as abstract or anthropomorphic. When discussing regional style in rock art, in particular Southwestern, the oldest as defined above initially by Steward (Steward, 1929) is the Great Basin Abstract Style. Stretching from Idaho to southern Arizona, this regional style overlaps multiple archaeological cultural areas. More important to us, it is shown to be represented in the cultural areas adjacent to the area of study including the three major cultures of the American Southwest - Anasazi, Mogollon, and Hohokam - as well as the Great Basin to the north, Coso Range of Southeastern California to the west, and Fremont to the northeast. In a brief attempt to highlight regional style I will analyze two particular types of glyphs, mountain or bighorn sheep and shaman. These two types of glyphs are well represented in the archaeological literature in defining particular regional styles.

As seen above in Figure 5, petroglyphs of sheep are well represented in the Valley of Fire State Park, both in number and regional style. Of the 157 total sheep images recorded, 101 were found at the lower elevational level, thirty-nine in the middle



Figure 7. Examples of multiple mountain or bighorn sheep on a single panel. Note the right panel with multiple regional styles.

elevational level, and 17 in the high elevational level. Proportional to the total number of glyphs at each of the corresponding elevations, sheep represent 7.2% of the lower elevation glyphs, 27.5% of the middle elevation glyphs, and 6.6% of the high elevation glyphs. These data support the hypothesis that the middle level relates particularly to hunting. It is interesting to note that the two styles of sheep glyphs other than the older Great Basin Abstract (Figure 5), the Coso Range Style with its unique horn shapes and the Kayenta Representational Style with its unique body shape shown in Figure 6, are only located at the low elevation. Also interesting to note is that the two unique regional styles were created on the same panels mixed among the Great Basin Abstract Style.



Figure 8. Examples of Great Basin style shaman glyphs present in the Valley of Fire State Park. The two glyphs to the left are from the low elevation region while the two glyphs to the right are from the high elevation region.

A total of seventeen shaman glyphs were recorded. Of these, 14 were located at the low level and the remaining 3 were at the high level. Examples seen at both high and low elevations are given in Figure 8. Proportionally, shaman glyphs represent 1.0% of the low elevation glyphs and 1.2% of the high elevation glyphs. All but 2 of the shaman are represented in the Great Basin Abstract regional style. These two remaining suggest an eastern influence with the iconic triangular body shape of the Fremont regional style shaman primarily seen in southern Utah. Another example of this regional style can be seen in Figure 9.



Figure 9. Fremont region influenced Shaman with the distinct triangular shaped torso present in the Valley of Fire State Park. This regional style can be found at multiple sites along the Utah / Nevada border.

Overall, when analyzing these two types of glyphs the sheep/mountain goat glyphs represent cultural affiliations to the south and west of the Colorado River, while the shaman glyphs represent those to the northeast of it. The existence of these particular non-local glyph styles is supported by the group development of Great Basin peoples as described above, and theories developing in other fields referencing southwest language dispersal (Gelo, 1994; Quinlan and Woody, 2003), in particular reference to this thesis, the spread of the Numic language over the Great Basin area. Suitably, the glyphs styles represented in the above analysis are encased in the Southern Numic family of languages. In reference to the placement of these at varying elevational levels, this is also supported by Gelo (1994) in stating that “topographic references produce direct associations between particular events and ritual” when discussing topographic symbolism and worldviews, in this case the Numic speaking Commanche.

Relational Analysis

Within the study area, the vast majority of the glyphs are located in three discrete areas (Figure 10). While two of the areas contained glyphs at all three elevational levels, the grouping located farthest east contained no glyphs at the high level despite the presence of appropriate high

elevation rock formations that could have been used. This easternmost grouping is also the smallest of the three groups in number of overall panels containing four total; two

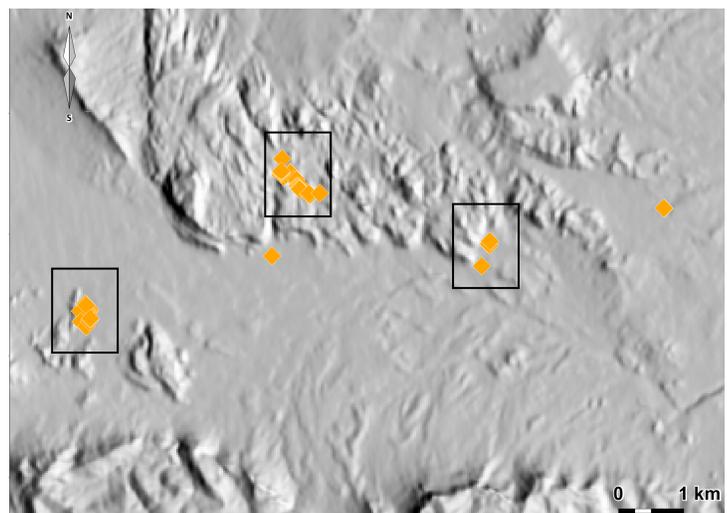


Figure 10. Elevational map showing the location of panels present in the Valley of Fire State Park. The three main groups are boxed.

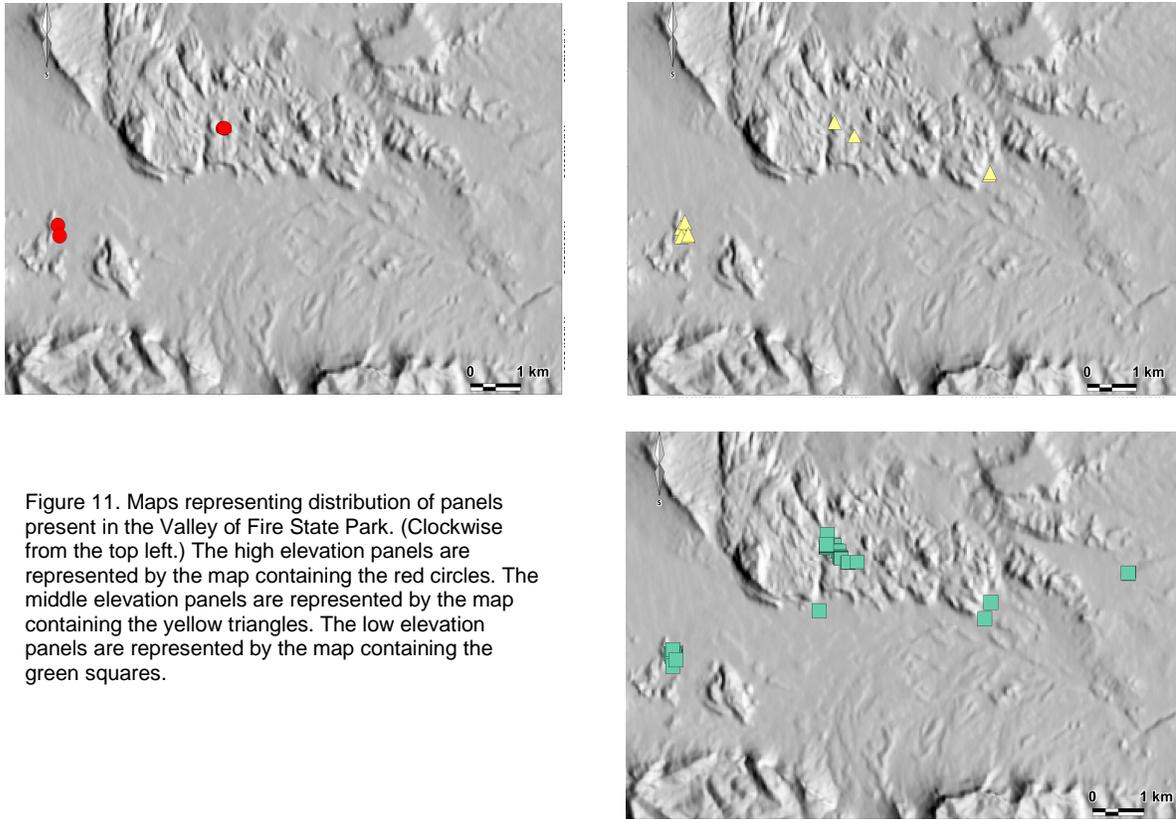


Figure 11. Maps representing distribution of panels present in the Valley of Fire State Park. (Clockwise from the top left.) The high elevation panels are represented by the map containing the red circles. The middle elevation panels are represented by the map containing the yellow triangles. The low elevation panels are represented by the map containing the green squares.

high and two low. The four panels in this group are located very near each other on the same rock face. Viewing the surrounding landscape, this group is located at the point where natural water run-off had created deep washes for water collection from the adjoining mountains. Of the three discrete areas containing rock art, this easternmost area would have been the most conducive to hunting due to the combination of its accessible water source, clear views over a vast area, and rock faces conducive to easily accessible mid-range climbing heights. In fact, of the three sites, this is the only one with all three of the above mentioned features. Although several others had an expansive view of open areas, none also contained a water source within close proximity. The small number of panels at this grouping may give credence to lower socially ritualistic use and higher practical use; in this case hunting. This may be in contrast to the others which may have been used topographically for more of a symbolic purpose rather than a practical one, reiterating Gelo's (1994) ideas regarding

presentation of worldviews. In overall comparison, the other two large groupings contained panels located over a larger number of rock faces, facing multiple directions, and spread over a much larger area.

Interpretation / Conclusion

Three major patterns emerge from the present study. First, certain glyphs are associated with particular elevational levels. As illustrated in Figure 10, the red sandstone rocks in the Valley of Fire were viewed as an ideal palate to create



Figure 12. The above glyphs are currently present in the Valley of Fire State Park. The picture to the left is located at ground level while the picture to the right is approximately 75 meters above the ground after a precarious climb.

expressions of symbolic importance. Whether through sacred, ritualistic, or other expressive reasoning, the indigenous people who traveled this area chose this particular area to leave a multitude of glyphs at various elevations in three primary areas. Primarily because the middle level is represented by a disproportional number of zoomorphs, interpreting the middle level glyphs in relation to hunting is statistically sound. Viewing this level from a locational analysis perspective, only one of the three main groupings offers a valid hunting site. Therefore, to accurately view the entire level in relation to hunting it needs to be viewed from both practical (locational analysis) and representational (spatial analysis) perspectives.

The glyphs located at the highest elevational level represent a subset of those found at the lowest level. When analyzing the entire listing of glyphs at each elevational

level there is comparatively about 1/3 less number of distinct glyph types at the highest level. It is also distinguished by a proportionally slightly higher percentage of anthromorphs, zoomorphs, and plants than the lowest level. Not only are there similar glyph groupings at the high and low levels (see Appendix B), but there is one unique glyph that only occurs at the high level and that is the 4 paddlewheel glyphs (Figure 13).

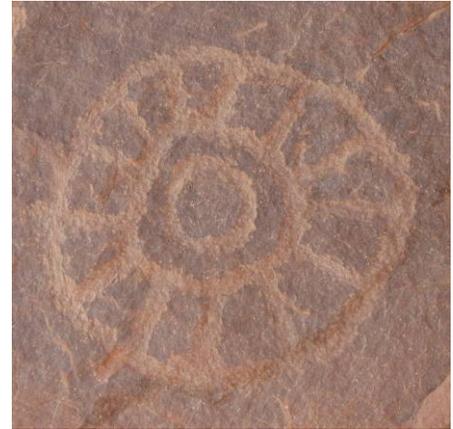


Figure 13. An example of a paddlewheel glyph present in the Valley of Fire State Park.

This paddlewheel glyph may be interpreted as representing tunnel vision and other entopic images experienced during a hallucinogenic state (VanPool, 2009). If this interpretation is correct, the association of the paddlewheel with the highest elevational level supports the hypothesis presented in this study that the highest level is associated with shamanistic mechanisms like vision quests and journeys to other worlds.

Second, the patterns identified in this thesis tend to fit the larger, expected social model presented in this thesis. Stated in a different manner, because the creators of the glyphs at the high and middle levels are also members of the low (domestic) level two concepts should be seen statistically. First, similar glyphs should be seen when comparing each of these levels with the low level due to the fact they are all part of the larger social group. Second, unique glyphs should be seen at each of these levels because of the idea that each level is used for specific purposes by particular members of the larger society. Whether the definitions for these particular members of society used in this thesis are correct or not may be up to future analysts to reevaluate.

Third, comparing the overall number of glyphs at each level, Quinlan and Woody's (2003) idea that rock art was primarily used in social ritual is highly supported with 78% (1,410/1,811) of the total number of glyphs produced at the low level.

Additional support is provided by the tight groupings of them. Every culture has physical locations used for ritual gathering, sources of power, and particular places for unique members of its society to conduct their functions. Whether this level should be renamed social, ritualistic, corporate, or other group-sensed wording is up for debate understanding that this level is a multi-faceted layer of use by a variety of social members.

From an analytical perspective, in order to begin to analyze such a large amount of glyphs, they need to be broken down into smaller groups not just by type but also by other means that can be tied to culturally defined spaces. Whether its location is defined through elevation differences or distance differentials from other particular defined spaces, the context in which a glyph was produced has very important meaning. At the same time, these spaces need to be able to be culturally defined. An example of this may be in the obvious absence of birds at the higher elevation. In multiple southwestern cultures, birds are associated with shamanistic ritual and practice as being used to guide or transport the shaman in his/her altered state of consciousness to and from other worlds. In the confines of the park, the one bird that is present is labeled as the Phoenix and it only appears at the lower elevations. This may be because of a cultural or regional practice/ritual which has yet to be identified. This thesis makes an attempt to define elevational space first through an objective, analytical perspective then a cultural lens to give meaning to the placement of patterns of glyphs. Although some sort of interpretation of individual glyphs is needed eventually when presenting patterns, purpose and meaning need to be the end result not the beginning.

Significance of Study

The proposed study is significant for at least two reasons. First, it expands Swartz' (Swartz, 1994) concept of contextual analysis. Adding a distinct social

perspective, yet avoiding an emic cultural one to the list of variables used in contextual analysis, adds insight to the creator of the petroglyphs as a social character rather than a cultural group. Understanding one key aspect of petroglyphs at a time, in this thesis the 'who' (socially defined), greatly narrows the possibilities of interpreting both content and meaning.

Secondly, the study provides the first detailed compilation of Valley of Fire State Park's most valuable cultural resource; its petroglyphs. With thousands of tourists visiting the park annually there has been slow but steady damage to this irreplaceable resource. This data collected for this thesis has resulted in a permanent record of this incredible, but yet disappearing, resource; a record that can be used both now and in the future for academic and historical purposes.

Appendix A. Photograph Form

Date: ____/____/____ Time: _____ a.m./p.m. Page: ____ of ____

Location: UTM's: Z ____ E _____ N _____ Elev. _____

Meters above current ground level measured from marker in photograph: _____

Memory Card #: _____ Photograph #: _____ Photographer: _____

Dir. of photograph: _____ Dir. of panel facing: _____ Level: High Mid Low

Current state of panel: _____

Vandalism: Yes or No If "Yes", describe: _____

Brief description of panel. (Types and number of glyphs, scenes, and orientations):

Zoomorphs #___/Anthromorphs #___/Theriantropes #___/Geometrics #___/Hands #___

Plants #___/Unknown #___/ : _____

Description of surrounding area. (Cultural and natural): _____

Appendix B. Data set of all 49 glyph variables broken down by elevation

High / Med. / Low	Abstract / Unknown	Abstract Anthro	Abstract Zoo	Antelope / Sheep / Elk	Anthro	Anthro w/Shield	Atlatl
High	49	11	5	17	10	0	2
Medium	28	10	8	39	1	0	2
Low	361	31	51	101	37	8	3

High / Med. / Low	Centipede	Circle	Circle Bisected	Circle w/Mult. Bisections	Circles Concentric	Circle w/Dot	Circles Connected
High	1	4	3	1	8	0	19
Medium	0	4	1	0	2	0	5
Low	17	41	16	2	18	5	37

High / Med. / Low	Circles Conn. w/Line	Circle Tailed Conn.	Cross /X	Crosshatch	Diamnd Hang. Chain	Dog / Coyote	Dots in a Row
High	17	2	6	0	0	2	10
Medium	9	0	4	1	0	0	0
Low	56	14	31	4	1	1	24

High / Med. / Low	Enclosed U	Enclosed U Concentric	Foot	Hand	Line Straight	Line Wavy	Lines Wavy Group
High	1	4	1	0	6	15	16
Medium	0	0	0	0	0	9	0
Low	14	12	34	2	71	118	44

High / Med. / Low	Oval Bisected	Paddle Wheel	Phoenix	Plant	Prong w/2	Prong w/3	Prong w/4
High	1	4	0	17	0	0	3
Medium	2	2	0	0	1	1	0
Low	10	0	2	72	3	30	2

High / Med. / Low	Rain Scene Open	Rain Scene Closed	Rake Open	Rake Closed	Rake Convoluted	Sawtooth	Shaman
High	0	0	15	1	0	1	3
Medium	1	0	4	0	1	2	0
Low	1	2	74	5	0	5	14

Appendix B. Data set of all 49 glyph variables broken down by elevation
(continued)

High / Med. / Low	Shell w/Lines	Snakes	Spirals	Spirals Connected	Square Bisected	Sun	Turtle
High	0	2	0	0	0	2	0
Medium	0	3	1	1	0	0	0
Low	1	6	19	1	1	7	1

High / Med. / Low	Abstract / Unknown	Total Anth	Total Zoo	Total Geo	Other Rep	Total Glyphs
High	49	25	27	137	21	259
Medium	28	11	50	51	2	142
Low	361	126	179	662	82	1410

Appendix C. Cross-tabulation table of 13 glyphs used in quantitative analysis

broken down by elevation

Type * HML Cross-tabulation						
			H	M	L	Total
Type	AbstAnthro	Count	11	10	31	52
		Expected Count	8.1	4.8	39.1	52
		% within Type	21.20%	19.20%	59.60%	100.00%
		% within HML	7.00%	10.80%	4.10%	5.10%
	AbstZoo	Count	5	8	51	64
		Expected Count	10	5.9	48.2	64
		% within Type	7.80%	12.50%	79.70%	100.00%
		% within HML	3.20%	8.60%	6.70%	6.30%
	AnteShpElk	Count	17	39	101	157
		Expected Count	24.4	14.4	118.2	157
		% within Type	10.80%	24.80%	64.30%	100.00%
		% within HML	10.80%	41.90%	13.20%	15.50%
	Anthro	Count	10	1	37	48
		Expected Count	7.5	4.4	36.1	48
		% within Type	20.80%	2.10%	77.10%	100.00%
		% within HML	6.30%	1.10%	4.80%	4.70%
	Circle	Count	4	4	41	49
		Expected Count	7.6	4.5	36.9	49
		% within Type	8.20%	8.20%	83.70%	100.00%
		% within HML	2.50%	4.30%	5.40%	4.80%
	CircConnect	Count	19	5	37	61
		Expected Count	9.5	5.6	45.9	61
		% within Type	31.10%	8.20%	60.70%	100.00%
		% within HML	12.00%	5.40%	4.80%	6.00%
	CircConnectwLine	Count	17	9	56	82
		Expected Count	12.8	7.5	61.7	82
		% within Type	20.70%	11.00%	68.30%	100.00%
		% within HML	10.80%	9.70%	7.30%	8.10%
	CrossX	Count	6	4	31	41
		Expected Count	6.4	3.8	30.9	41
		% within Type	14.60%	9.80%	75.60%	100.00%
		% within HML	3.80%	4.30%	4.10%	4.00%
	LineStraight	Count	6	0	71	77
		Expected Count	12	7.1	58	77
		% within Type	7.80%	0.00%	92.20%	100.00%
		% within HML	3.80%	0.00%	9.30%	7.60%
	LineWavy	Count	15	9	118	142
		Expected Count	22.1	13	106.9	142
		% within Type	10.60%	6.30%	83.10%	100.00%
		% within HML	9.50%	9.70%	15.40%	14.00%

Appendix D. Cross-tabulation table of 13 glyphs used in quantitative analysis

broken down by elevation (continued)

		H	M	L	Total
LineWavyGrp	Count	16	0	44	60
	Expected Count	9.3	5.5	45.2	60
	% within Type	26.70%	0.00%	73.30%	100.00%
	% within HML	10.10%	0.00%	5.80%	5.90%
Plant	Count	17	0	72	89
	Expected Count	13.9	8.2	67	89
	% within Type	19.10%	0.00%	80.90%	100.00%
	% within HML	10.80%	0.00%	9.40%	8.80%
RakeOpen	Count	15	4	74	93
	Expected Count	14.5	8.5	70	93
	% within Type	16.10%	4.30%	79.60%	100.00%
	% within HML	9.50%	4.30%	9.70%	9.20%
Total	Count	158	93	764	1015
	Expected Count	158	93	764	1015
	% within Type	15.60%	9.20%	75.30%	100.00%
	% within HML	100.00%	100.00%	100.00%	100.00%

REFERENCES

- Adams, William Y., Alexander J. Lindsay, Jr., and Christy G. Turner. *Survey and Excavations in Lower Glen Canyon, 1952-1958*. 1st. Flagstaff, AZ: Northern Arizona Society of Science and Art, 1961. Print.
- Ashmore, Wendy, and A. Bernard Knapp. *Archaeologies of Landscape*. 1st ed. Bodmin, Cornwall, Great Britain: MPG Books Ltd., 1999. Print.
- Bamforth, Douglas B. "Technological Organization and Hunter-Gatherer Land Use: A California Example." *American Antiquity*. 56.2 (1991): 216-234. Print.
- Beck, Charlotte, and George T. Jones. "The Terminal Pleistocene/Early Holocene Archaeology of the Great Basin." *Journal of World Prehistory*. 11.2 (1997): 161-236. Print.
- Beck, Charlotte, and George T. Jones. "Toolstone Selection and Lithic Technology in Early Great Basin Prehistory." *Journal of Field Archaeology*. 17.3 (1990): 283-299. Print.
- Bernardini, Wesley. "Reconsidering Spatial and Temporal Aspects of Prehistoric Cultural Identity: A Case Study from the American Southwest." *American Antiquity*. 70.1 (2005): 31-54. Print.
- Berrocal, Maria Cruz, and Juan Vincent Garcia. "Rock art as an archaeological and social indicator: The neolithisation of the Iberian Peninsula." *Journal of Anthropological Archaeology*. 26. (2007): 676-697. Print.
- Bettinger, Robert L., and Martin A. Baumhoff. "The Numic Spread: Great Basin Cultures in Competition." *American Antiquity*. 47.3 (1982): 485-503. Print.
- Bird, Douglas W., and James F. O'Connell. "Behavioral Ecology and Archaeology." *Journal of Archaeological Research* 13 June 2006: 143-188. Web. 15 May 2011.
- Bostwick, Todd W. *Rock Art Research in the American Southwest, Discovering North American Rock Art*, 1st ed., ed. Loendorf, Lawrence L., Christopher Chippindale, and David S. Whitley, Tucson, AZ, The University of Arizona Press, 2005. Print.
- Boyd, Carolyn E. *Rock Art of the Lower Pecos*. 1st. College Station, TX: Texas A&M University Press, 2003. Print.
- Bradley, Richard. "Rock Art and the Perception of Landscape." *Cambridge Archaeological Journal*. Vol. 1 No. 1. 1999: 77-101. Print.

- Bradley, Richard. *Rock Art and the Prehistory of Atlantic Europe: Signing the Land*. 1st ed, New York, NY. Routledge Publishing, 1997. Print.
- Bradley, Richard, Felipe Criado Boado, and Ramon Fabregas Valcarce. "Rock Art Research as Landscape Archaeology: A Pilot Study in Galicia, North-West Spain." *World Archaeology*. 25.3 (1994): 374-390. Print.
- Butzer, Karl W. *The Americas before and after 1492: An Introduction to Current Geographical Research*, *Annals of the Association of American Geographers*, Vol. 82, No. 3, Sept. 1992. 345-368.
- Castilblanco, Guillermo Munoz. "The complexity of understanding how to investigate rock art." *Rock Art Research*. 26.2 (2009): 1654-156. Print.
- Chippindale, Christopher, and George Nash. *Pictures in Place: The Figured Landscapes of Rock Art*, 1st ed., Cambridge, UK; Cambridge University Press, 2004. Print.
- Clarkson, Persis B. "Contextual Archaeological Approaches to Geoglyphs in Northern Chili: Extending the Theoretical Landscape." *1999 IRAC Proceedings*. P. Whitehead and L. Loendorf: Farmington, NM, American Rock Art Research Association. 2000. 191-197. Print.
- Cordell, Linda. *Archaeology of The Southwest*. 2nd. Walnut Creek, CA: Left Coast Press, 1997. Print.
- Denevan, William M. *The Pristine Myth: The Landscape of the Americas in 1492*, *Annals of the Association of American Geographers*, Vol. 82, No. 3, Sept. 1992. 369-385.
- Dobyns, Henry F. *Disease Transfer at Contact*, *Annual Review of Anthropology*, Vol. 22, 1993. 273-291.
- Dockal, James A., and Michael S. Smith. "Evidence for a Prehistoric Petroglyph Map in Central Arizona." *Kiva: The Journal of Southwestern Archaeology and History*. 70.4 (2005): 413-420. Print.
- Fiore, Danae. "The economic side of rock art: Concepts on the production of visual images." *Rock Art Research*. 24.2 (2007): 149-160. Print.
- Flood, Josephine. *Rock-art landscape in Aboriginal Australia*, *The Figured Landscapes of Rock-Art*, 1st ed., Ed. Chippindale, Christopher and George Nash, Cambridge, UK; Cambridge University Press, 2004. Print.

- Francis, Julie E., and Lawrence L. Loendorf. *Ancient Visions: Petroglyphs and Pictographs of the Wind River and Bighorn Country, Wyoming and Montana*, 1st ed., Salt Lake City, UT. University of Utah Press, 2002. Print.
- Francis, Julie. "Pictographs, Petroglyphs, and Paradigms; Rock Art in North American Archaeology." *Discovering North American Rock Art*. Ed. Loendorf, Lawrence L., Christopher Chippindale, and David S. Whitley. Tucson, AZ: The University of Arizona Press, 2005. Print.
- Gelo, Daniel J. "Recalling the Past in Creating the Present: Topographic References in Comanche Narrative." *Western Folklore*. 53.4 (1994): 295-312. Print.
- Gortner, Willis. *Evidence for a prehistoric petroglyph trail map in the Sierra Nevada*, North American Archaeologist, Vol.9 Is. 3 , 1988. 147-154.
- Gortner, Willis. *Evidence for a prehistoric petroglyph trail map in the Sierra Nevada II; two additional 'glyph maps'*, North American Archaeologist, Vol. 10 is. 3, 1989. 231-236.
- Grant, Campbell. *The rock art of the North American Indian*, 1st ed. New York, NY, Cambridge University Press, 1983. Print.
- Guilford, Andrew, *Sacred Objects and Sacred Places, Preserving Tribal Traditions*, 1st ed., Boulder, CO, The University Press of Colorado, 2000. Print.
- Hammons, Jim. "Survey of Valley of Fire." Personal Message to Eric Pacl. May 19, 2009. E-mail.
- Harry, Karen G., and James T. Watson. *The Archaeology of Pueblo Grande De Nevada: Past and Current Research within Nevada's "Lost City"*. Las Vegas, NV: Non-dated (n.d.). Print.
- Hartley, Ralph J. *Rock art on the northern Colorado plateau; variability in content and context*. Brookfield, VT. Avebury, 1992. Print.
- Heizer, Robert F, and Martin A. Baumhoff. *Prehistoric Rock Art of Nevada and Eastern California*. 1st. Berkeley, CA: University of California Press, 1962. Print.
- Hildebrandt, William R., and Kelly R. McGuire. "The Ascendance of Hunting during the California Middle Archaic: An Evolutionary Perspective." *American Antiquity*. 67.2 (2002): 231-256. Print.

- Hyder, William D. *Locational analysis in rock-art studies*, Pictures in Place; The Figured Landscapes of Rock-Art, ed. Christopher Chippindale and George Nash. Cambridge, UK: Cambridge University Press, 2004. Print.
- Huckell, Bruce B. "The Archaic Prehistory of the North American Southwest." *Journal of World Prehistory*. 10.3 (1996): 305-373. Print.
- Ingold, Tim. *The appropriation of nature: Essays on human ecology and social relations*. 1st. Iowa City, IA: University of Iowa Press, 1986. Print.
- Jablonka, Eva, and Marion J. Lamb. *Evolution in Four Dimensions: Genetic, Epigenetic, Behavioral, and Symbolic Variation in the History of Life*. 1st. Cambridge, MA: MIT Press, 2006. Print.
- Jennbert, Kristina. "Sites and the Mental Landscape: Stone Age in the Kullen district, North-western Scania, Sweden." *Lund Archaeological Review*. 11.12 (2005): 47-58. Print.
- Jones, George T., Charlotte Beck, et al. "Lithic Source Use and Paleoarchaic Foraging Territories in the Great Basin." *American Antiquity*. 68.1 (2003): 5-38. Print.
- Kelly, Robert L. "Late Holocene Great Basin Prehistory." *Journal of World Prehistory*. 11.1 (1997): 1-49. Print.
- Keyser, James D., and David S. Whitley. "Sympathetic Magic in Western North American Rock Art." *American Antiquity*. 71.1 (2006): 3-26. Print.
- Kroeber, Alfred L. "Handbook of the Indians of California." Bureau of American Ethnology. Bulletin 78. (1925): Print.
- Larson, Daniel O., and Joel Michaelsen. "Impacts of Climatic Variability and Population Growth on Virgin Branch Anasazi Cultural Developments." *American Antiquity*. 55.2 (1990): 227-249. Print.
- Larson, Daniel O. "Population Growth, Agricultural Intensification, and Culture Change among the Virgin Branch Anasazi, Nevada." *Journal of Field Archaeology*. Vol. 23. 1996: 55-76. Print.
- Lewis-Williams, J. D. "The Evolution of Theory, Method and Technique in Southern African Rock Art Research." *Journal of Archaeological Method and Theory*. 13.4 (2006): 343-377. Print.

- Lewis-Williams, J. D., and T.A. Dowson. *Images of Power: Understanding Bushman Rock Art*. 1st. Johannesburg, South Africa: Southern Book Publishers, 1989. Print.
- Lewis-Williams, J. D., and T.A. Dowson. "The Signs of All Times: Entopic Phenomena in Upper Paleolithic Art." *Current Anthropology*. 29.2 (1988): 201-245. Print.
- Llamazares, Ana Marie. *A semiotic approach in rock-art analysis*. The Meaning of Things. 1st. ed. Ian Hodder. London, UK: Unwin Hyman Ltd. 1989. Print.
- Lyneis, Margaret M. Nevada State Historic Preservation Office. *Archaeological Element for the Nevada Historic Preservation Plan*. Carson City, NV: SHPO, 1982. Print.
- Lyneis, Margaret M. (a) "Social Complexity Among the Lowland Virgin Anasazi." *Kiva*. Vol. 57 No. 3 1992: 197-212. Print.
- Lyneis, Margaret M. (b) *The Main Ridge Community at Lost City Virgin Anasazi Architecture, Ceramics and Burials*. University of Utah Anthropological Papers No. 117. Salt Lake City, UT: University of Utah, 1992. Print.
- Lyneis, Margaret M. "The Virgin Anasazi, Far Western Puebloans." *Journal of World Prehistory*. Vol. 9 No. 2 1995: 199-241. Print.
- Madsen, David B. "Dating Paiute-Shoshoni Expansion in the Great Basin." *American Antiquity*. 40.1 (1975): 82-86. Print.
- Madsen, David B. "New Views on the Fremont and the Sevier: Defining Prehistoric." *American Antiquity*. 44.4 (1979): 711-722. Print.
- May, Sally K., and Ines Domingo Sanz. "Making Sense of Scenes." *Rock Art Research*. 27.1 (2010): 35-42. Print.
- McCall, Grant S., and Marie R. Richards, *Exploring Spatial Variation in Rock Art Site Composition at Ndedema Gorge, South Africa*, American Indian Rock Art, Vol. 34, 2008. 123-131.
- Owusu, Heike. *Symbols of Native America*. 1st. New York, NY: Sterling Publishing Co. Inc., 1999. Print.
- Murison, Richard W. "The petroglyph recording standards debate." *Rock Art Research*. 26.2 (2009): 227. Print.

- Patterson, Alex. *A Field Guide to Rock Art Symbols of the Greater Southwest*. 1st. Boulder, CO: Johnson Books, 1992. Print.
- Patterson, Carol. "Seeking Power at Willow Creek Cave, Northern California." *Anthropology of Consciousness*. 9.1 (1997): 38-49. Print.
- Peterson, Christian E., and Robert D. Drennan. "Communities, Settlements, Sites, and Surveys: Regional-Scale Analysis of Prehistoric Human Interaction." *American Antiquity*. 70.1 (2005): 5-30. Print.
- Potter, James M. *The creation of person, the creation of place: hunting landscape in the American Southwest*, *American Antiquity* vol. 69 no. 2, 322, April 2004. Print.
- Quinlan, Angus R. and Alanah Woody. *Marks of Distinction: Rock Art and Ethnic Identification in the Great Basin*, *American Antiquity* vol. 68 no. 2, 372-390, April 2003. Print.
- Rafferty, Dr. Kevin. "A Small Rockshelter in the Valley of Fire State Park, Clark County, Nevada." *In-Situ*. 14.2 (2010): 6-9. Print.
- Rafferty, Kevin. "The Virgin Anasazi and the Pan-Southwestern Trade System, A.D. 900-1150." *Kiva*. 56.1 (1990): 3-24. Print.
- Ross, June, and Iain Davidson. "Rock Art and Ritual: An Archaeological Analysis of Rock Art in Arid Central Australia." *Journal of Archaeological Method and Theory*. 13.4 (2006): 305-341. Print.
- Ross, Mairi. *Emerging trends in rock-art research: hunter-gatherer culture, land and landscape*, *Antiquity* Vol. 75 No. 289, 543-548. 2001. Print.
- Schaafsma, Polly. *Form, content, and function: theory and method in North American rock art studies*, *Advances in Archaeological Method and Theory*, 8th ed. New York, NY: Academic Press. 1985. 237-277. Print.
- Schaafsma, Polly. *Great Basin, Rock art*. *Handbook of North American Indians*, vol. 11, gen. ed. William C. Sturtevant. Washington, D.C.: Smithsonian Institution, 1986. Print.
- Schaafsma, Polly. *Indian Rock Art of the Southwest*. 1st. Santa Fe, NM: School of American Research, 1980. Print.
- Schaafsma, Polly. *Rock Art in the Navajo Reservoir District*. 1st. Santa Fe, NM: Museum of New Mexico Press, 1963. Print.

- Schaafsma, Polly, and Karl A. Taube. "Bringing the Rain: An Ideology of Rain Making in the Pueblo Southwest and Mesoamerica." *A Pre-Columbian World*. Ed. Jeffrey Quilter and Ed. Mary Miller. 1st ed. Washington, D.C.: Dumbarton Oaks Research Library & Collection, 2006. 231-286. Print.
- Schutler Jr., Richard and Mary Elizabeth Schutler. *Anthropological Survey in Southern Nevada*, Nevada State Museum Anthropological Papers No. 7, Carson City, NV, September 1962. Print.
- Slifer, Dennis, and James Dufield. *Kokopelli - The Magic, Mirth, and Mischief of an Ancient Symbol*. 1st. Layton, UT: Gibbs Smith Publisher, 2007. Print.
- Smith, Gerald A. *The Mojave Indians*. 1st ed. Redlands, CA: San Bernardino County Museum Association, 1977. Print.
- Steward, Julian. "Petroglyphs of California and Adjoining States." *University of California Publications in American Archaeology and Ethnology*. 24. (1929): Print.
- Steward, Julian. *Theory of Culture Change; The Methodology of Multilinear Evolution*. 1st. Urbana, IL: University of Illinois Press, 1955. Print.
- Swartz, B. K. Jr. *Levels of interpretation in rock art study and their application to investigations in east-central Nevada, U.S.A.* Proceedings of the First International Conference of the South African Rock Art Research Association, Natal Drakensberg, South Africa. 49-53. August 1991.
- Swartz, B. K. Jr., and Thomas S. Hurlbutt. *Space, Place and Territory in Rock Art Interpretation: An integration of concepts of space and their application to an unusual petroglyphs locality in the Great Basin, U.S.A.*, *Rock Art Research: the Journal of the Australian Rock Art Research Association*. Vol. 11, No. 1, 1994. 13-22.
- Tacon, Paul Stephen Charles, and Christopher Chippindale. *The archaeology of Rock Art*. 1st. Cambridge: Cambridge University Press, 1998. Print.
- Thornton, Russell, Tim Miller, and Jonathan Warren. "American Indian Population Recovery Following Smallpox Epidemics", *American Anthropologist*. Vol. 93, No. 1, Mar. 1991. 28-45.
- Troncoso, Andres M. "Spatial Syntax of Rock Art." *Rock Art Research*. 25.1 (2008): 3-11. Print.

- VanPool, Christine S. "Flight of the Shaman." *Archaeology*. Vol. 55, No. 1, Jan/Feb 2002. 40-44. Print.
- VanPool, Christine S. "The signs of the sacred: Identifying shamans using archaeological evidence." *Journal of Anthropological Archaeology*. Vol. 28, No. 2, Feb. 2009. 177-190. Print.
- Warren, C. N. and R.H. Crabtree. "Prehistory of the Southwestern Area." *Handbook of North American Indians*. Ed. William Sturtevant. 1st. ed. Washington, D. C.: Smithsonian Institution, 1986. 183-193. Print.
- Warren, Claude. "Prehistoric Developments at Atlatl Rock", P.O. #10-00130. Institute for American Research. Golea, CA. June, 1982.
- Warren, Claude, Kathleen Bergen, David Ferrara, Kathryn Olson. "Archaeological Excavation at the Valley of Fire / Archaeological Research Center UNLV", Contract #V.F. 75-77 C 449.0. University of Nevada, Las Vegas Archaeological Research Center. Las Vegas, NV. May, 1978.
- Watson, Ben. "Oodles of Doodles? Doodling behaviour and its implications for understanding palaeoarts." *Rock Art Research*. 23.1 (2008): 35-60. Print.
- Wellmann, Klaus F. "A Quantitative Analysis of Superimpositions in the Rock Art of the Coso Range, California." *American Antiquity*. 44.3 (1979): 546-556. Print.
- White, Leslie A. *The Science of Culture: A Study of Man and Civilization*. 1st. New York, NY: Grove Press, 1949. Print.
- White, Leslie A. *The Evolution of Culture: The Development of Civilization to the Fall of Rome*. 1st. New York, NY: McGraw-Hill, 1959. Print.
- Whitley, David S. "By the hunter, for the gatherer: art, social relations and subsistence change in the prehistoric Great Basin." *World Archaeology*. 25.3 (1994): 356-373. Print.
- Whitley, David S. *Handbook of Rock Art Research*, 1st ed., Walnut Creek, CA: Alta Mira Press, 2001. Print.
- Whitley, David S. *Introduction to Rock Art Research*, 1st ed., Walnut Creek, CA: Left Coast Press, Inc., 2005. Print.
- Whitley, David S. "Shamanism and Rock Art in Far Western North America." *Cambridge Archaeological Journal*. 1992: 89-112. Print.

- Whitley, David S. "Socioreligious context and rock art in east-central California." *Journal of Anthropological Archaeology*. 6.2 (1987): 159-188. Print.
- Whitley, David S. *The art of the shaman: rock art of California*. 1st. Salt Lake City, UT: University of Utah Press, 2000. Print.
- Whitley, David S. "Use and Abuse of Ethnohistory in the Far West." *1999 IRAC Proceedings*. P. Whitehead and L. Loendorf: Farmington, NM, American Rock Art Research Association. 2000. 127-153. Print.
- Whitley, David S. and Lawrence L. Loendorf. *Ethnography and Rock Art in Far Western North America: Some Archaeological Implications*, New Light on Old Art: Recent Advances in Hunter-Gatherer Rock Art Research. 1st ed. Los Angeles, CA: Institute of Archaeology, UCLA, 1994. 81-93. Print.
- Whitley, David S., Joseph M. Simon, and Ronald I. Dorn. "The Vision Quest in the Coso Range." *American Indian Rock Art*. Steven M. Freers: Farmington, NM, American Rock Art Association. 1999. 1-32. Print.
- Whitley, David S., and Ronald I. Dorn. "Rock Art Chronology in Eastern California." *World Archaeology*. 19.2 (1987): 150-164. Print.
- Wilcox, A. R. "The Rock Art of North America: Some Impressions and Comparisons." *South African Archaeological Bulletin*. 28.109 (1973): 27-31. Print.
- Wobst, H. Martin. "The Archaeo-Ethnology of Hunter-Gatherers or the Tyranny of the Ethnographic Record in Archaeology." *American Antiquity*. 43.2 (1978): 303-309. Print.

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