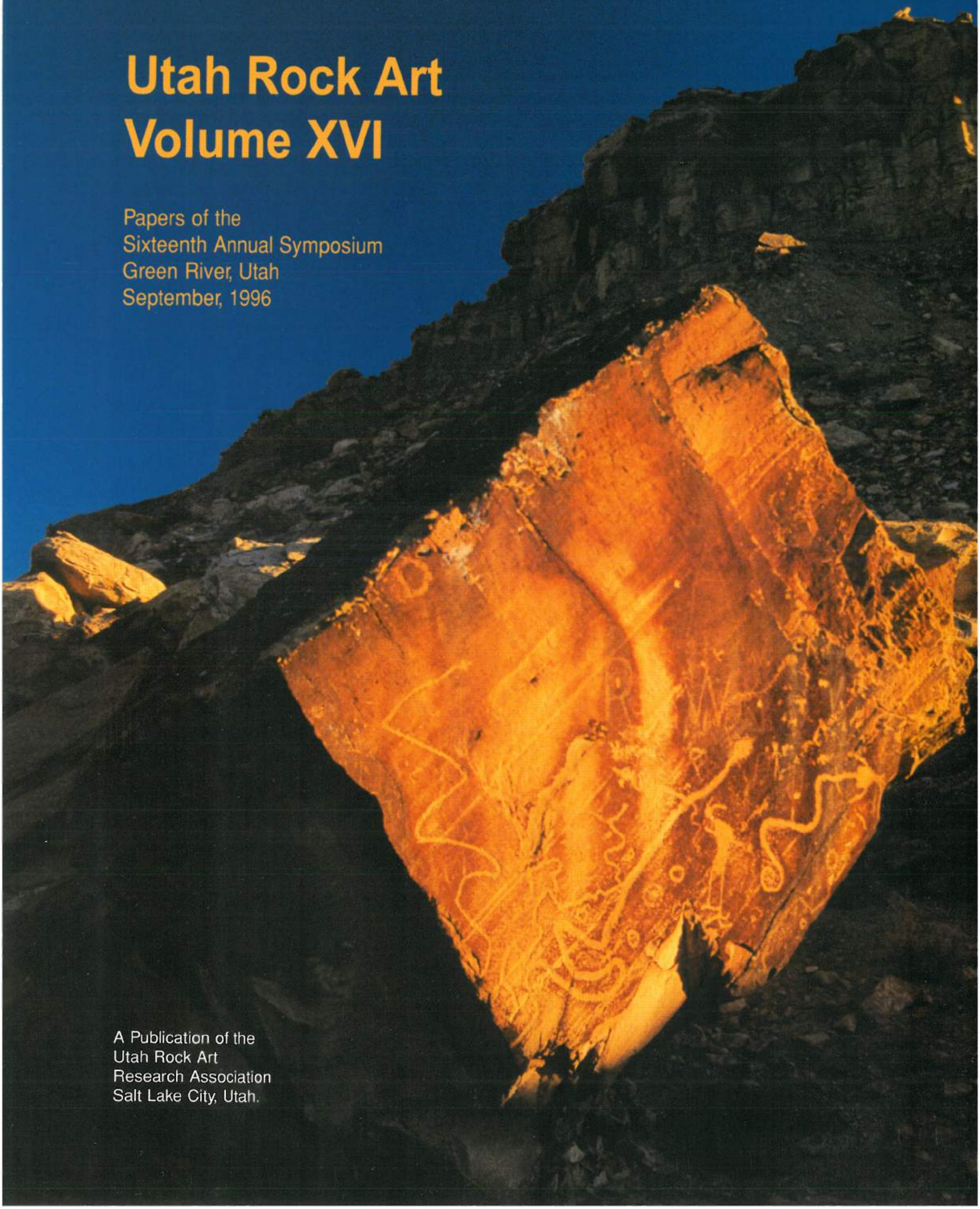
Utah Rock Art
Volume XVI

Papers of the
Sixteenth Annual Symposium
Green River, Utah
September, 1996



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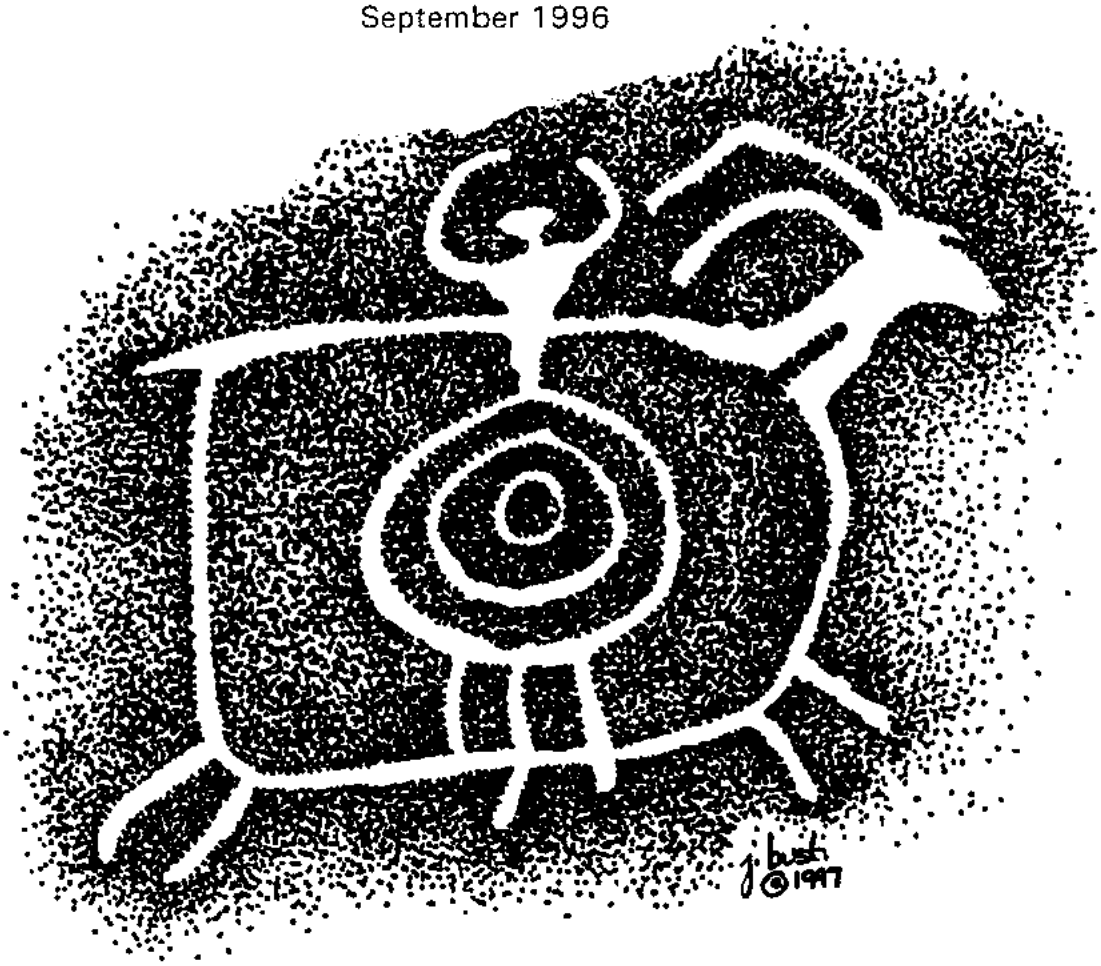

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In recognition for his achievements in research and

in appreciation for his tireless efforts with its publications,

The Utah Rock Art Research Association

dedicates the Sixteenth Annual Symposium to

Steven J. Manning

Thank you for all that you do

September 1996

Nina Bowen, URARA President 1996

Jane Bush, URARA Vice-President and
Symposium Chair 1996

The Utah Rock Art Research Association provides an opportunity for the members to present their research and ideas at the annual symposium. The presentations are then published in symposium volume. All authors/presenters are responsible for their own material published in this volume.

Two Petroglyph Sites in Mexico's Bermuda Triangle, Durango, Mexico

(FOR URARA 1996)

Alex Apostolides

This is a preliminary field report on the petroglyph sites of El Cadillal and San Rafael de los Milagros, in Mexico's state of Durango. This paper is presented to give researchers a partial glimpse of the wealth of rupestrian art in the Durango/Coahuila area. The region has been relatively ignored to date, the sole exception being the indefatigable research of Luis Maeda Villalobos of Torreon, Coahuila, for the past 20 years and more. Dr. Maeda was our guide to these sites in the Bolson de Mapimi.

Special thanks and acknowledgment are due to my old friend, scholar Pablo Bush Romero, whose unbounded vitality and enthusiasm have been responsible for many of our treks into unmapped areas from Mexico's southern tip to her northern border. And a grateful acknowledgment is given to our companions on this trek: Dr. Donald Rathbun of El Paso, Texas, good friend and trailmate; to Brigadier General Dr. Jesus Lozoya-Solis, onetime governor of Chihuahua and now of the Distrito Federal, who shared part of his homeland with us and became a lifelong friend; and to Drs. Maeda and Villareal, of Torreon and Saltillo respectively, whose enthusiasm and knowledge of the countryside made this trek unforgettable.

No "official" research has been done in the area to our knowledge. Dr. Maeda has conducted what has been in effect a one-man expedition in the Zone of Silence of Mapimi for the past two decades. One hopes to read the results of his dedicated labors before much more time has passed. This report is made to make these sites familiar to a wider audience, with the hope that readers who find similarities in their experience will communicate them to the writer and to the Utah Art Research Association.

The Region

Mapimi is "a region as shadowy as it is ignored" (Moller, 1979). According to Moller, Mapimi means "grasping the arrow." He characterizes the area, especially the Zone of Silence, as being the most written about and little known in Mexico. The Zone of Silence lies in the area north and east of our petroglyph sites, where the states of Durango, Coahuila, and Chihuahua touch. This is Mexico's "Bermuda Triangle," a place where meteorites seem to have an affinity for falling; where radio transmission or reception is in spots impossible; where evolution of both flora and fauna has taken strange turns. There is an "other-world" quality to the landscape, and this feeling carries over to the area in which the sites of El Cadillal and San Rafael de los Milagros are found.

Mapimi is a vast field of more than 200,000 acres, sunk in the *altiplano* which surrounds it, forming a semi-arid steppe land. "Its landscape is harsh, unfriendly, intensely hot or cold; in summer there can be as much as 125 degrees F. between the maximum and minimum temperatures. And the general aspect is of a vast unattended land" (Moller, 1979). Moller is a little harsh, we feel, in his description. The area might seem hostile to people not familiar with the desert, but to inveterate desert wanderers, Mapimi is a wondrous place to roam, with discoveries to be made at every turning in the *barranca* and at the lip of every red-stone mesa.

Ancient lake beds form the floor of Mapimi, laced with dust devils twisting in the wind, surrounded by living dunes and hills broken by upthrust. The dry, winding track of eroded arroyos wrinkles the land as though some great hand had lifted and crumpled it and then thrown it back to earth. The local Indian term for dust devils is *cachivipa*, and children are frightened into proper behavior by the threat of the devils' coming to get them if they misbehave.

The view is interesting, compared with the *pingo*, the term used for the same phenomenon in Morelos and points south. Appearance of a *pingo* in the Central Highlands merely means that the gods have come to visit—if "merely" can be applied to such an event. Historically, as now, the landscape was filled with natural phenomena to which explanations, plausible or not, were assigned. This was not unfriendly land, not harsh to the ancient dwellers who traversed the broken canyonlands, made their living ceremonial centers along the edges of vanished lakes, left trace of their passing in designs pecked, carved, and painted on the fossil-laden rocks. And this was the area in which we found ourselves in the month of August, 1979. The first site we visited was the hidden cliff of El Cadillal.

El Cadillal

Going north and west to Torreon, one enters the region of Mapimi. West of the hamlet of Mapimi, on Mexico's Highway 30, one passes through a region of live sand dunes, *barrancas*, sandstone hills, and fossil lake beds. Dirt roads wander off, unmapped, into the outback. The track which threads through the village of 4 de marzo leads one ultimately to the cluster of huts that mark El Cadillal and the beginning of the track to the site in the river bottom below.

The glyphs of Cadillal are carved into an outcrop of uptilted sandstone slabs that lie along the southern bank of a deep, intermittent drainage channel. All faces of this outcrop bear glyphs, and no special orientation of the designs is apparent. It is not our intent to interpret the glyphs of Cadillal but merely to record, until such time as a data base has been built to allow comparison and possible interpretations.

One of the art styles encountered at Cadillal is unique in our experience: a panel of petroglyphs executed in a fashion resembling nothing we have seen to date characterized as "Indian" (see Fig. 1). The panel bears a faint resemblance to rock-art styles recorded in Kansas and Wisconsin (cf. Figs. 667 and 781, Wellman, 1979), but the technique displayed at Cadillal is more akin to a sculptor's treatment of bas-relief than to petroglyphs as we normally encounter them. The main panel (Fig. 1) bears a design executed in this unique "professional" style. The lines of the design are executed in deep V-cuts in the rock, about 4 cm. deep and 6 cm. wide, cut and then abraded for the bas-relief effect. Part of the slab on which this design is found has spalled off at the "foot" of the figure, where a grid-like design extended into the portion now missing.

The grid is an integral part of the total design, which, using the imagination, can be made into a recumbent anthropomorph, or anything else you want to make it. At the "head" is a circle diagonally bisected, with two spiked "rays" issuing from it, together with a zigzag "spirit" line. A tailed circle lies above the head, but this seems to have been pecked at a later time; the technique is a different one, the design being much more lightly pecked and without the finely finished quality of the rest of the design. One circle lies below the grid, separated from the main design; two more circles, one of them bisected, lie above the grid and are connected to it by single vertical lines, and two "arms" extend from the "torso" up to the edge of the slab. The last design element (to the left as you face the rock) is an angular "U" lying on its side.

Another seemingly integrated panel (Fig. 2) is separated from the rest, and dives into the cliff which rises sheer above the river bottom for some 14 m. at this point. This particular panel is covered by at least 12 m. of overburden, and the investigatory excavations by Dr. Macda into the overhanging cliff face revealed the continuance of the glyphs past the present cliff for at least one meter. Whether or not more lie beyond is unknown at this time of writing; and the rate of soil deposition or the susceptibility of this particular site to flash flooding are also unknown.

The glyph of the "main" panel is unique in terms of sheer art style and execution. The "disappearing panel" finds us on slightly more familiar ground, with the exception of the main portion lying exposed to the air, where the same angular rectilinearity of line and style is found as on the main panel, except with far less polish of technique. Less time was spent in carving these glyphs than the "main" panel.

The center portion (Fig. 2) displays a bisected triangle, point down, connected to a zigzag which rises and then falls vertically. Next to this design element are two anthropomorphic figures resembling the Greek letter *lambda*. (This element will be found again at San Rafael de los Milagros and is a fairly common element in Southwestern rock art.) Below is a design which, in Olmec country far to the south, would designate a cave: nested "U's." We make no claim to any connection between Cadillal and Olmec sites; this cave motif element is commonly encountered throughout the world. Further to the right in Fig. 2, in the excavated area which was covered by

overburden, we encounter a series of what appear to be rain-cloud symbols, together with motifs familiar to Southwestern rock-art researchers.

Other design elements at Cadillal include deeply cut spirals, one of which resembles an ammonite with thin tentacles coming out the open end. There are circles and more circles, cruciforms and more of the *lambda* figures, connected in a line. A full description will appear in Dr. Maeda's publication. That this was a site devoted to some special purpose seems evident, given its location at the riverbed. The cliff walls rise sheer all along the drainage, precluding any occupation sites immediately. That the site is exposed to flash flooding is evident by the wrack and flotsam tossed upon every outcrop by water from passing storms.

To conclude: here is a rock art site picked for some special purpose as yet unknown, which includes elements matching no "Indian" art we have yet encountered, executed in a technical sophistication new in our experience for a site of this type.

San Rafael de Los Milagros

San Rafael de los Milagros lies west of the hamlet of Mapimi, on the northern shore of a lake bed. A hogback ridge of iron-red fossil-bearing sandstone parallels the highway. Here we are on more familiar ground. Here definitely are petroglyphs (and pictographs) along a well-defined trail in association with a ceremonial ground. A steep and rocky trail leads up the south face of the ridge. Petroglyphs cover almost every rock face above the trail that leads upward and then dives over the lip of the ridge, ending in a high artificially flattened ceremonial area.

The whole top surface of the ridge, with the exception of the natural rocky "wall" on the south side has been cleared and tamped flat, giving a "ballcourt" effect. The ceremonial ground is open at the east end to a winding canyon whose most immediately observable feature is a conical hill standing in the fork of the arroyo. Local informants state that more petroglyphs are to be found on this hill. At the arroyo end a trail leads down to the drainage from the "ballcourt," and more glyphs are found here along the trail. Whether the trails served in initiatory rites is moot, of course; but that is the impression we get. One feels that these glyphs, in clusters, were stations at which novitiates would pause, learn whatever was to be learned at that particular point in the ceremony, and so progress by stages to the top, where the "ballcourt" area was suddenly revealed. In any event, that this was a major ceremonial center is obvious from the immense labor that must have been required to level the "ballcourt" that measures a quarter-mile from end to end.

The petroglyphs found at San Rafael are for the most part of a type more familiar to students of glyphs of the Southwest: anthropomorphs, zoomorphs, sun, cloud, and rain designs, "blanket" motifs, handprints, and footprints--any of which may be matched with petroglyphs occurring in the Southwest.

The one incidence of pictographs noted at San Rafael has chains of inverted triangles in a dark red pigment, superimposed on petroglyphs that consist of short, vertical lines in rows, an anthropomorph, and a vertical chain of diamond shapes with two small "horns" on top.

Time and space do not allow a full discussion of the petroglyphs of San Rafael. We have picked five examples, as seen in Fig. 3: some for their strangeness, others for their more familiar forms.

Fig. 3a gives the immediate impression of "sun and moon." These designs are 12 cm. in diameter and are pecked on the east face of a boulder in the relative positions shown. The "sun" is a circle with rays directed outward; the "moon," a bisected circle with its "rays" going in toward the center. The juxtaposition and the positive/negative treatment of space in these two designs are striking.

Fig. 3b: This is a "ladder" design, flanked by inverted triangles connected in a vertical chain and with another series of the same inverted triangles running down its center. All these triangle elements have been completely pecked in. To the right is a series of six outlined, upright triangles. The bottom one has a single horizontal line across its interior; the other five contain two horizontal lines. The "ladder" is crossed by a horizontal line at its first full top constriction, and by two horizontal lines at the next constriction below. An inverted triangle is pecked within the second segment, reading from the top; the third segment has a hooked line running from the outside of the "ladder" to the inside. Both these symbols are at the left side of the "ladder" as you look at the glyph. In the series of triangles to the right of the "ladder," a dot has been pecked at the left side of the eighth triangle up the chain. (Note: The boulder on which this glyph appears has been cracked, top and bottom, so this may be an incomplete design.)

Fig. 3c was dubbed the "Argyle" glyph. Here are three rows of connected diamonds, pecked to form three distinct textural impressions, on top of a "rain" symbol consisting of a horizontal line to which are appended three short vertical strokes. At the top right of the "Argyle" design, a single line slants upward, as if another diamond were in the process of being formed. The lowermost right-hand triangle is shaped differently, with slightly curved outlines giving it a more leaf-like form.

Fig. 3d gives us an inverted-triangle motif, with two solidly pecked triangular shapes connected to each other, and two more similar shapes below. The top left element is pecked at the top to form a bird's head, with a small rounded-edge rectangle in front of the beak. The lower-right triangle is curved at the bottom to make a comma-form. Some irreverent observers have noted the resemblance to a jalapeño pepper of the design element immediately to the right of the main design.

Fig. 3e has in its bottom half design elements found all through the Southwest: sun symbols, meandering lines, rain cloud, enclosed cruciform, and others. This petroglyph was done by a different hand than the others in this illustration. In the

enclosed cruciform, note that the inner line does not enclose the cross completely, but begins at one arm, circles the form, and ends tucked into the junction of the vertical and horizontal lines. The upper half of this glyph, were fancy given full rein, could be interpreted as a Tlaloc figure, and the whole panel can be read as a petition for rain or a testimonial of gratitude for the plentiful soaking which followed the petition.

To conclude: San Rafael de los Milagros was a major ceremonial center in which petroglyphs played an integral part. Some design elements at San Rafael resemble those found at El Cadillal: rows of *lambda* figures, anthropomorphized and stalking one another in a row, more deeply cut than the remainder of the glyphs; but none of the glyphs at San Rafael shows the precision and sheer sculpting skill of the glyphs of Cadillal. There are design similarities, and that is all that one can state at present. The remainder of the glyph inventory resembles designs found throughout north-central Mexico and the southwestern United States. The sites described lie in a region rich beyond all measure in rock art. As yet, it is a region little known and less reported.

REFERENCES

Moller, Harry. "Mapimi: Una Region tan Asombrosa como Ignorada," in *Mexico Desconocido.* Vol. 33, 1978.

Wellman, Klaus. *North American Indian Rock Art.* Academische Druck-u. Verlaganstalt, Austria: 1979.

NOTES

Readers may be interested in comparing design elements with some of those appearing in Kenneth Castleton's two excellent volumes, *Petroglyphs and Pictographs of Utah* (Salt Lake City, Utah Museum of Natural History, 1979).

The major glyphs of Cadillal are unique in our experience; however, at the ARARA VII symposium in Albuquerque, Dr. William Breen Murray of Mexico's Universidad de Monterrey, advised that he has seen an art style similar to that of Cadillal in a remote area west of Monterrey.

This article was originally presented at Albuquerque NM, 24-26 May 1980, and was published in *American Indian Rock Art*, Vols. VII and VIII (El Toro: American Rock Art Research Association, 1982).

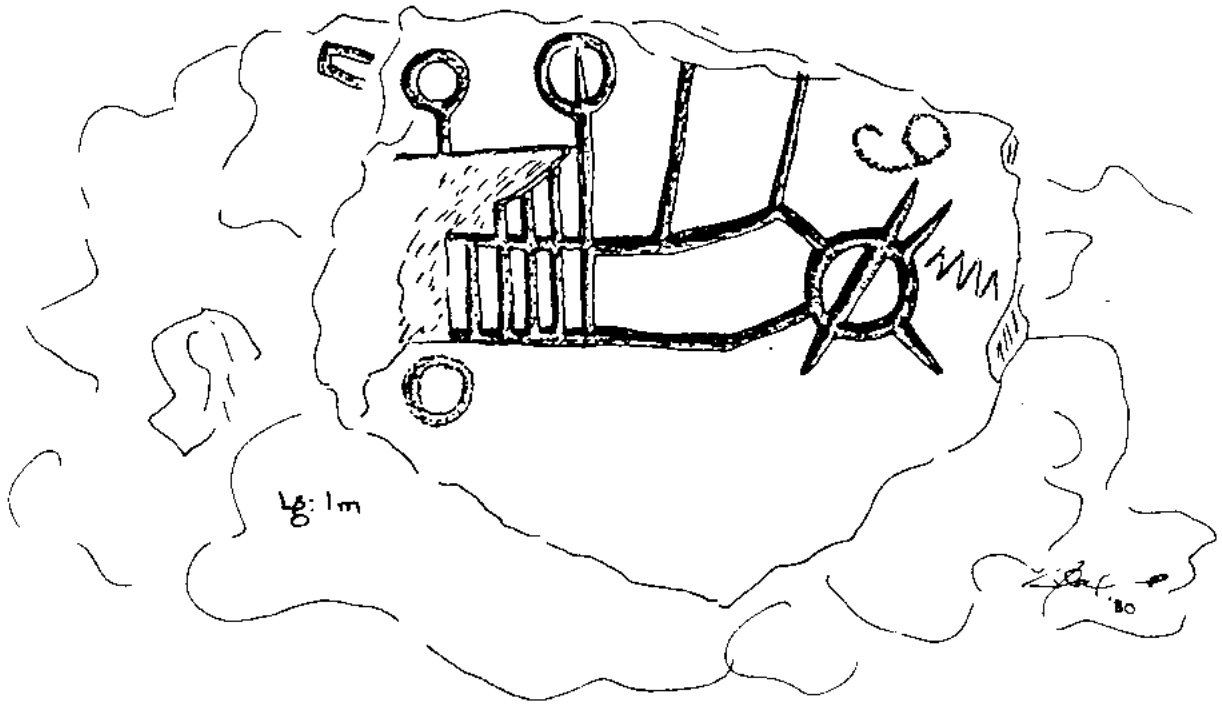


Figure 1. **Durango, Mexico: EL CADILLAL**

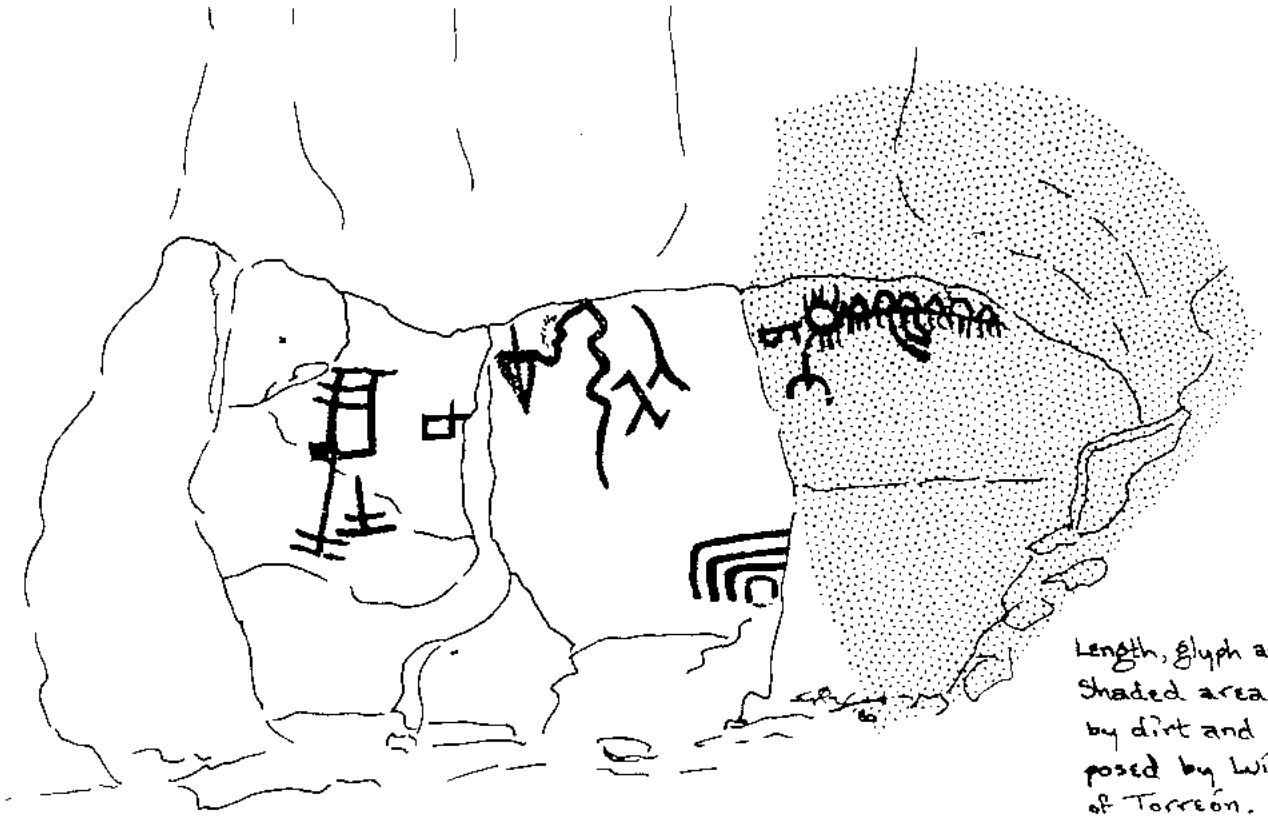


Figure 2. **Durango, Mexico: EL CADILLAL**

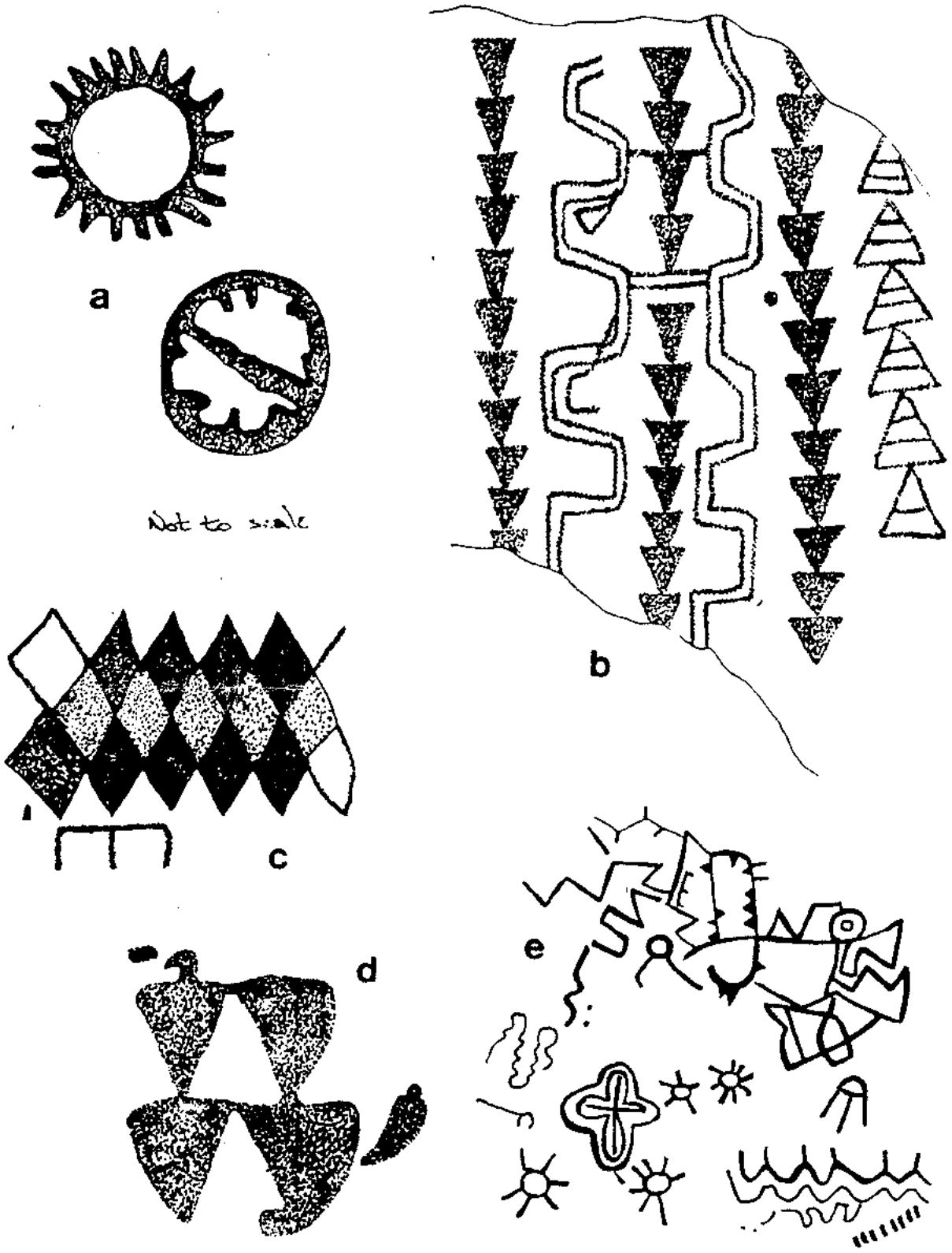


Figure 3. **Durango, Mexico: SAN RAFAEL de los MILAGROS**

Creation and Calendars—Partners in Meaning

Alex Patterson

In our efforts to decipher the meaning of southwestern rock art, Mary, my wife and partner of 43 years, and I have been trying to figure out the main subjects of this art and why they were chosen. We could then focus our studies.

Subjects we are frequently finding in rock art, seem to be gods, ceremonies, and mythic events. Often they seem, in our opinion, to be related to Creation Time, a period when all of these beings and happenings were ordained by the Creator. All of these are embodied in the stories and legends of the Native American cultures of the Southwest.

Another subject or aspect of rock art is the presence of mechanisms for telling the time of the year--an annual calendar. More and more researchers are identifying alignments of light and shadow to announce the solstice, equinox, and other key days in the year.

Creation panels are occasionally identified with these calendric mechanisms. We propose that that this association of Creation and calendars in rock art is no accident. They are linked and require each other. We will explain why.

We offer for your consideration research by Mircea Eliade, who is well known in rock art circles, for his studies on shamanism. We refer to Eliade's study on Creation as found in primitive societies around the world. His book Cosmos and History: the Myth of the Eternal Return. published in English in 1954 contains this research. We will summarize his work in this talk. Also, we are providing a copy of his book to the URARA Library for any of you who would like to pursue Eliade's research further.

Eliade offers the thesis that each year's annual cycle--with its birth, growth, maturity, and death of plants, animals, and people; with the ceremonies that mark each phase and season of the cycle--replays the myths of the original creation of this primitive society. The Myth of the Eternal Return is the return of the events of creation, replayed in song and ceremonies during each annual cycle. Creation returns each year and the tribe relives creation throughout the year.

Primitive societies usually begin each year with numerous ceremonies which separate the new year from the old year. This often took place on or near the winter solstice. A calendric device was required to announce this date.

Primitive societies continue through the new year with more ceremonies; each ceremony being a reenactment of some aspect of Creation Time. These ceremonies often are keyed to the seasons, again requiring a calendric device to signal the proper date for performance of the ceremony.

History as we know it in modern societies--which emphasizes secular happenings and historical people--is absorbed by primitive societies into this re-enactment of Creation Time, a time of the gods and heroes. History disappears into Creation Time. Primitive societies may be

said to live in permanent Creation Time.

Now these creation myths, with their annual cycles, seem to be set into a broader sequence of mythical cosmic ages, often three or four or more. In these ages the gods who created the world and its creatures come to realize that the age and its people they just created are flawed and must be destroyed. Fire, ice, floods, or other catastrophes inflicted by the gods end each age and in due time the gods try again with a new race of beings.

According to White Bear Fredericks and Frank Waters, the Hopi are today living in the Fourth World, Tu-wa-qachi--the World Complete, created by Taiowa, the Creator, after several failed worlds had to be destroyed. The Nahuas, the Meso-American people who encompass the Aztecs, are living in the era of the fifth Sun, named 4-Movement, following a similar sequence of failed worlds. Aspects of these failed ages can be found in the Creation myths, often as object lessons of what evil to avoid and what practices to be followed.

Recently we have been attempting to meet elders in Hopiland, using our two books, The Field Guide to Rock Art Symbols in the Greater Southwest and Hopi Pottery Symbols, as door openers. We have made a few visits, met a few friends, attended a few ceremonies, and visited a few rock-art sites. You might be interested in our thoughts about Creation and Calendars in the light of these visits.

As you know, it is at New Year time--this winter solstice time--in the Hopi ceremonial cycle when the Kachinas (ka meaning respected and china meaning spirit) return to Hopiland from the San Francisco Mountains to begin the ceremonies of the New Year. Some of these supernaturals are associated with events of Creation Time--a time when the gods and spirits helped the ancestors of the Hopi people survive and prosper. The Hopis look upon the Kachinas as beings who "bring all good things to the Hopis," to quote a Hopi friend who dances in these ceremonies.

As many of you know the arrival and departure of the Kachinas at a dance involves much gift giving by the Kachinas to members of the audience. Baked goods are passed out lavishly after the Kachinas come down the ladder into the kiva. On departure the Kachinas give oranges and apples to all. These gifts are symbols of the good things these supernaturals bring to the community.

Regarding history being non-existent and Creation Time being the here-and-now, we remember discussing with a Hopi elder the massacre at Awatovi where the Hopi traditionalists in the early seventeen hundreds killed off the offending people of Awatovi who were embracing Christianity. This elder had no recollection of such a massacre--it was not in his history memory if he had one. Yet he would sit and discuss with us how Massaw, his god and owner of the surface of the earth, was furious about the new water and sewer lines being constructed through the village. No one had properly asked Massaw for permission to disturb the earth--his

Massaw' earth. I could feel Massaw sitting grumpily at the oil-cloth covered table very much there and very much annoyed. It was the time of the Creation in my Hopi friend's house.

Parallels exist between the Hopi and other primitive societies. For example, the Tatars of Persia on the day of Nawroz, the Persian New Year, sow seven kinds of seeds in a jar and "from their growth . . .(draw) . . . conclusions regarding the corn of that year." (Eliade 1954:65). This seems highly similar to the planting of the beans in the kiva after the turn of the year in Hopiland--to prophesy the success of the crops to be planted in the spring in Hopi fields.

Now let me talk briefly about three rock-art sites in the Southwest that seem to exhibit my them, Creation and Calendars.

The first site is on private land near the Petrified Forest, northern Arizona. We used this panel (Exhibit 1) from the site as the cover of our book A Field Guide to Rock Art Symbols in the Greater Southwest published in 1992. We picked this panel for the cover because the overall display of symbols was representative of what you find on the rocks. We have come to develop a special respect for this panel. This site faces southeasterly and the panel is what we call "a pantheon panel," as it has many of the mythical gods and spirits of Creation Time on it. These symbols are some of the most common found in southwestern rock art.

At the top are three concentric circles which depict the sun. The outer circle is the ring of light around the sun, the next is the sun itself and the center circle is the hole or umbilicus of the creator, Taiowa, who stands behind the sun. It opens to spread the power and blessings of the creator upon the world (Patterson 1992:192). In my opinion, this panel is dominated by the Creator and his symbol, the sun symbol, and represents the Creator making the world and all its beings spirits and human beings.

The sky snake is directly below it; the one pole ladder or feather comes next; the lizard or earth mother figure, a spider or the grandmother figure, multiple snakes, the stepped pyramid, cloud symbols, and even a flute player appear up at the right.

The bluff across the valley has a prominent up-thrust rock which acts as a nomen or pointer on the winter solstice sunrise, casting its shadow down over this panel. This event on the winter-solstice sunrise signals the beginning of the New Year. Creation and the Calendar meet each winter-solstice on this rock-art panel, as the sun turns back north to begin the new annual creation cycle.

White Bear Fredericks in the Book of the Hopi (Waters 1963:61) tells us that the symbols of the sun and flute player-both are on this rock-signal the presence of the Sun and Flute Clans. White Bear goes on to say: "these two clans, the sun and the flute clans, work together in . . . rituals which help the sun to turn back at the times of the winter and summer

solstices."

The next example (Exhibit 2) is the major panel at Sears Point on the Gila River in southern Arizona. Boma Johnson refers to it as "the Creation Panel." A Puebloan elder called it by that name and explained the rock art to Boma almost 20 years ago. Boma has an article in press concerning this site, "A Lesson in Stone: The Sears Point archeological Site, Lower Gila River, Southwestern Arizona," to be published under the editorship of David Whitley which we recommend to you when it is published.

The ubiquitous lobed staff is on the left--and is repeated again some 50 yards to the right, framing the glyphs of the Creation scene. The lobed staff, according to Boma's Hopi informant, is a calendric device. Exactly how this device works and what it signifies was not explained to Boma.

We have some possibilities for your consideration. The staff may stand for the three, four or five ages or eras that are part of the Creation myths as described by White Bear. He portrays the ancient Hopi coming from the West on rafts over a great sea. They were interrupted by several cataclysms that wiped out other life forms, the Hopi surviving to arrive on the western shores of America. From there they migrated to the Hopi Mesas.

Other versions of the Creation myth describe the Puebloan people climbing upwards through several levels of the underworld to exit into the surface world thru the sipapu near the Grand Canyon. White Bear says this version is not correct; the true version is the overseas one related above.

Another possibility is one given me by a Hopi elder recently with whom I was discussing rock-art symbols (subsequent to the URARA meeting at Green River). He explained the lobed staff was a calendric device that specified the time interval between performances of a rite or ceremony. Each lob on the lobbed staff was a specific period of time--a month, year etc. This explanation implied that the figures and symbols in the panel associated with the lobbed staff were performing a ceremony. I intend to pursue this explanation with my Hopi friend.

This panel contains a concentric circle sun symbol with the hole or umbilicus in the center that opens as mentioned before. There is a grid below. I believe the grid represents this world we live in, either as the woven mats that were used for sitting or sleeping or were the layout of the fields assigned to the various farmers.

This panel also shows a vertical line--the axis mundi climbing to the sky and then the world tree in the form of a menorah. There are the mythical twin lions that helped the Creator in his work and the Creator himself in his big hands and feet aspect (Exhibit 3 & 4).

Oversize hands and feet, we think, were metaphors to designate the Creator's ability to create the world and his ability to travel the great distances required in this task. Unfortunately, Boma's Puebloan informant did not explain this aspect of the Creator.

In certain parts of Meso-America big hands and feet may have designated chiefs or gods according to one researcher, Gary Gossen, who has studied the languages and customs of various Mayan tribes. "An extremely common fixed couplet formula , , , which introduces many prayers . . . goes as follows:" I have come before your feet, I have come before your hands'" (Gossen in Bricker 1985:87)

We admit we may be stretching this evidence too far, but we are intrigued by the allusion in prayers to the hands and feet of the one to whom prayers were addressed. So often, especially in Archaic depictions, we see anthropomorphs who are mostly hands and feet. This occurs especially in Archaic panels.

At Sears Point there are solstice alignments, verified by Tom Hoskinson, the archaeoastronomer. A solstice sunrise occurs in a gap in the Oatman Mountains to the East. A solstice sunset occurs in a notch over Grannery Basket Peak to the West. These sunrises and sunsets were viewed, apparently, from a spirit or ceremonial path that crosses the top of the mesa.

The third site is at Parawan Gap, Utah. There is a great deal of rock-art in the Gap itself, but today I will refer to a panel within a cave in the Gap. Nal Morris calls this site "the large cave" which differentiates it from a smaller cave nearby. This "large cave" contains this interesting panel (Exhibit 5).

This "large cave" is directly below the profile of the Paiute creator god, Tibutz, which is outlined in the rock face of the over-hanging mountain. The whole area seems to be especially sacred to the Paiute tribe.

The main panel in this "large cave" has the lobed staff at the extreme left and right side of the panel. As to the meaning of this "framing" of the panel, I refer you to the discussion of the lobbed staffs at Sears Point. You might remember that caves were often shrines and/or special locations where offerings were made or ceremonies held.

We can only guess at the meaning of the other figures besides the lobbed staffs. The right-hand oval figure could signify the opening between the surface world and the sky world, plus a designation of the four directions. The left-hand grid figure could designate our surface world with a grid depiction of planting fields, sleeping mats, or whatever.

There are too many solar and lunar alignments at Parawan Gap to outline them here.

Nal Morris is "Mr. Calendar" and Parawan Gap is one of his masterpieces. Ways of determining the calendar using solar and lunar alignments are much in evidence.

Let me conclude by restating my opinion that Creation Time and devices for determining the time of year were major subjects on the rocks. They went together to tell the story of the unfolding annual cycle and to signal the proper time for the ceremonies that encouraged the success of this annual cycle.

Bibliography

Eliade, Mircea
The Myth of the Eternal Return; Translated from the French by Willard R. Trask (Also Cosmos and History: The Myth of the Eternal Return.) New York: Pantheon Books (Bollingen Series 46) 1954.

Gossen, Gary H.
"Tzotzil Literature." In Supplement to the Handbook of Middle American Indians, Volume Three, "Literatures" Victoria Reifler Bricker, General Editor, and Munro S. Edmonson, Volume Editor. Austin: University of Texas Press 1985.

Patterson, Alex
A Field Guide to Rock Art Symbols in the Greater Southwest. Boulder: Johnson Books. 1992

Exhibits

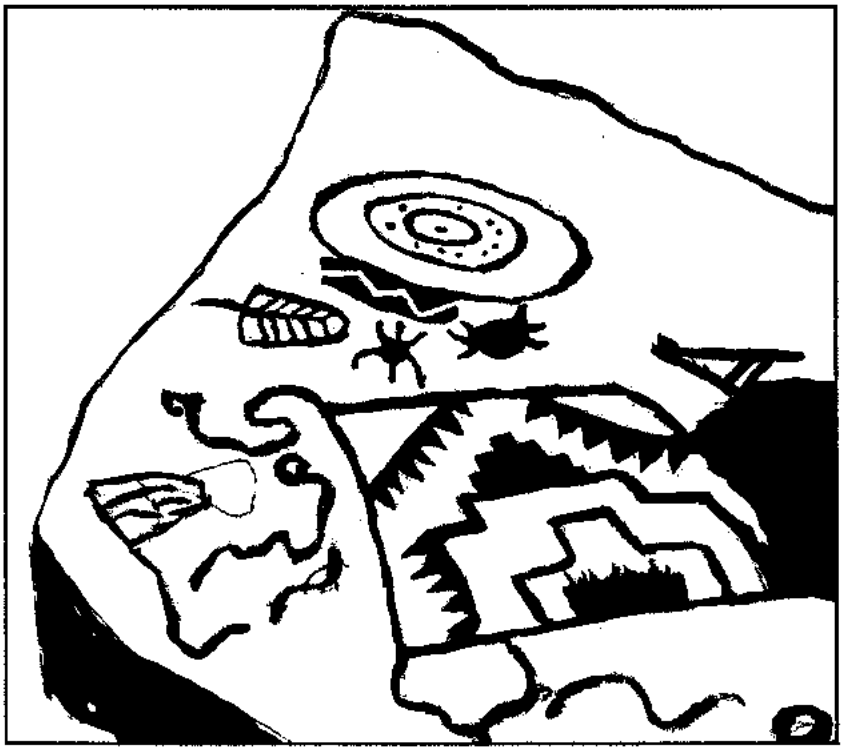


Exhibit 1 Panel at site on private land near Petrified Forest National Park, AZ

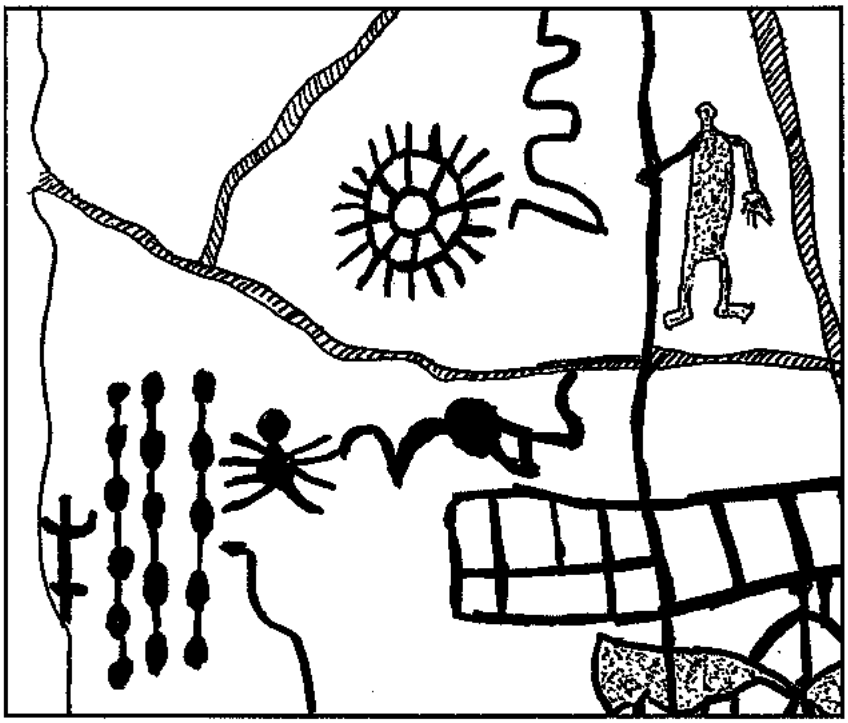
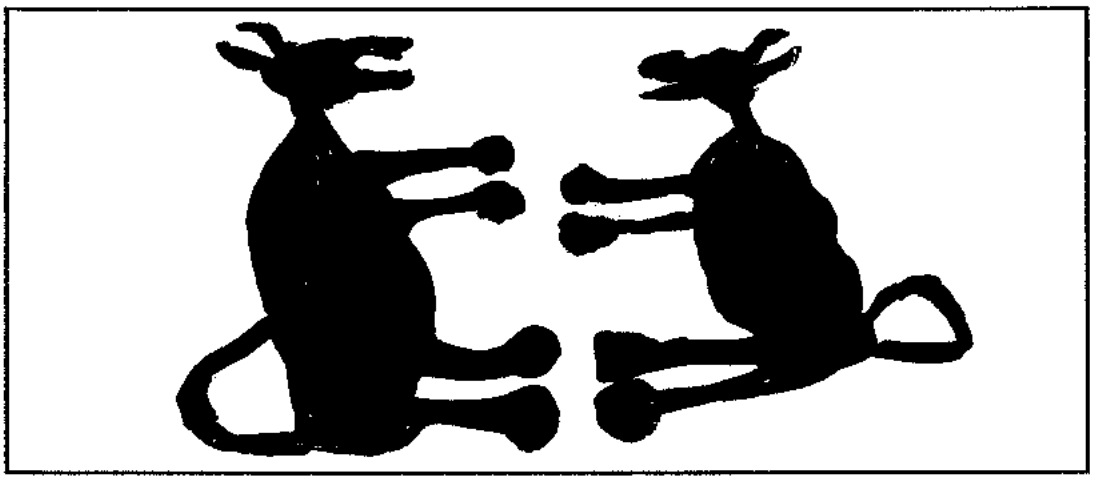


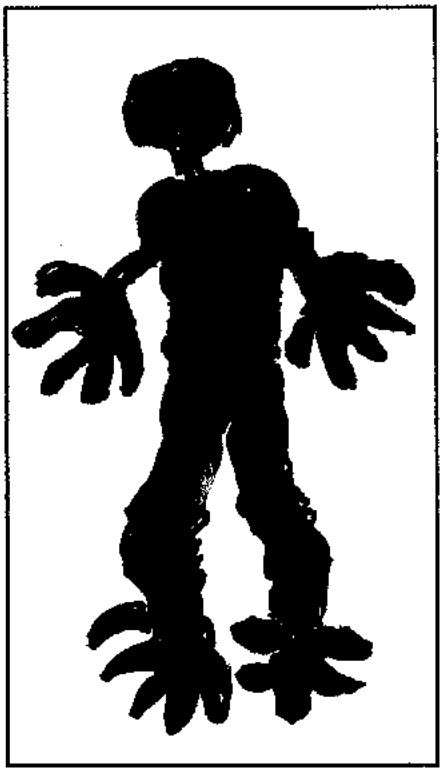
Exhibit 2 Beginning of so-called "Creation" panel at Sears Point, AZ



Invidiual elements from the "Creation" panel at Sears Point, AZ

Exhibit 3 (Above). Legendary Twin Lions who assisted the Creator during the original Creation.

Exhbiti 4 (Right). Creator himself in his big hands and feet aspect which allowed him to complete the original Creation of the world.



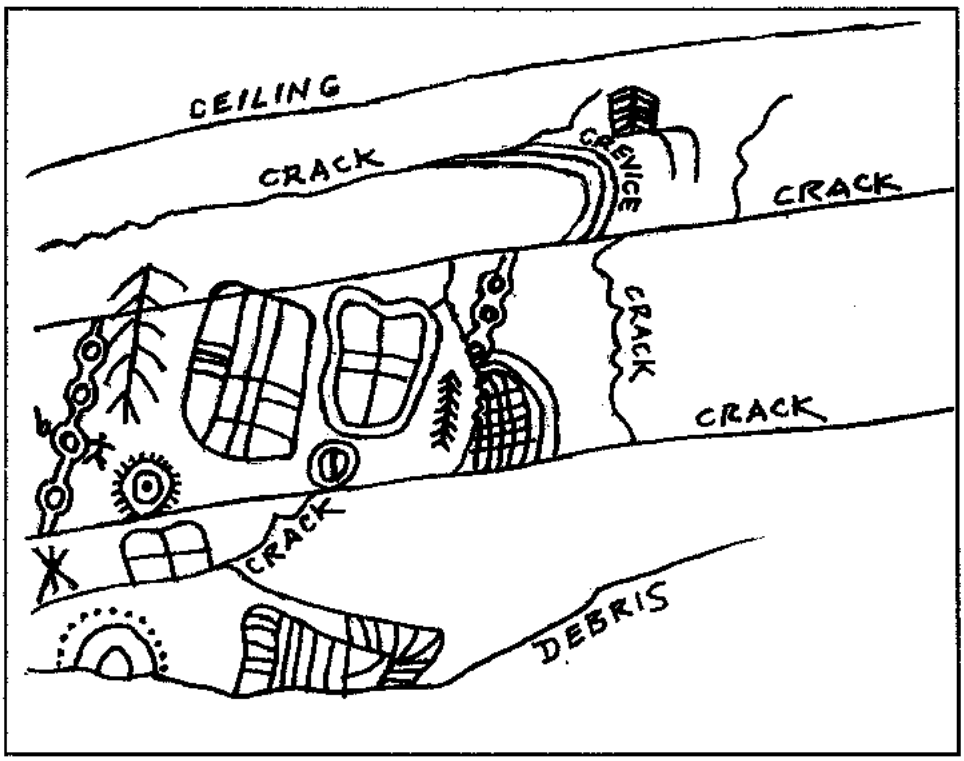


Exhibit 5 Panel in so-called "Large Cave" at Parawan Gap, UT (1995)

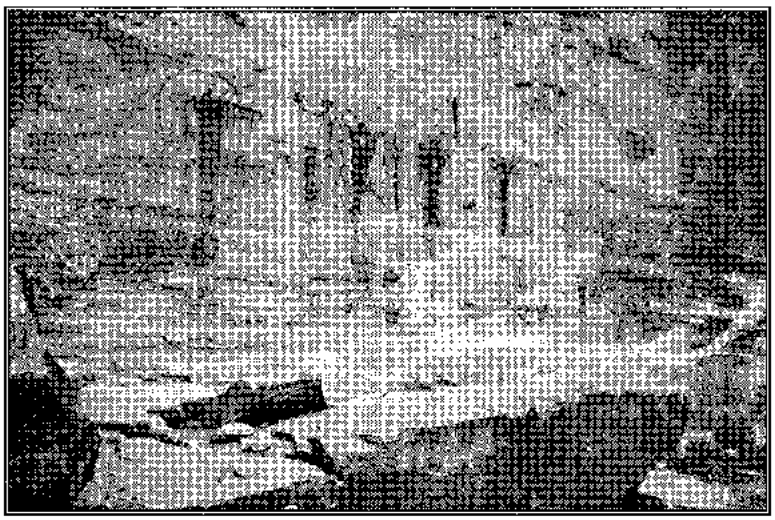


Figure 1. Center section of Buckhorn Wash Panel with spirit figure incorporating rain or water symbol (far left figure). Images are about life size.

WATER AT BUCKHORN WASH: Symbolism in Barrier Canyon Style Rock Art.

David Sucec, BCS PROJECT

> The study of symbols enables us to reach a better understanding of man—of man "as he is," before he has come to terms with the conditions of History. Every historical man carries on, within himself, a great deal of prehistoric humanity.
>
> Mircea Eliade 1961,12

Abstract

The Barrier Canyon style rock art panel at Buckhorn Wash contains several images of spirit figures whose forms incorporate a visual motif of vertical parallel lines (figures 1,2). La Van Martineau has suggested that the motif is a "rain symbol." This linear motif can be found associated with anthropomorphic figures at numerous Barrier Canyon style rock art sites and as discrete images at other Western Archaic rock art sites in Utah. The motif is found in Pueblo kiva art and among the earliest visual images/symbols of the Old World. The parallel line image is also associated with zig-zag, wavy-line, and snake images. Together the motifs represent the complex or family of aquatic symbols.

Buckhorn Wash Panel

Situated in the arid San Rafael Swell, Buckhorn Wash is without surface water during most of the year. The panel lies about two miles up Buckhorn Wash from the San Rafael River and the ten-mile wash affords an easy route

between the river and the higher land that lies to the north. From the top of the wash there is an unobstructed view, and a walk of about twenty-five miles, west to the resource-abundant Wasatch Plateau and its fertile alluvials.

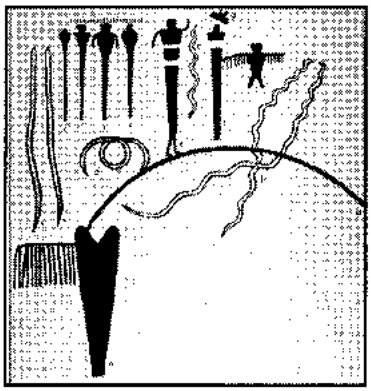
Almost two-hundred feet long, this well-known gallery of Archaic rock art is one of seven or eight major Barrier Canyon style rock art sites. Including the major sites, more than one hundred fifty panels of this style rock art have been found on the Colorado Plateau—the vast majority in Utah.

As at the other major Barrier Canyon style rock art panels, many large anthropomorphic or human-like images have been painted across the face of a great sandstone wall. Designated a *spirit figure,* the type of elongated anthropomorph seen here is thought to represent a spiritual entity: a deity, a spirit, an ancestral spirit or shaman.

Rain Symbol at the Buckhorn Wash Panel

At Buckhorn Wash, Martineau suggests that figure 2 is a "Hopi deity...reaching out of his abode and giving of his safety, or good fortune (rain)..." (1973,111). The line curved over the deity's head and shoulders indicates "abode," and the series of vertical parallel lines is the symbol for "good fortune," in this case "rain." To Martineau, the form of another Buckhorn Wash spirit figure (bottom left figures 3, 4) suggests a more specific identification: "Alosaka (Muyingwa), one of the few Hopi deities who actually makes his home in the underworld. He is the god of reproduction of man, animals and plants" (Martineau 1973,113).

This figure, with its associated motif of parallel lines, (figure 4) is, Martineau thinks, linked with a composition containing a number of animated snake images, curved lines and smaller anthropomorphic figures (figure 3). Martineau describes the motif of painted parallel lines (in this instance, the lines extend downward from both of the outstretched



Top: Figure 2. Spirit figure with incorporated rain symbol (vertical parallel lines). Life size.
Middle: Figure 3. After Martineau drawing of upper composition, Buckhorn Wash Panel.
Bottom: Figure 4. Detail, spirit figure with a series of parallel vertical lines associated with its form. Life size.

arms of one of the smaller figures—upper right) as the "symbol" for "salvation or saving rain" (Martineau 1973,113). Martineau believes that this composition may depict the origin, or an early version, of the Snake Dance. Still practiced by the Hopi, the "snake ceremony seeks divine aid for these (Alosaka's) reproductive blessings" (Martineau 1973,113).

Besides the figures mentioned above, there are at least five other spirit figures incorporating the parallel line motif exterior to the torso-form. Martineau suggests that one is a Hopi deity and another a Snake Dancer (Martineau 1973:109). He does not mention the three other figures. Martineau believes that the artists who painted these spirit figures, rain symbols, and snake forms were the ancestors of today's Hopi Snake Clan (Martineau 1973,107-113).

ABOVE. Left: Figure 5. cloud-rain symbol with snake-like lightning forms. Kiva painting, Walpi, Hopi First Mesa, Pueblo IV type.
Right: Figure 6. Detail, painted cloth curtain, First Mesa Hopi, 1892. Cloud-rain and snake-lightning symbols.

Pueblo Rain Symbol

In late prehistoric (Pueblo III, IV—ca. a.d. 1100–a.d. 1700) and historic Pueblo painting, the parallel line motif is not found in the rock art panels but in the kiva and it is combined with stylized cloud forms (figures 5, 6). The cloud and rain symbol are often associated with stylized snake-lightning composite images. The symbols were most frequently painted on the kiva walls (figure 5) and on ceremonial objects (figure 6), but they were also painted on the roof supports and rendered in dry pigments, sand, flowers, ash, and other powdered colors on the kiva floor (Figure 7) (Brody 1991, 151,154,165).

In *Anasazi and Pueblo Painting*, J. J. Brody cites a report stating that on several occasions during the 1880s small groups of young women and men renewed the kiva

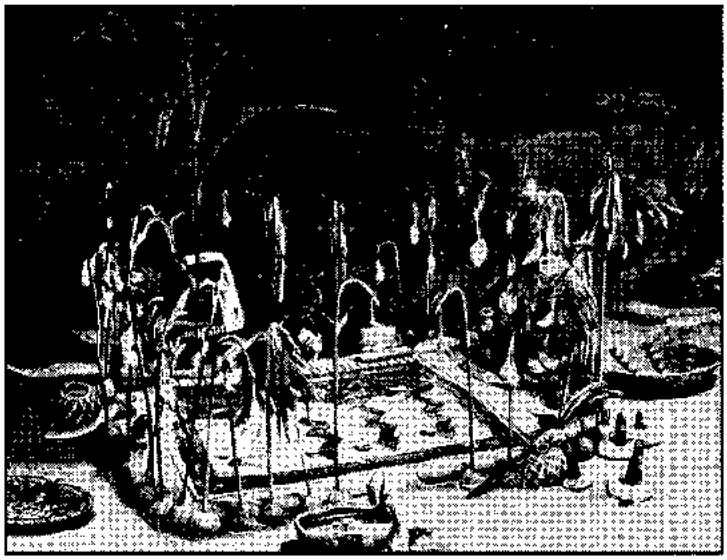


Figure 7. Dry painting of stylized snake-lightning forms standing on clouds with rain below. Antelope Altar, Walpi Pueblo, Hopi, northeastern Arizona, 1896.

walls with "fresh mud plaster." The young women decorated the roof beams with "mud-plaster paintings of clouds, lightning and other rain emblems, as well as with handprints. They referred to these paintings as 'prayers,' and in the 'old usage,' the pictures expressed a desire to grasp clouds and to bring rain" (Brody 1991,151). The young men did the wall paintings (under the supervision of older men) which, "like those on the ceiling, were more than ornament. 'They say the clouds and other symbols are as much prayers for rain and other blessings as the altar itself'" (Brody 1991,151).

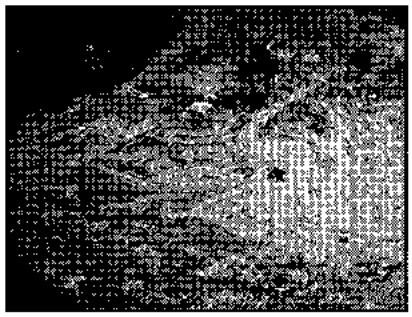
During the 1896 Snake Dance, a dry painting was the centerpiece of the Antelope Society Altar (figure 7). Its imagery consisted of stylized snake-lightning forms "stand(ing) on clouds from which rain falls." (Brody 1991,163) The Hopi ceremonialists believed that, through its ritual association, even the materials of dry paintings could acquire "supernatural power." In the early 1890s, the dry painting made for the Antelope Society kiva was "destroyed *ritually* on the last day when the cloud symbols drawn along its base (we)re carefully removed and deposited in agricultural fields" (Brody 1991,165).

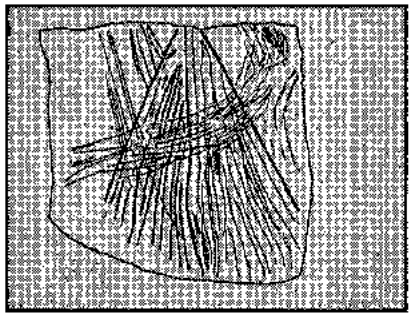
Rain or Water Symbol in the Old World

Not unlike those of the prehistoric and early historic Pueblo cultures, the surfaces of Old European (ca. 7,000 b.c.- 4,000 b.c.) objects (sculptures, engraved objects, and ceramics) are rich with symbolic imagery. As reported in her study of archeomythology, *The Language of The Goddess,* Marija Gimbutas's investigation revealed four categories of interrelated image groups.

The symbols and images "cluster" around a "self-generating Goddess" and her basic functions as "*Giver-of-Life, Wielder-of-Death*, and as *Regeneratrix* and around the *Earth Mother*, the *Fertility Goddess* young and old, rising and dying with plant life. She was the single source of all life who took her energy from the springs and wells, from the sun, moon, and moist earth" (Gimbutas 1991,xix).

The first category of symbols, given the designation of *Life-Giving*, "embraces the aquatic sphere since the prevalent belief was that all life





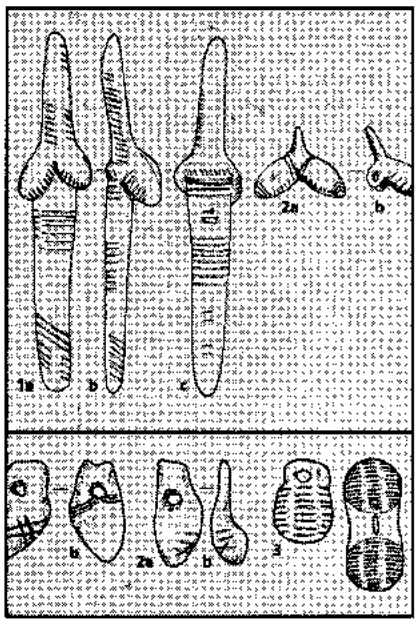
Top: Figure 8. "Macaroni," careful finger markings in soft clay ceilings. Maybe the earliest examples of the parallel line imagery.
Bottom: Figure 9. Drawing of engraved limestone. The markings symbolize the flow of water suggesting life, healing, and abundance, upper Paleolithic.

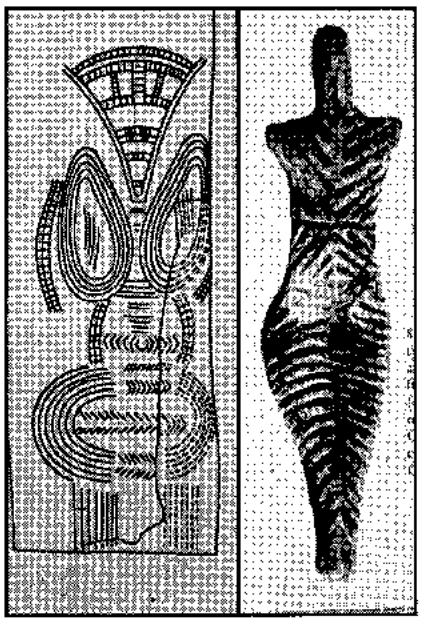
comes from water." The symbols of water expanses, streams, and rain—meanders, parallel lines, zigzags, wavy or serpentine bands, net, checkerboard—belonged to the realm of the "*life* or *nourishment-giver* and *protectress*" (figures 9, 10, 11) (Gimbutas 1991,xxii).

Gimbutas is persuaded that this "rich group of symbols" is Paleolithic in origin, and she traces the symbolic imagery back to the period when the first sculptures of bone, ivory, or stone appeared, "around 25,000 b.c. (figure 10 top) and their symbols to an even earlier time" (figures 9, 10 bottom) (Gimbutas 1991, xix).

When associated with the Bird Goddess image (figure 11 right), the aquatic symbols suggest her function as a giver of moisture and life waters. When the *brush* image (parallel lines bound by a bar on one side) is associated with or in place of the pubic triangle on a Goddess image, it may symbolizes her regenerative powers (Gimbutas 1991,298).

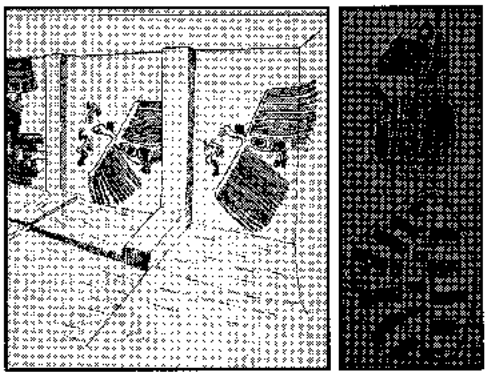
Motifs of parallel lines are also found on pendants dating back to 30,000 b.c. (figure 10 bottom). Sometimes, they are found incised on amber stones (figure 13). Because the yellow transparent stones are associated with healing energy Gim-



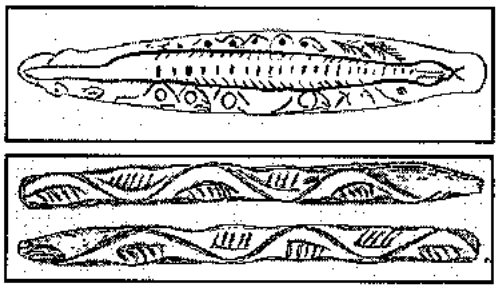


TOP LEFT. Figure10.
Top: After Gimbutas drawings of objects with incised parallel lines. Schematized figure ca. 25,000 b.c.
Bottom: Pendant beads with incised parallel lines, ca. 30,000 b.c.

LEFT. Figure 11.
Far left: After Gimbutas drawing of Goddess with engraved parallel lines, ca. 20,000 b.c.
Near left: Bird Goddess with linear symbols, ceramic, ca. 5,000 b.c.



ABOVE. Left: Figure 12. After Gimbutas drawing of fresco of stylized vulture forms with wings of parallel lines symbolize death and resurrection. Ceremonial space, Catal Huyuk, Asia Minor, Early 7th Millenium, b.c.
Right: Figure 13. After Gimbutas drawing of amber pendants incised with. parallel lines (healing energy symbol), ca. 4,000 b.c.

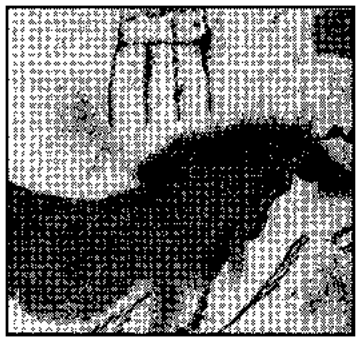


LEFT. Top: figure 14. After Gimbutas drawing of engraved antler. Snake associated with young birds, plants and tri-line implying use in a spring ritual celebrating regenerative growth. ca. 12,000. b.c.

LEFT. Bottom: figure 15. After Gimbutas drawing of engraved bone. Snakes associated with "brushes" (parallel lines) motif. Suggests regenerative powers of Goddess. Upper Paleolithic.

butus feels that the brush image may have well been a symbol of that energy (Gimbutas 1991,300). Incorporated as the wings in the vulture form (figure 12), the parallel lines symbolize that "death and resurrection (regeneration) are inseparably linked" (Gimbutas 1991,187).

Along with aquatic symbols, the brush appears in the Upper Paleolithic in association with snakes and fish. The symbols surrounding the snake and the anthropomorphic Snake Goddess are the same as those associated with the waterfowl and the Bird Goddess. Gimbutas thinks that snakes must have been considered guardians of the springs of life in prehistory, as they still are in European folklore. The snake's influence was felt not only in life creation, but also in fertility and increase, and particularly in the regeneration of dying life energy. Its seasonal renewal in sloughing off its old skin and hibernating made it a symbol of the continuity of life and of the link with the underworld (Gimbutas 1991,121).



Rain Symbol in Utah Archaic Rock Art

In Utah, the rain, or water, symbol is primarily associated with the Western Archaic rock art styles. Often called a *rake*, the parallel line motif is found most frequently in four of the Utah Archaic styles: *Great Basin Abstract, Glen Canyon Linear 5, Chihuahua Polychrome,* and *Barrier Canyon.*

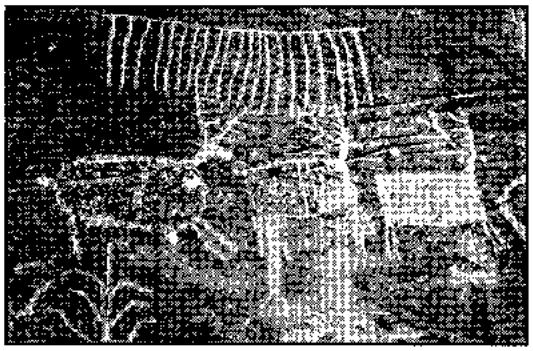
In Utah, the Great Basin Abstract style is found west of the Wasatch Front while the other three Archaic styles share southeastern Utah. The dates for the Archaic styles are uncertain but are

Top: Figure 16. Painted parallel line and plant-like images with pregnant mare. Lascaux Cave, ca. 15,000 b.c.
Bottom: Figure 17. Pecked, Great Basin Abstract Style, Delta area.

thought to be within the general culture dates—ca. 6,000 b.c. to ca. a.d. 500. The Glen Canyon Linear 5 and the Great Basin Abstract styles may have continued into late prehistory, until ca. a.d. 900-1050 and ca. a.d. 1500 respectively (Turner 1963,39, Heizer & Baumhoff 1962,234).

At Utah sites, the Great Basin Abstract style is often mixed with representational images. The pecked parallel line motif can be seen in various forms and combinations such as a rake-form (the Old World brush with lines bound by a bar on one side), lines within a rectangular or an oval box, or simply parallel lines (figure 17). Curvilinear meanders and wavy lines, similar in form to the Old World aquatic symbols, are also present.

Unlike the Great Basin Abstract style, the Glen Canyon Linear rock art sites in Utah contain a high percentage of representational images. The pecked parallel line motif is often seen incorporated into the interior designs of the representational images, especially quadrupeds and anthropomorphs, as well as unincorporated, or discrete, rake/rain symbol images (figure 18).



Top: Figure 18. Pecked, Glen Canyon Linear Style, Uintah Basin.
Bottom: Figure 19. Painted, Chihuahua Polychrome Style, San Rafael Swell.

The imagery of the Chihuahua Polychrome style is the most non-representational of the four styles. Most Chihuahua Polychrome images are painted in varieties of red ochre but there are highlights and images in white, black, green–grey, and other colors. In addition to the parallel line motif, blocks and lines of dots are common motifs as are animal/bird footprints, plant-forms, atlatl symbols, concentric circles, and "fringed" elements (figure 19). These non-representational and, surely, symbolic images are the basic forms that characterize Utah's Archaic rock art styles and are most similar in form to those of the Old World stone age imagery.

Rain Symbol in Barrier Canyon Style Rock Art

At most Barrier Canyon style sites, the parallel line motif is incorporated within the body-form—either defining the entire body or a part, usually

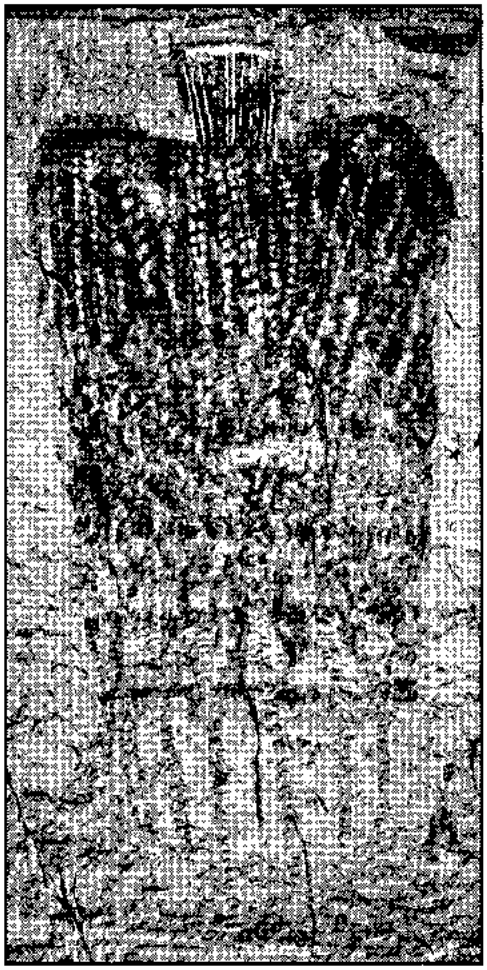
an upper section. Much less common are the figurative images that have the motif incorporated exterior to the body. However, there are at least two Barrier Canyon sites where discrete parallel line motif images occur.

Figure 20 shows the motif with elongated parallel lines. This detail comes from an unusual site which consists, almost exclusively, of painted parallel line motifs. Some of the images have linear zig-zags, wavy lines, and angular frets painted between the vertical lines. Some of the images appear to be identical in form, interior designs, and color to the Barrier Canyon spirit figure but without the heads. This site appears to have ritual significance. For example, almost without exception, the images were carefully painted with a small brush/tool and a consistent high quality of execution. The variable condition of the paintings suggests that individuals have been visiting this site over a very extended period of time. Yet, while one would expect some evolution in the parallel line images, the paintings are remarkably similar in form.

The second site, which consists of painted and pecked images, has both discrete and incorporated imagery (figure 21). Judging from the level of repatination, it appears that the three images were pecked about the same time. Here, the motif's lines are curved slightly inward at the bottom to suggest a torso and the line, or bar, at the top is capped with a "bust" of a human-like form—a Barrier Canyon style spirit figure.

There are significant differences between the Barrier Canyon and the other three Archaic styles. The most striking is the scale of the imagery—Barrier Canyon style spirit figures are often life-sized and can run to more

Left: Figure 20. Painted parallel line images. Many of the images at this unique site appear to be similar to the interior linear pattern of Barrier Canyon style spirit figures. Escalante River Drainage, about 12 inches in height. Right: Figure 21. Pecked parallel line image incorporated within the anthropomorphic figure. Barrier Canyon Style, Book Cliffs. About 24 inches in height.



Left top: Figure 22. Right, a low-fired red clay figurine with traces of red ochre paint. Parallel line motif engraved on head and body. Barrier Canyon style. Walters Cave, ca. 7100 b.c. Left, a grey unfired clay figurine with vertical and horizontal lines of punctuated dots. Barrier Canyon style, Cowboy Cave, ca. 5700 b.c. Hand-sized.

Right: Figure 23. Red painted spirit figure with parallel lines of white dots on head and body. Also pecked lines of dots. Early Barrier Canyon style image, Great Gallery. Larger than life-size.

Left bottom: Figure 24. Red painted spirit figure with white dots and parallel lines on body. Early Barrier Canyon style image, Hanksville area. Life-sized.

than eight feet in height compared to two or three feet for the tallest figures of the other styles. Another difference is seen in the image inventory at the Barrier Canyon style sites—almost totally representational and usually dominated by an upscale anthropomorph(s). A third important distinction is the intimate and interactive association frequently seen between the Barrier Canyon style anthropomorphs and their animal, bird, insect and plant forms. And, consistently, the paintings of the Barrier Canyon artists are of a higher competency and creativity—in technique, process, and representational modes—than those of all the other prehistoric styles.

Early Barrier Canyon Style Parallel Line Imagery

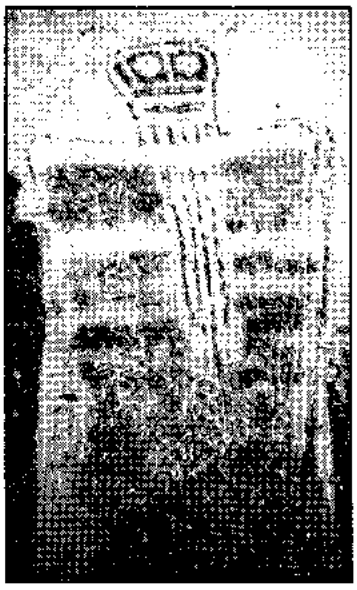
Quite possibly the oldest image/object in the Barrier Canyon style, a hand-size hardened (probably baked) red clay figurine (figure 22 right), has the parallel line motif engraved on the front of its head and body. The engraved linear marks were made with an indirect percussive technique that

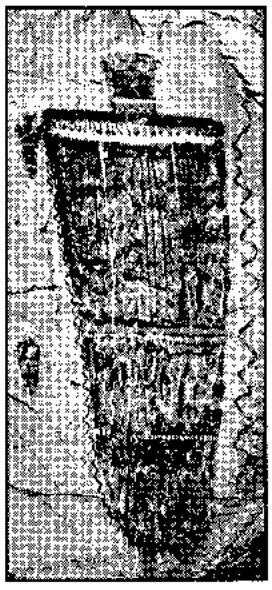
left cashew or bean-shaped depressions regularly spaced over the length of the lines. The same technique, with the resulting bean-like depressions, was employed to engrave lines on the lower half of figure 23—of course, at a much greater scale (about fourteen times larger).

In addition to the pecked linear elements, there are layers of vertical lines of white dots painted on the upper part of the torso. Parts of the upper torso have been overpainted with transparent red ochre washes and lines of white dots. The layered color patterns create an interior depth not common within the style. A white band has been painted across the crown of the head and solid, white parallel lines down the "face." The emphasis on the rounded shoulder-forms, seen in all three figures (22, 23, 24), is also unusual. A number of features—form, dot motifs, color, and paint condition, and level of repatination—suggests that figure 23 is very old, surely among the oldest of its style. Although there are some differences between the three interior parallel line motif figures, they appear to represent the same entity.

Interior Parallel Line Motifs

The interior parallel line motif is most often seen as a distinct unit within the figure (figure 25, 26) or forming the body/torso itself (figures 29, 30). Perhaps the best known rock art image on the Colorado Plateau, the Holy Ghost figure from the Great Gallery displays a painted parallel line motif on its chest and neck. In addition, the artist scratched long vertical, evenly spaced, lines in the spray-painted body form and incised zig-zag and wavy lines between some of the lines, similar to the image in figure 20. The parallel line motif was defined by paint and abrasion in figure 26. The spirit figure



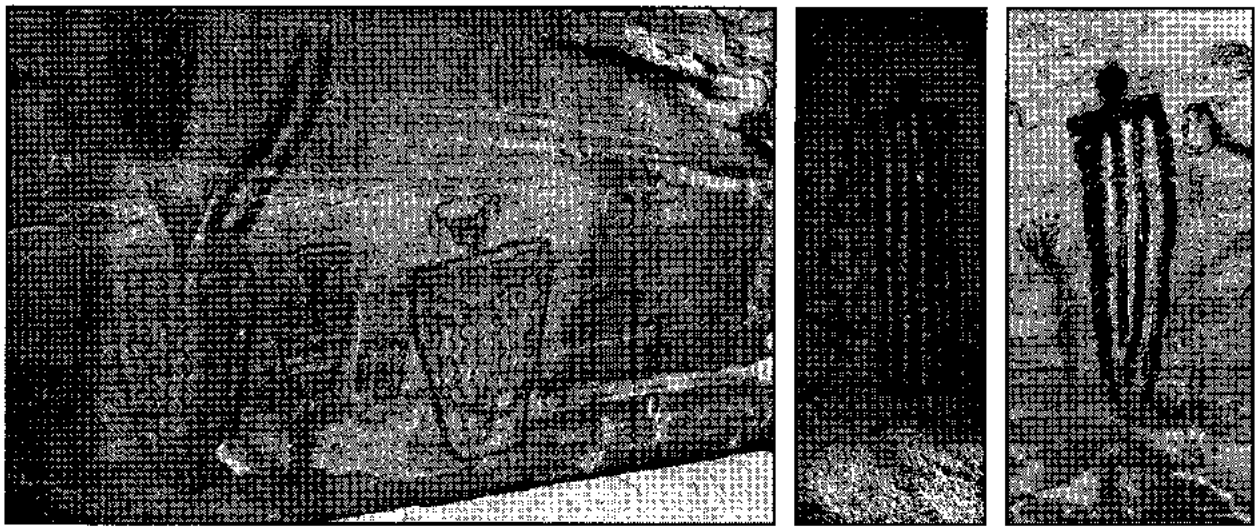


Far left: Figure 25. Painted parallel line motif on torso and neck of the "Holy Ghost" figure. Great Gallery. Larger than life-size.
Middle: Figure 26. Painted and incised parallel line motif on chest area. Harvest Panel. About life size.
Right: Figure 27. Painted dots and parallel line motifs on body and wavy lines next to it. Great Gallery. About life size.

has a stylized head with a white crown, and wavy lines run up both sides of its torso. About life size, figure 27 also comes from the Great Gallery. It has a horizontal line of white dots painted across its lower section and vertical red and white parallel lines over most of the figure. There are also a few delicate white vertical lines painted on the lower section of the head below the eyes. Vertical zig-zag or wavy lines also run up each side of the figure.

Body or torso forms exhibit some variations in size and form throughout the style area, and the parallel line motif can be found in all of the variants. Figure 28 shows several variations of the parallel line motif on a shield-shaped Barrier Canyon style spirit figure. Reading from the left, interior parallel patterns of wavy, horizontal, straight vertical, and wavy snake lines with heads fill the figures. All appear to be painted about the same time. Streaking diagonally, above the figure on the left, parallel lines of red paint, carefully smeared on with fingertips, recall the "macaroni" finger markings of Paleolithic Europe (figure 8).

An elongated rectangular spirit figure has white dots carefully placed, by thumb or finger, between red vertical parallel lines (figure 29). Three wavy snake images (two very faint) float heads up to the left of the figure. To the left of the striped anthropomorph in figure 30 is a clump of plant-like forms



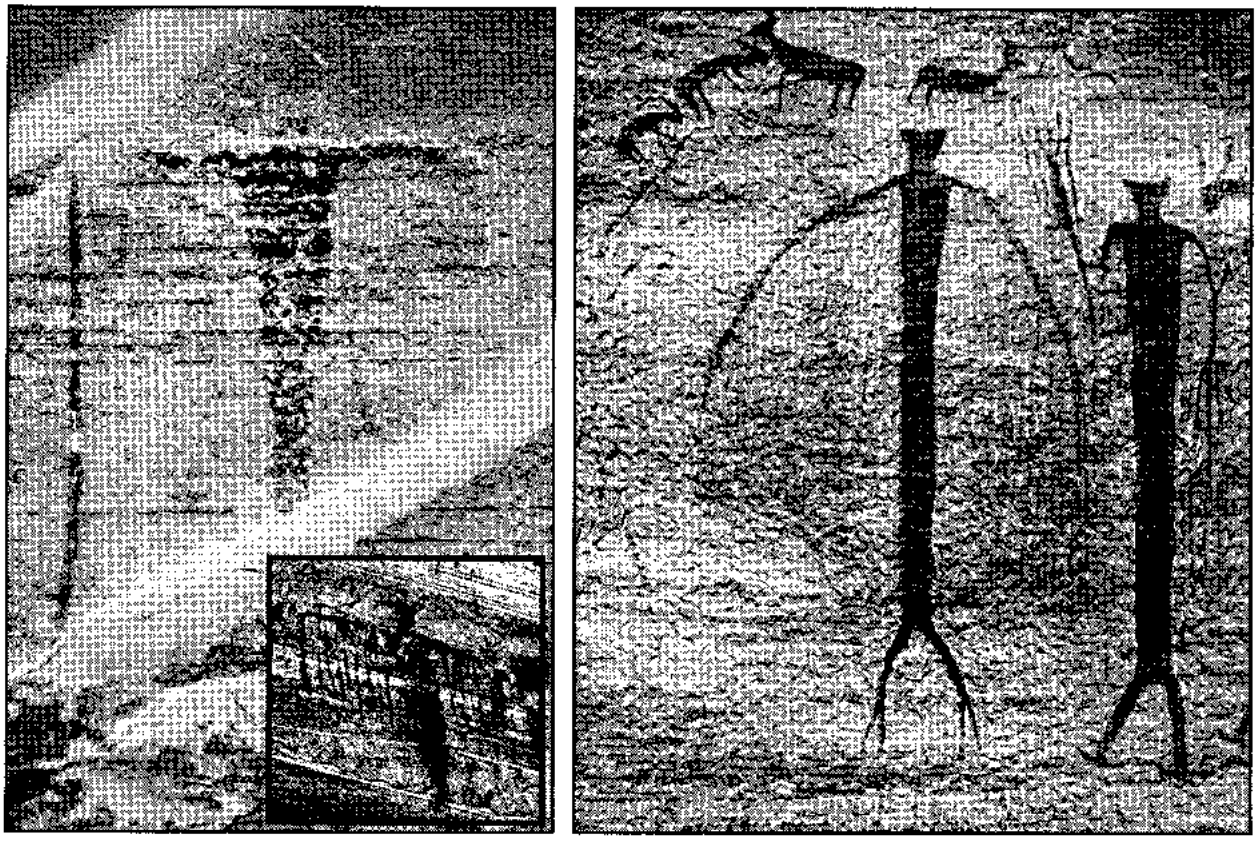
Left: Figure 28. Section of a large panel with variations of the parallel line motif including wavy lines, horizontal lines, straight vertical lines and wavy vertical snakes (with heads). About four feet in height.
Middle: Figure 29. Spirit figure with painted red vertical parallel lines and white dots (thumbprints) carefully placed between the lines. Wavy snake lines, with heads, float to the left of the figure. About four feet in height.
Right: Figure 30. Painterly parallel-line figure associated with a clump of plant-like forms and a snake-like image with a horned sheep's head and bird-like feet (fragment at right). About four feet in height.

with roots and a composite image with a snake's body, bird-like feet, and a salivating horned sheep's head approaches from the right.

Exterior Parallel Line Motifs

The concentration of Barrier Canyon style figures with exterior parallel lines in the Buckhorn Wash area is unusual. As indicated above, there are at least eight representations of exterior line motif figures at the panel itself. There are at least another five more images, in three other sites, that have similar images and there could well be more in the area.

Several of the figures have bird-like outstretched arms/wings. An unusual painted figure at Buckhorn Wash displays an elegant symmetry with fine lines drawn from its outstretched arms downward (figure 31). A vertical



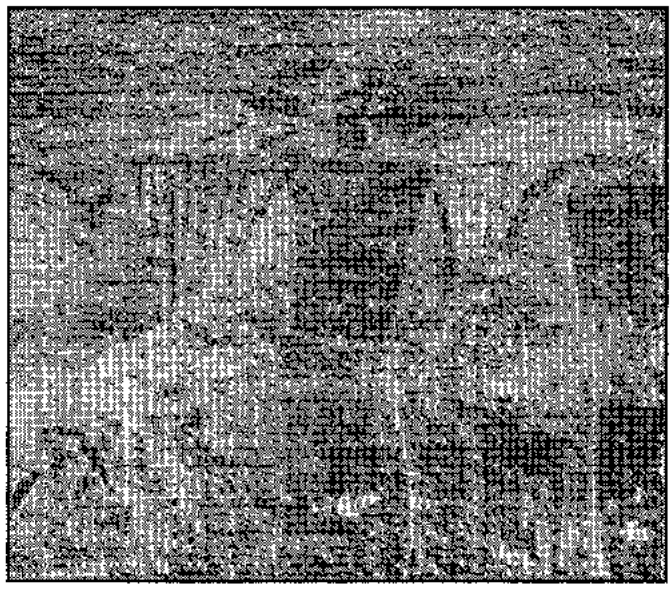
Left: Figure 31. Symmetrical spirit figure with fine drawn lines falling from outstretched arms. Buckhorn Wash. About life-size.

Left inset: Figure 32. Bird or flat-headed figure with painted parallel lines extended below outstretched arms, or wings. Buckhorn Wash area. About 18 inches in height.

Right: Figure 33. Painted composition with rabbits, deer, plant-wands and a figure with fine lines painted below curved arms or wings. The figure also has root-like feet. Buckhorn Wash area. About four feet in height.

straight snake-like form is connected to the tip of the arm at the left. The inset, figure 32, is found at a site east of Buckhorn Wash that contains at least three figures with exterior line motifs. The painted red figure appears to have a bird-like or flat head. This particular form appears in the rock art of many cultures and is popularly called a *Thunderbird* figure. Located a few miles west of Buckhorn Wash, figure 33 is part of a composition that contains rabbits and deer. One figure holds a plant and plant-wand or fan in each hand. The figure with the exterior parallel line motif appears to have curved arms or wings, and has roots for feet. This panel is located near a large spring.

Another figure at the Buckhorn Wash Panel has line motifs connected to its outstretched arms (figure 35). Both straight and wavy lines are found extending from one arm (left). A curved form consisting of three parallel lines, partially blended together on the right side, covers its head and shoulders. Martineau describes this image as a Hopi deity "dwelling in his abode" (Martineau 1973,109). In figure 36, a detail of a very faint composition, there is an unusual incorporation: the parallel line motif flanks both sides of the figure but appears to lie behind the arms. In this image, the linear motif is not connected to the arms—the parallel lines descend from horizontal lines or bars that extend from the figure's shoulders.



Left: Figure 35. Spirit figure with straight and wavy lines extending downward from arms. A three line arc covers the head and shoulders of the figure. Buckhorn wash. About life-size.
Right: Figure 36. Spirit figure with parallel line motif on either side of the shoulders. Buckhorn Wash. Almost life-size.

Discussion

> Do we ever understand what we think? We understand only such thinking as is a mere equation and from which nothing comes out but what we have put in. That is the manner of working of the intellect. But beyond that there is a thinking in primordial images—in symbols that are older than historical man; which have been ingrained in him from earliest times, and, eternally living, outlasting all generations, still make up the groundwork of the human psyche.
>
> C. G. Jung 1936,129

> Indeed, what is striking is not the metamorphosis of the symbols over the millennia but rather the continuity from Paleolithic times on.
>
> Gimbutas 1991,xix

The mythologist Joseph Campbell suggests that we may think of images, myths and rites as "a function of the local scene, the landscape, the history, and the sociology of the folk concerned (in which case our approach will be ethnological or historical)" or as "clues to what may be permanent or universal in human nature (in which case our emphasis will be psychological, or perhaps even metaphysical)" (Campbell 1959,461).

Working from the ethnological and historical point-of-view, Martineau learned the identity, the meanings and functions of the historic Pueblo images, symbols, myths and rites and projected his findings back to the Archaic Barrier Canyon style paintings at Buckhorn Wash. And Gimbutas employed the same method to interpret Neolithic European cultural symbols, representational images and objects, and trace their meaning and functions back to the Upper Paleolithic and earlier.

As Campbell suggested, images, myths and rites can also be considered from a psychological point-of-view to find their nonhistorical and universal meanings or messages. A key to Campbell's search for the universality in myth was C. G. Jung's identification of primordial images, symbols or archetypes in the psyche of modern man. Archetypes and symbols originate below the threshold of consciousness in an aspect of the psyche which Jung designated the "collective unconscious"—"the matrix of consciousness (which) has its own inborn structure" (Jung 1966,97).

"All events are ruled by the structure," the poet Octavio Paz quotes anthropologist Claude Levi-Strauss, "that is, by a universal unconscious rea-

son. The latter is identical among savages and among the civilized: we think different things in the same way. Structure is not historical: it is natural, and in it resides the real human nature" (Paz 1970,133). At this point, Levi-Strauss departs from the Jungian model, suggesting that "it is only forms and not contents which can be common. If there are common contents the reason must be sought either in the objective properties of particular nature or artificial entities or in diffusion and borrowing, in either case, that is, outside the mind" (Levi-Strauss 1970,65).

The content, Levi-Strauss insists, is variable when it is established through the interaction of people but this is not the case with form. Form is common to all because it reflects, or is an expression of, our "inner cohesion," or universal reason—the unconscious structure of "real human nature." The development of "pictorial form is not greatly modified by cultural and individual differences," agrees aesthetician and psychologist Rudolph Arnheim. "It is for this reason that the drawings of children look essentially alike throughout the world, and that there are such striking similarities among the early art products of different civilizations" (Arhneim 1960,167).

Regardless of whether the meaning attributed to the early visual forms derive from their origin in the psyche or because of their objective visual properties or from the association of men or from some combination, the images represent the beginning of man's symbolic activity. The early symbols "reflect basic human experiences by means of equally basic pictorial form" (Arnheim 1960,167). Before language and discursive reason, man thought symbolically (Eliade 196,12). And this early form of reasoning is "in images rather than by intellectual concepts," in the "concrete logic of sensible qualities which is at the basis of all artistic representation" (Arnheim 1962,6).

> In pre-literate or proto-literate culture, the art symbol becomes the fact; that is, it simultaneously represents, defines, and manifests its referent. In such cultures, art objects and events serve as media for information storage, rather than books.
>
> Otten 1971,xiv

Mirceau Eliade, historian of religion, emphasizes that images, symbols and myths are not "irresponsible creations" of the psyche; rather "they respond to a need and fulfil a function—that of bringing to light the most hidden modalities of being." The sacred mysteries were "expressed by a pattern of symbols rather than by the interplay of concepts: a metaphysic—that is, a whole and coherent conception of Reality, not a series of instinctive gestures ruled by the same fundamental reaction of the human animal in confrontation with Nature'" (Eliade 1961,176).

The Water Symbol Complex

The aquatic symbols are among mankind's most constant family of visual images. Although some water symbols appear to be non-representational images, more frequently they appear to be elementary or schematic (stylized) representations (figures 5-6, 8-16). The images reflect the objective visual properties of rain, running water, and fluids. These symbols may also function as mnemonic images that have been handed down from primordial times (Jung 196,80).

The earliest record of the water symbol complex, and the oldest example of intentional engraving, is an engraved ox rib which was found at Pech de l'Aze', France, in Lower Paleolithic deposits dated at a startlingly ancient 300,000 b.c. (Grieder 1982,21). The rib is marked with pairs of parallel lines engraved in double arcs, zigzag and serpentine forms. Parallels, pairs, the number two and doubleness, Gimbutas notes, meant a "blessed multiplication". Since "it was more than one it had more strength and more influence on fertility." "Fertility was not sexuality, it was multiplication, growing, flourishing" (Gimbutas 1991,317).

From the beginning, the complex of water images represented an important part of the visual pattern that symbolized the invisible but potent life force and its processes. In particular, the "Waters" symbolized the entire universe of the virtual—they were "the *fons et origo*, the reservoir of all the potentialities of existence; they precede every form and sustain every creation" (Campbell 1959,66).

By the Upper Paleolithic, the creative life force was associated with the female and personified by the goddess. The power of the "Life Creatrix and Regeneratrix was in animals, plants, water, mountains, and stones. The Goddess may be a bird, a deer, a bear, a vase, an upright stone, or a tree. The anthropomorphic Birth Giver was interchangeable with bear, deer, elk. The protectress of young life, the Nurse, or the Madonna, appeared both as human and as bird, snake, bear" (Gimbutas 1991,317). Water was the vehicle of the power of the goddess; but equally, "it was she who personifies the mystery of the waters of birth and dissolution—whether of the individual or of the universe." "The amniotic fluid is then precisely comparable to the water that in many mythologies represents the elementary substance of all things" (Campbell 1959,64). The process of seasonal awakening, growing, fattening, and dying was seen as connecting humans, animals, and plants: "the pregnancy of a woman, the fattening of a sow, the ripening of fruits and crops were interrelated, influencing each other" (Gimbutas 1991,317).

Because water is critical to all of life, wild and cultivated, the images have remained useful and relevant or potent to millennia of both hunters-gath-

ers and agriculturists (Campbell,1959,66).

Conclusion

An unprecedented efflorescence in rock art seems to have occurred in the Western or Desert Archaic. This phenomenon resulted in an impressive accumulation of Archaic rock art sites like Buckhorn Wash. Many of these sites contain skillfully pecked and painted images—some with imposing figures larger than life, some with finely rendered quadrupeds smaller than an inch, and, surprisingly, the appearance of at least four rock art styles. It is not clear whether this increase in activity indicates an awakened creative impulse in the local population, diffusion of new images and ideology, shifting populations, or even a second wave of immigrants from Asia.

In the abstract images common to all of the Western Archaic styles (figures 17-24), we see a close correspondence to symbolic images engraved on Old World objects and figurines (figures 9-15). Gimbutas associates these basic images with the aquatic realm and the single source of all life—a life-giving and life-renewing "self-generating Goddess." The snake, guardian of the springs of life, and the waterfowl are related symbols of regeneration often found with the water symbol complex.

The kiva art associated with the Hopi Snake Ceremony includes Pueblo agriculturists' versions of these ancient images—the parallel line/rain symbol and zig-zag snake and lightning forms—joined with a new form of stylized clouds (figure 5). The ceremony and its symbols are associated, Martineau relates, with "Alosaka (Muyingwa)" the Hopi god of reproduction of man, animals and plants. Other scholars relate that "Muyinwa," is not only "the maker of all life germs" but "prayers for rain are directed to him." And his sister (Tih-Juyi-wuhti) is the mother of game animals—antelope, deer, mountain sheep, and rabbits (Gill and Sullivan 1992,202).

The Buckhorn Wash figure was painted by a hunter-gatherer, the Pueblo images by an agriculturist. Before the hunting and gathering lifestyle gave way to the domestication of animals and the planting of crops in Europe. "There was no division into the Lady of Plants and the Lady of Beasts; no deity ruled over the plants or animals separately" (Gimbutas 1991a,317).

Bracketed by the symbols of the Old World Stone Age and the Pueblo, there is no reason to think that Martineau's reading of the Buckhorn Wash rain symbol and figures (figures 2, 3) is not essentially correct. Likewise, the many Barrier Canyon style spirit figures (figures 23-30) with the interior or exterior parallel line motif probably represent the life-giving and life-renewing entity—especially when snake, zig-zag or wavy line forms are present. However, considering the possible temporal span (one to five-thousand years or more) between the paintings of the Archaic and Pueblo images, the figure

could well represent a less differentiated deity/spirit or personification of the life-giving and renewing power—closer, perhaps, to the single, self-generating goddess than to Alosaka (Muyingwa) and his sister.

References

Arnheim, Rudolf. *Art And Visual Perception: A Psychology of the Creative Eye*. Berkeley and Los Angeles: University of California Press, 1960.

Brody, J. J. *Anasazi And Pueblo Painting*. Albuquerque, N. M.: University of New Mexico Press, 1991.

Campbell, Joseph. *Primitive Mythology: The Masks Of God*. New York: Penguin Books, 1959.

Eliade, Mirceau. *Images and Symbols: Studies in Religious Symbolism*. Translated by Philip Mairet. New York: Sheed & Ward, 1961.

Gill, Sam D. and Irene F. Sullivan. *Dictionary Of Native American Mythology*. New York and Oxford: Oxford University Press, 1992.

Gimbutas, Marija Alseikaite. *The Language Of The Goddess*. (First Paperback Edition). New York: HarperCollins, 1991.

Grieder, Terence. *The Origins of Pre-Columbian Art*. Austin, Texas: University of Texas Press, 1982.

Heizer, Robert F. and Martin A. Baumhoff. *Prehistoric Rock Art of Nevada and Eastern California*. Berkeley, Los Angeles, London: University of California Press, 1962.

Jung, C. G. *Modern Man in Search of a Soul*. New York: Harcourt, Brace and Company, 1936.

— *The Spirit In Man, Art, And Literature* (Bollingen Series XX). New York, N.Y.: Pantheon Books, 1966.

Levi-Strauss, Claude. *The Savage Mind*. Chicago: The University of Chicago Press, 1970.

Martineau, La Van. *The Rocks Begin To Speak*. Las Vegas: KC Publications, 1973.

Otten, Charlotte M. *Anthropology and Art: Readings in Cross-Cultural Aesthetics* (American Museum Sourcebooks in Anthropology). Garden City, N Y: The Natural History Press, 1971.

Paz, Octavio. *Claude Levi-Strauss: an Introduction*. Translated from the Spanish by J.S. Bernstein & Maxine Bernstein.New York: Dell Publishing Co., Inc. 1970.

Turner, Christy G. *Petrographs of the Glen Canyon Region* (Museum of Northern Arizona Bulletin 38, Glen Canyon Series Number 4). Flagstaff, 1963.

Sego Canyon and the Aztec Calendar Serpents

Cecilio Orozco, Ph.D.

National Geographic Magazine's article in January 1980 enabled me to identify the ancient lands of the Aztecs (Mexico) in the southwestern United States. The name for the land (and the people) is *Nahuatl*, and encompasses Utah, western Colorado, northern New Mexico and northern Arizona, as well as parts of eastern Nevada. My verification stems from the fact that *Nahui* means four and *Atl* means water: the National Geographic magazine article illustrated the area of the most ancient pictographic art, maps the Green, the Colorado, the San Juan, and the Paria—four great rivers. The Mexican people spoke of the *Nahuat* as a land also known as *Huehuetlapala* or *Huehuetlapallan* which means old, old, many colored place. My experiences in northern Arizona and southern Utah in the 1950's and 1960's left me no doubt the area had to be the same. The National Geographic article also included a Venusian figure from the Head of Sinbad panel that included the eight-year cycle of Venus every five synodic revolutions (knotted strings on the sides of the main figure, number eight and five). The main figure, besides having two heads (reference to the morning and evening Venusian positions), is also identified as a "year counter" by the snake above its head, and its hands signal the division of the eight-year cycle into two four-year cycles. These two four-year cycles identify the figure as the basis of the calendar of the Mexico—Aztec and Maya.

In January 1990, accompanied by my professor and friend from the Universidad Autónoma de Guadalajara in the state of Jalisco in Mexico, Lic., Alfonso Rivas Salmón, and guided by Dick Seeley of Green River, I visited the great panel on the east side of the Sego Canyon panel. Additional proof of the ancient Venusian knowledge was in front of me.

The concept of the two "year counters" (rattlesnakes), known to us as Venus matutine and vespertine, is clearly illustrated by the two great snakes, with four rattles each, that flank the solstice marker on the panel at Sego Canyon and also surround the Aztec calendar or Sun Stone.

It was a great pleasure during the January 1990 expedition to view what can be identified as a summer solstice marker, and to attend the yearly sunrises at the summer solstices at Sego

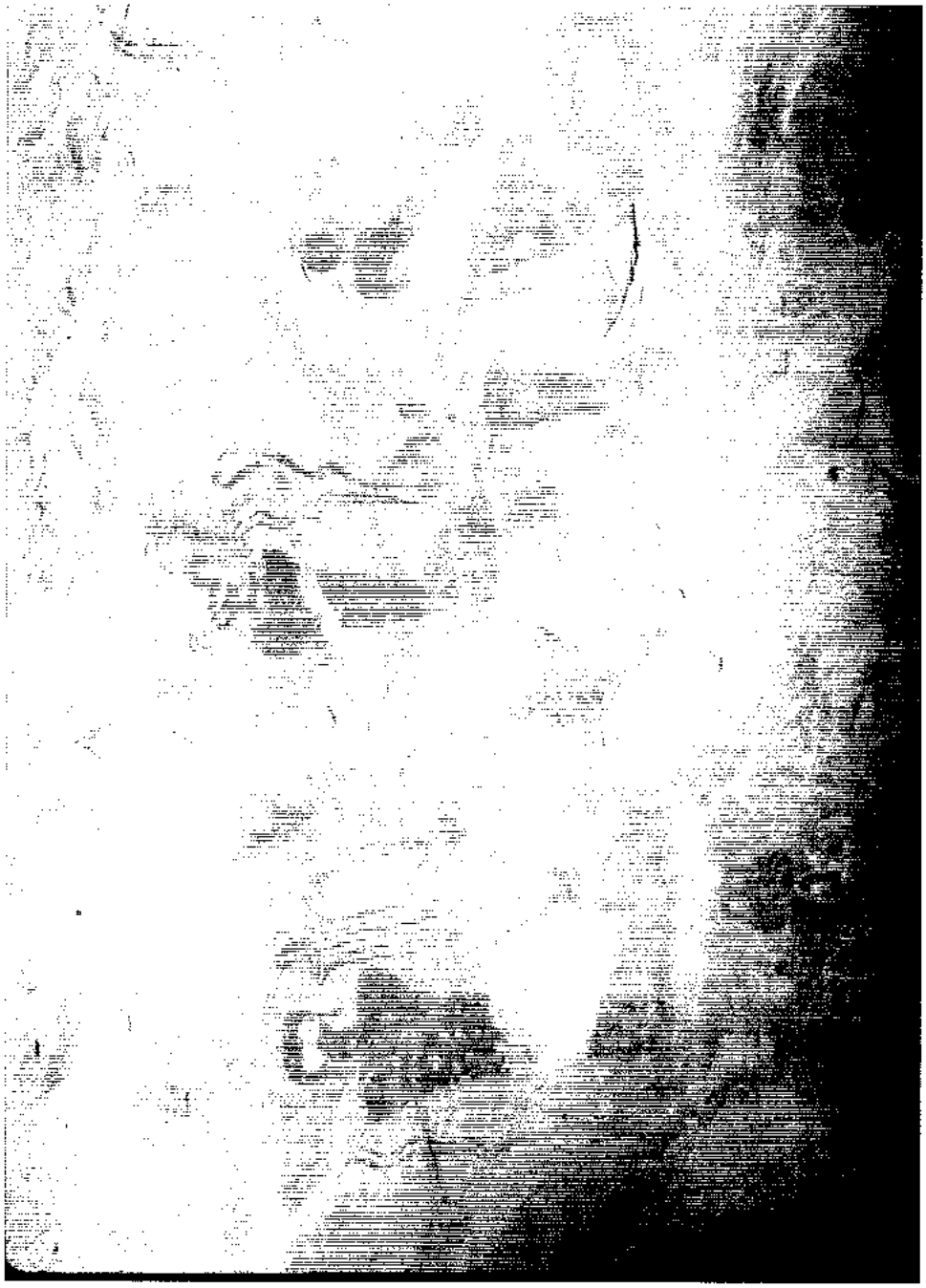


Figure #1. Serpents at the Solstice Marker at Sego Canyon

Figure #2 Four years plus a festive day!

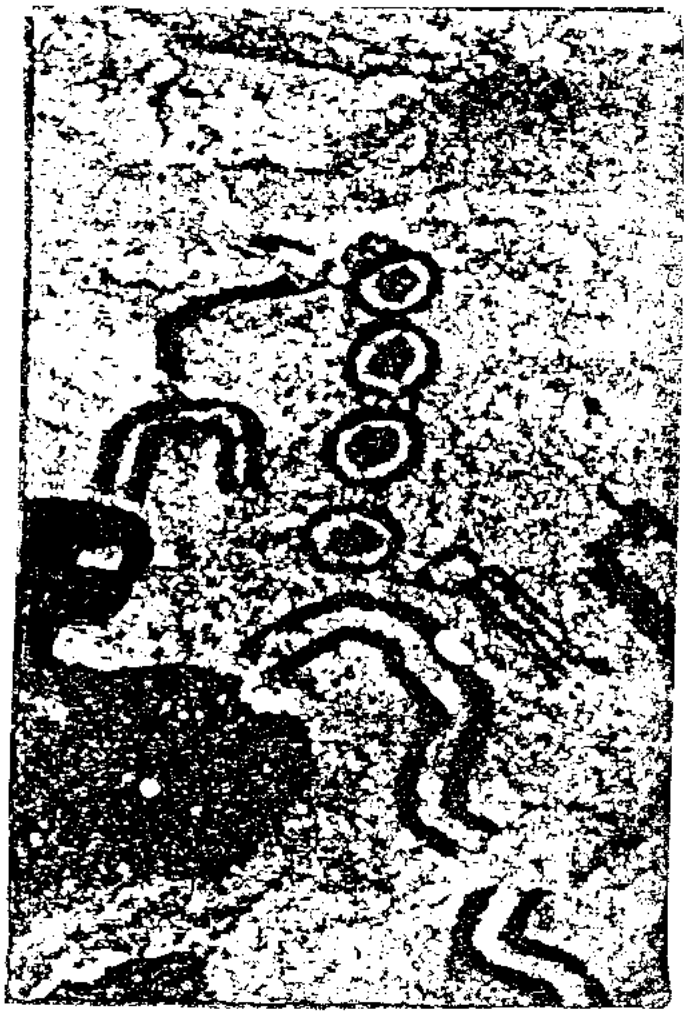
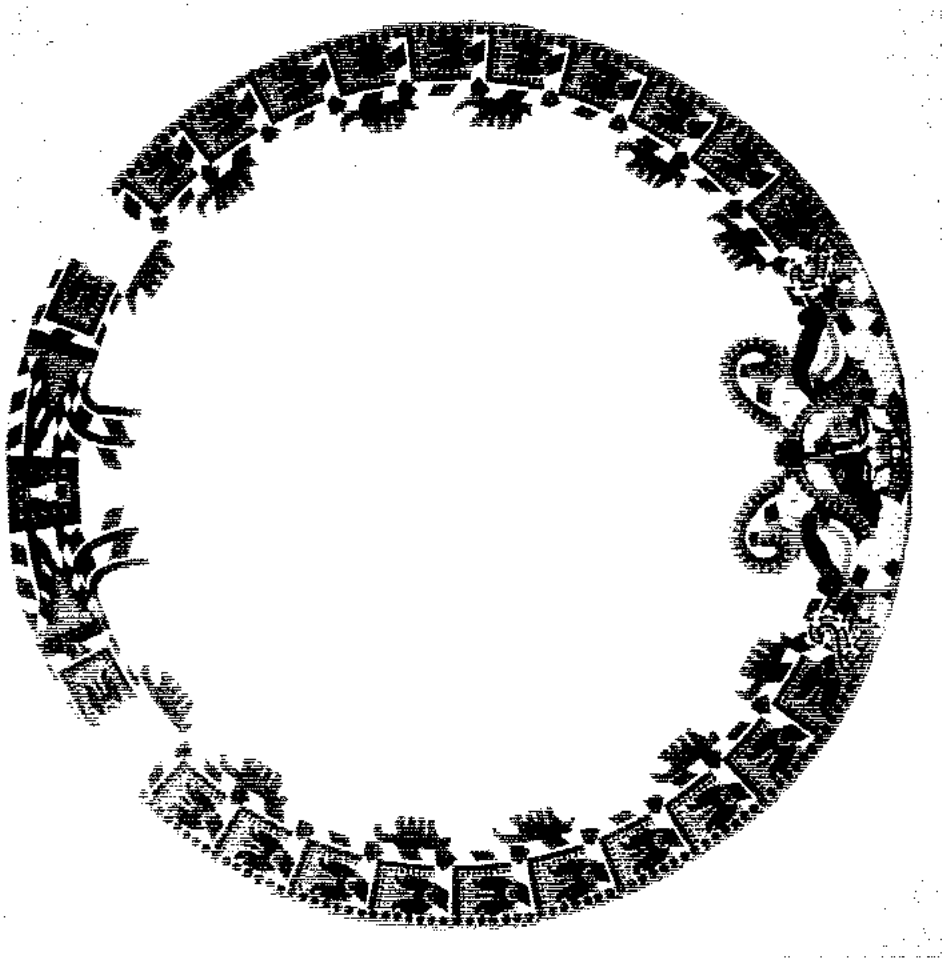


Figure #3. The Aztec/Mexican Sun Stone serpents or Xiuhcoatls



Canyon near Thompson Springs (27-miles east of Green River, Utah about three-miles north of the exit from I-70).

I thank Dick Seeley for his interest and capable guide services that took me, my mentor, Professor Rivas, my oldest son, Cecil, and my grandson, B.J. Orozco to that beautiful spot. When standing before a pre-Christian panel, it obviously expressed the same concepts as in the margin of the Mexican Sun Stone or Aztec calendar. The east panel at Sego Canyon pre-dates the concept in the Sun Stone by more than two-thousand years. Both illustrations, although two-thousands or more years apart, depict two decorated (feathers) heads and two bodies of snakes with four rattles each. Both are representations of the four-year cycle measured so accurately by the Venusian synodic revolutions. At a particular time of our year, Venus will appear at its apogee as the "Morning Star" and four years later will, on the same day of the year, as the "Evening Star" at its apogee. These four-year "comings" of Venus were celebrated every four years, and that day was not counted in their 260-day calendars to adjust for Leap Year. At Sego I saw that celebration represented by a festooned circle attached to each of the four-rattles.

The representations of the Venusian cycle in the Sun Stone include more evidence of the accuracy of later calendars. Each of the two "Fire Serpents" have thirteen "hearts" or heart flowers (*Yoyoxochitl*) in each of the "year-counters" that were interpreted as "lives" and multiplied by the four-year cycles (rattles on each serpent) giving us fifty-two years each, or a total of 104. This is how many years they were able to count with their 260-day calendar (Orozco 1995). The two great "serpents" are representations of Venus as a year counter at the two horizons. The dual phenomena give rise to the two-headed figure at Sego and to the two serpents in the Sun Stone of the Aztec-Mexican. In the *Nahuatl* language, quetzal means beautiful, and the most beautiful bird they ever saw was named *Quetzal Totol* (beautiful bird). In the same language, a rattle snake was called *coatl*, and it also stood for one who counts the years with its rattles. Thus, the figure at Sego Canyon and the serpents of the Sun Stone are both quetzalcoatls or beautiful year counters.

Reference

Orzco, Cecilio. *The Book of the Sun—Tonatiuh.* 2nd ed. Fresno: California Sate University, 1992.

Photographing from Dawn to Dusk in Coso's Renegade Canyon, CA

Ron Spees

For those of you who know a lot about photography, using a polarizer, sunshade and reflector is a must for successful rock art photographs. For those of you who are not photographers, a polarizer is a rotating filter that eliminates glare and reflections from a surface. It creates better contrast between the rock patina and the pecked design. A sunshade blocks the light, such as an umbrella used to cover a hot spot on a rock panel. A reflector redirects the light by filling in the shadows on your subject or panel. A reflector can be tin foil or a white piece of cardboard.

I used a Photoflex Litedisc reflector that can double as a sun shade too. Now I know the reflector I am showing you isn't very big. Well, the Photoflex Litediscs come in all sizes from 12" to 52" and they collapse to a third of their open size.

Let's take a walk down Renegade Canyon after meeting at the Maturango Museum to learn the do's and don'ts of the China Lake Navel Weapons Stations regulations. Some photos will be a series of the same panel with different light affecting it, or a close-up and then a wide angle showing the surrounding terrain or the panel in the shade and then in full light. The authors of rock drawings of the Coso Range claim that at the present, there is no other comparable concentration of rock drawings in North America. There is documentation for just over 14,000 drawings in only four canyons (two major and two side canyons). There are many unnamed canyons that haven't been documented. In one of the pamphlets in the Maturango Museum it give you to read on the way to the canyon, it claims that there are over 100,000 rock drawings in the area, but because of the restricted access to the area, we may never know how many there are.

The name Coso comes from the Shoshonean word for "fire" with a reference to the abundant evidence of volcanic activity in the area. When the white man got around to asking about the drawings, all the oldest Indians in the area could say was they were done by the "old ones" and they didn't know why. So it is still only speculation and will remain a mystery that on the basalt cliffs of the Coso Range and where smooth surfaced volcanic rocks occur near springs, you will find thousands of rock drawings.

Figures 1and 2. These are some excellent example of Coso's elaborately patterned anthropomorphs.

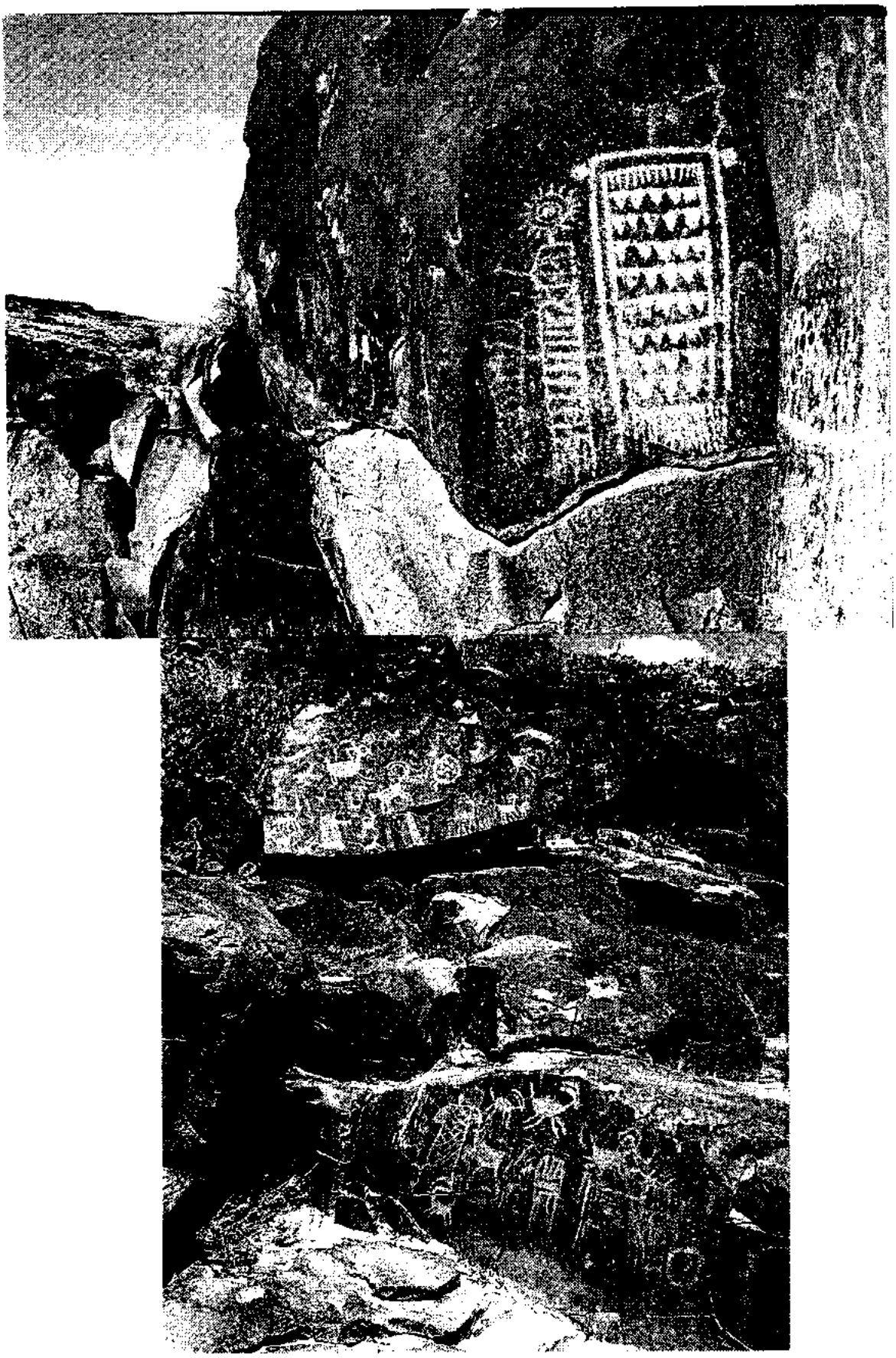


Figure 3. Selected basalt cliffs and boulders were used as drawing boards with many pecked drawings overlapping.

Figure 4. Some rock faces would contain many drawings and others only one. This Coso rock drawing example may have influenced many artists to recreate their images in a multitude of art forms.

Figure 5. Another excellent example of Coso's elaborate patterned-bodied anthropomorphs. There are 397 recorded drawings of this type in Renegade Canyon.

Figure 6. This panel is unique with its shield-like patters. There are 1473 recorded drawings of this type in Coso's, and Renegade Canyon contains 795 of them.

Figures 7 and 8. Examples of animated sheep in Coso. In just two canyons of the Coso Range there are over 7000 sheep drawings. Of the three areas where Bighorn sheep drawings are abundant, Coso has more than the other North American sites combined.

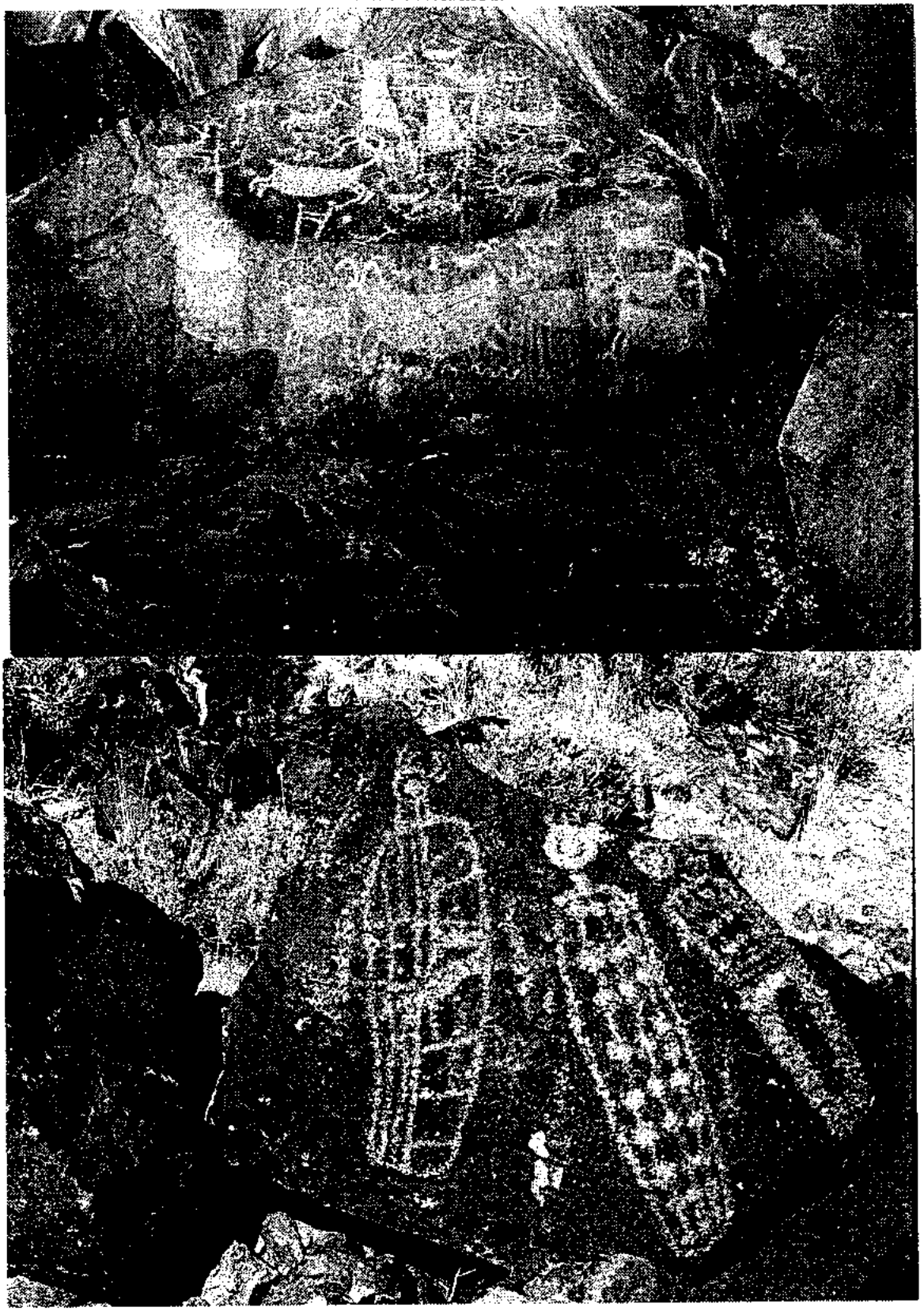
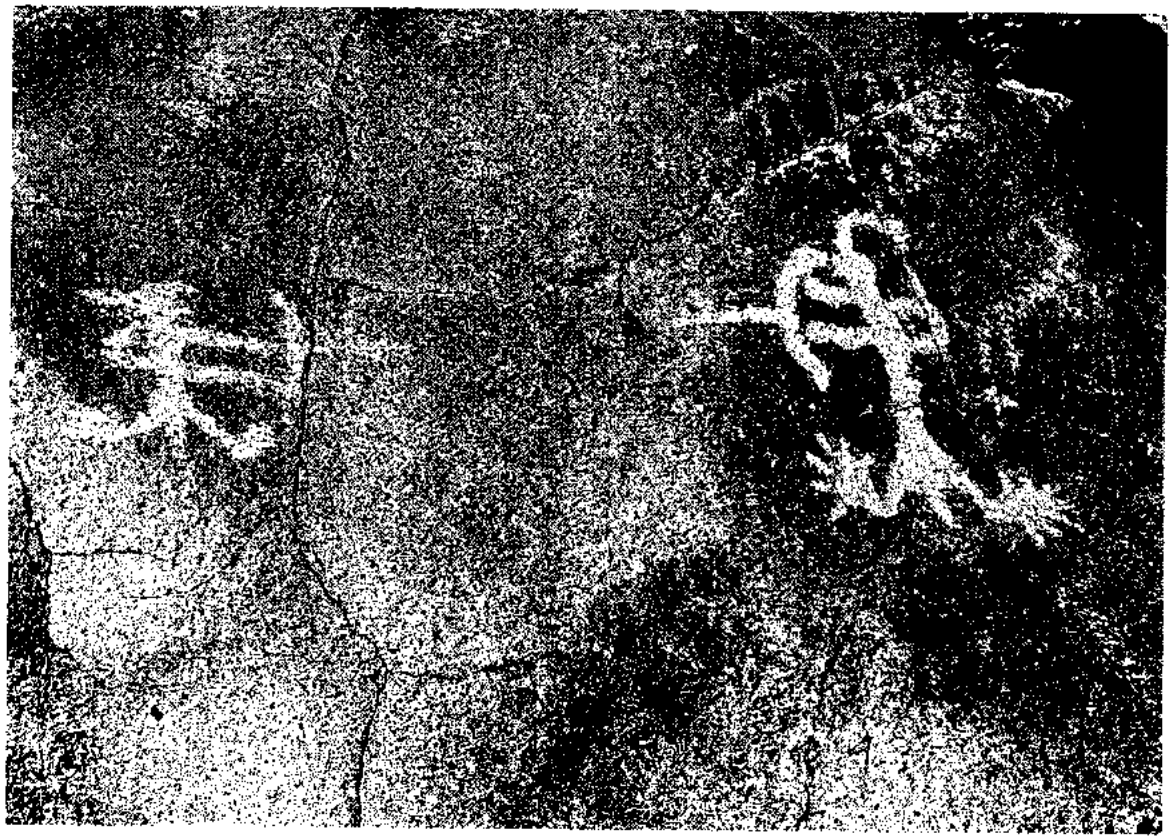
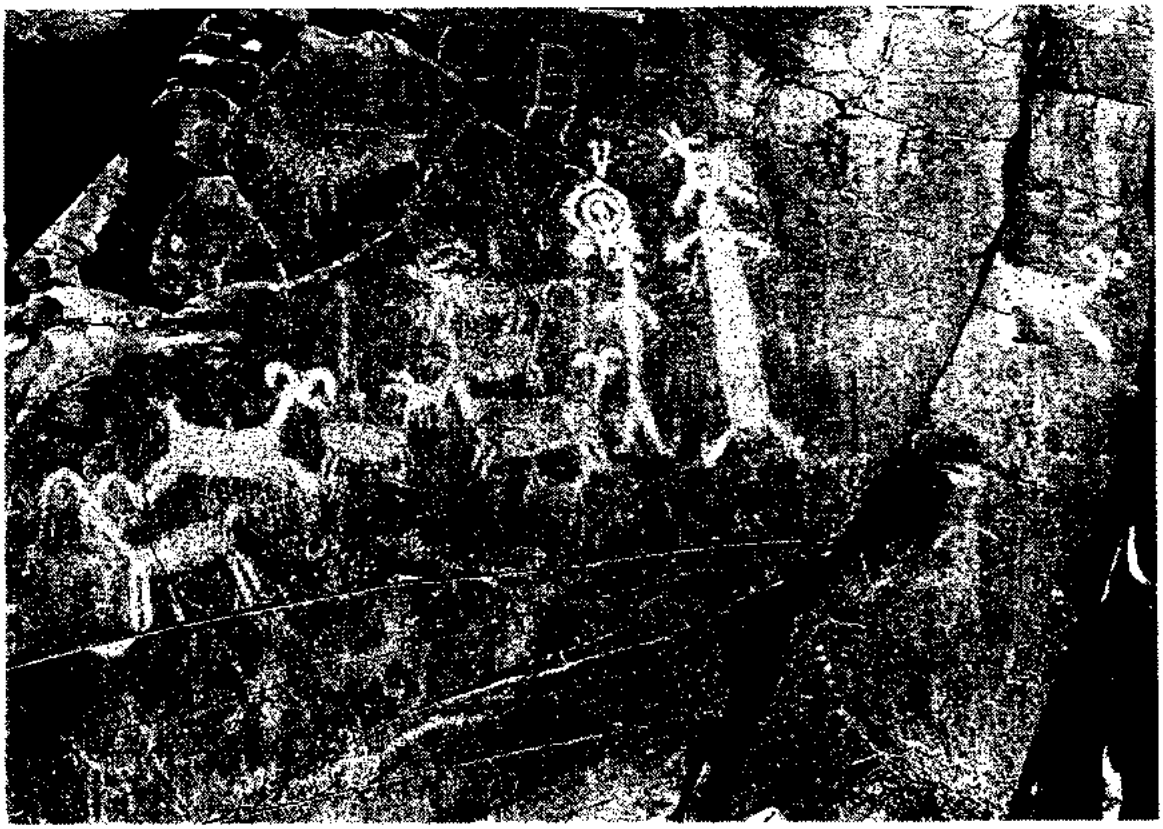


Figure 9. This displays many elements, but most notable is the figure with the horned headdress center right.

Figure 10. Two bowmen possibly shooting at each other.



I was asked to show you some photos of the Coso Range because I was referred to as "the only URAUA member who had been there." Well, I thought that if I brought a lot of slides, I wouldn't have to talk much. The travel magazines show you one image of an area and it is so spectacular that want to go there. As they say, "One picture is worth a thousand words." Well, I showed you 133 pictures. For the sake of argument (because I know researchers like to argue), say there are an average of ten rock drawings in each slide. So take ten times 133, subtract that from 100,000, and it leaves 98,670 rock drawings left for *you* to find!



Three Rivers Petroglyph Site, New Mexico. Photo by Ronald N. Spees

Toward a Stylish Gut

Clay Johnson

Abstract

Rock art "style" is routinely tacitly treated as a cultural and temporal marker. However, recent research suggests that concepts of rock art "style," as used at present, may be unreliable or even deceptive as an indicator of both time and culture. Needed are sound theoretical approaches to rock art style.

Author's Note

I must acknowledge an intellectual debt I suspect is owed Steven Manning. I do not remember reading or even hearing the September 1991 Manning presentation, "A Modal Based Classification System for Rock Art Research, Overcoming Stylistic Methodological Problems." Manning's approach in this paper was somewhat different than the one I chose. Although he commented on alternate classification methods, I chose merely to outline the problem with the hope that this would stimulate suggestions, but I am always suspicious of coincidence. After reading Manning's prior publication following this symposium, I believe that it (as well as my own experience and informal conversations with many researchers) may have directly influenced my work. Manning's paper details aspects of the problem I did not directly address and offers valuable suggestions. I urge readers to reread Manning on the subject.

"GUT" refers of course to Grand Unified Theory, something long sought by physicists to explain how all the known forces interact to produce the result we see as the observable physical universe. I believe rock art researchers also have a theory dilemma; we inadequately understand how the interplay of both social and physical forces affect the appearance of the resultant rock art panel. I argue that is because researchers have concentrated on style-based art history approaches to an object (the rock art panel) that, while it is certainly also "art" in the broadest sense, is first an in-situ archaeological artifact or feature (archaeologically, non-portable artifacts are usually called features).

I believe there are problems with the way the style concept is currently used for rock art. The problems lie both in assumptions made during rock art style studies and in assumptions about rock art based on the styles assigned.

Background

Use of style as a cultural and temporal marker has long dominated classification and study of rock art. Existing rock art style names denote time periods, ethnic groups, artistic evolution within groups, archaeological cultures, and geographic areas. Often the first thing categorized about a rock art panel is the style, from which is derived the comfortable feeling that something is actually known about the panel.

A style is an arbitrary, subjective grouping of categorically similar objects possessing variable attributes, based on perceived similarities in the variables selected. For style as applied to rock art in the Southwest, Polly Schaafsma has been a major influence. Based on Schapiro's ideas of the 1950s, Schaafsma (1971, 1980) says styles are defined through examination of major motifs, forms, form placement and relationships, and overall expressive qualities, as perceived by the individual researcher. Additionally, she suggests that element inventories, occurrence profiles, and examination of technique are important in assessing rock art style. She states that art historians and anthropologists in common assume that every style is peculiar to a cultural period or time, and an individual or group: that for every culture or time there is only one, or a limited number of styles. Her

discussion of style implies that styles are primarily the result of socially driven selections from the range of possible choices. Schaafsma notes that style studies, including hers, are normally made primarily from existing collections of photographs that fail to provide much context for the panels pictured.

Problems of the Style-Based Approach

A basic research problem typical in rock art style studies lies in the data used. Schaafsma (1971) and Burton (1971) both note their primary data source is existing photographs. Hartley (1992) found that variations in the depth, parameters, and completeness of existing site records made it necessary to reject many sites as candidates for his study. Photo collections and photos incident to site recording typically exclude panels or elements that are small, subjectively judged unimportant or atypical, occur in "atypical" places, are difficult to photograph, or are simply not located during relatively brief site visits. Rock art style studies typically rely on statistical analysis of element class presence, absence, or ratio to other elements. However, statistically valid conclusions cannot be drawn from biased or non-representative samples.

Major problems also stem from past assumptions about the causes of rock art variability. These include assumption that style is culturally or temporally diagnostic, that style is independent of environmental constraints, and that style can be separated from function. Thirty years ago, the role of environment was underplayed, and styles were assumed to occur through social tradition within a culture and to change because of changes in social tradition over time. Social tradition was treated as the prime constraint on style.

Anthropologists' assumptions have changed a great deal since Schapiro's article (Schapiro 1953). One change is the advent of absolute dating techniques applicable to many types of archaeological artifacts and sites. Although rock art styles were assumed thirty years ago to be specific to cultural epochs, Francis, Loendorf, and Dorn (1993)

found, in a recent Wyoming study using AMS and Cation ratio dating, that all rock art styles were co-occurring within a given time period and across a large geographic area.

Today, stylistic variability can be viewed as resulting from the interplay of multiple selective forces: actor choice, socially driven choice, and environmental constraints. Actor choices include whim, borrowing, and individual physical capabilities or habits. Socially driven choices operate on a group level and must, as well as tradition (stable, evolving, or as affected through diffusion of ideas), include function (purpose and use of the artifact). Environmental constraints may operate from site to regional levels, or across time, and include physical constraints imposed by characteristics of tools and materials available at specific times and places. Thus, assignment of style as referent to populations, ethnic or social groups, or changes in artistic tradition cannot be independent of (a) comparing functional equivalents (we must compare apples to apples), (b) comparing equivalent variables (we mustn't compare apples and abstracts), (c) recognizing environmental constraints, (d) recognizing that some similarities may be due to individual borrowing and some variability due to individual physical capabilities or whim. To establish the parameters of a style as a marker for any social or ethnic group or time period, one must somehow quantify and exclude the effects of all variables except the selected marker variable. Let us examine the problems posed in determining the effects of (a) through (d) above.

(a) Function: Binford (1989) found his attempts to identify classes of functional equivalents among similar artifacts inaccurate in the face of his continuing experience. Differences in function may affect any or all elements of style. For example, sports cars and mountain bikes are both relatively small vehicles made of modern lightweight materials, used for pleasure or thrills, sometimes by the same individual, but they are not functional equivalents. Identifying sports car-mountain bike pairs made by the same manufacturer, or even manufacturers of the same nation, based on perceived similarities in style is unlikely to succeed. Rock art function may vary with location (trail marker vs. living space vs. hunting drive site). Rock art panels at the same site can also vary in function (as well as through time or by social group). Rock art function is yet to be

determined for most panels or sites. Hartley (1992) and I (Johnson 1995b) note that style seems to vary with function, where different functions can be inferred from physical situational differences (and additionally in Hartley, with associated artifacts).

(b) Element equivalency: Variability within an element class can not be defined unless the assemblage being assessed contains only equivalent elements. We all know the extreme variability of rock art elements. Schemes abound, but major class divisions are typically into anthropomorphic, zoomorphic, abstract in rock art studies, ("abstract" often refers not to simplified representational forms, but to non-representational shapes), and geometric elements. These are variously subdivided. However divided, the sheer number, diversity, and geographic spread of any element practically guarantees the data will be biased and incomplete. For instance, Hartley (1992) divides anthropomorphic figures into full figure, fragmentary, and human heads. However, I have shown that for interactive rock art, heads or other apparently missing body parts may exist as a shadow element, or as sculpting (Johnson 1995a), observable only at specific times of day and year. I have also watched apparently abstract elements revealed by interactive events to be representational zoomorphic or anthropomorphic figures, presented from an unexpected perspective. Thus, "incomplete" representations may or may not be equivalent to "complete" representations. At the 1994 URARA symposium (Johnson 1995c), I offered proof that some "abstract" and "geometric" shapes in northeastern Utah rock art are actually representational, depicting physical features of site terrain. If an unknown percentage of abstracts and geometrics can be representations of physical terrain or depict other representational element classes from an unusual perspective, and if apparent variability in degree of element completeness may not survive closer examination, then any assignment of style dependent on the presence , absence, or ratio of abstracts, geometrics, or on variability in treatment of representational elements is suspect. Styles based on variability in categories of rock art element shape cannot be defined without first accurately placing elements into categories as equivalent variables.

(c) Environment: Environmental constraints restrict variability in specific and physically objective ways. They can operate to varying degrees over time and through

space. They may be obvious (charcoal is not very visibly effective for drawing on basalt) or subtle. For example, modern tandem canoes might more readily be grouped into an aluminum style, a kevlar style, and a plastic sandwich style cutting across manufacturer categories, rather than into manufacturer styles. Each material affects the shapes, curves, and edge sharpness differently in the finished canoe. For rock art, interactive design using shadow templates is the major environmental constraint on stylistic variability. Element size, exact shape, completeness of representation, placement on the panel, and techniques used vary due to the shadow template shape and pattern of motion (Johnson 1993). Shadow template size and shape varies with all the geophysical factors involved, and outcrops of the same rock stratum often cast shadows with similar template characteristics. For example, three basic techniques, outlined body, en-toto pecked body, and dot body construction, account for most of the anthropomorphs in northeastern Utah. Burton (1971) suggests the choice of body style is social: an artistic style evolution from less sophisticated through representational through abstract portrayal over time. However, dot body figures tend more to co-occur with some outcrops of Glen Canyon sandstone, while large outlined bodies are more common on Frontier sandstone. For example, the lens of Frontier sandstone at McKee Spring naturally tends to cast long, solid, fairly straight-edged shadows. There are more than forty anthropomorphs at McKee Spring. Most have large outlined bodies designed using these large templates. Only one interactive anthropomorph uses the dot body technique. That is on a surface where the available shadow templates consist of very small sun cups, boxes, or arrow shapes more typical of the shapes cast by the Glen Canyon sandstone at Cub Creek, where many dot bodied anthropomorphs occur. Thickness of element lines, technique chosen for a line, and depth of pecking in a line can also be constrained by shadow templates. Panels on very "poor" surfaces, have on further study had templates that were exceptionally "important" to other panels and interactions at the site, or had especially dramatic shadow templates, motion, and/or timing. These panels, used in spite of poor surfaces, may appear crudely or sketchily done, not as a style component but because the surface constrains the finished panel appearance. For interactive rock art, elements portrayed vary with season of design,

and arrangement of elements on a panel varies with direction and nature of shadow motion across that panel on key days (Johnson 1993). Thus, the effects of environmental constraints can only be assessed by examination of all interactive events. Since distribution of interactive design is currently unknown, rock art styles cannot accurately be based on variations in technique, sophistication, element shape, position, or size without examining the degree to which these choices are environmentally constrained.

(d) Individual choice: Individual choices include physical capabilities or habits, borrowing of techniques, shapes or figures, and whim. Individual choices are generally under-considered as a factor in rock art variability. Binford (1989) suggests that physical capabilities such as individual motor habits might identify and account for some variability, even across artifact classes. For example, as a left-hander, I use tools in a different manner than the average person, with results often detectable in the finished product. I observe that similar element treatments are shared by multiple panels at some northeastern Utah sites, but vary across sites. These variations do not appear due to environmental constraints or differences in function but do occur on equivalent elements. These minor stylistic choices seem to be actor-driven and individual. I think the most economical explanation is individual style choices (I-style): consistent treatment of element or figure detail apparently independent of environmental constraint, function, tradition, and location, but centered on one site. Individual borrowing of rock art "pictures," shapes, or techniques seems to occur. "Fremont" rock art associated with "Anasazi" artifacts (Sharrock 1966) may represent diffusion rather than individual borrowing, but enough "out of place" rock art figures or elements occur to suggest traveling individual rock artists were not above borrowing new ideas. Although it may be possible to isolate stylistic variability due to individuals, prehistoric I-styles are unlikely to be useful in discussing ethnicity, social groups, or temporal cultures. The chief effect of possible individual borrowing seems to lie in obfuscation of style distributions.

There are of course a number of stylistic elements in rock art that do seem driven by social factors. Site motifs are an example. A site motif is an element or figure centered on and recurrent at one site, occurring only occasionally and with decreasing frequency as one

moves away from that site. The element or figure appears to exist independent of interactive necessity, individual choice, or panel function (at least as far as determined by interactive study). An example from my experience is the McKee Spring object, a relatively large element, approximately the shape of a huge corner-notched projectile point, but depicted as suspended by the tip. Various rock art enthusiasts and authors have confidently described this object as representing a human head, a psychedelic mushroom, a scalp, a medicine bag, a spear, and a pot with water pouring out of it. After working with this site for six years, I believe it is still safest to call it a McKee Object, because no one, including me, has offered a test of any hypothesis. Site motifs may represent real world objects or shared ideas, but they seem most likely to bear upon a localized social group creating the rock art site. For this reason, I speculate that site motifs might represent group identity at a family or clan level.

Since discussions and assignments of rock art style seem generally to ignore the probable annual and life ranges of individuals and groups involved, I should point out that many estimates of the home range of foraging groups in arid climates are at around 10,000 square kilometers (Hartley 1992:43-6). According to Binford, an individual's lifetime home range can be double that, and the range individuals may have traveled on hunting trips is much larger still (Binford 1983:114-117). Most of the rock art examples used in this paper are attributed to Formative period peoples, who as horticulturists may have had a somewhat more restricted range than foragers. However, it is worth noting that most rock art attributed to, for instance, the approximately one-thousand years of Uinta Fremont occupation occurs inside an area no larger than the average home range of one foraging group.

Since present style assignments largely ignore the effects of environmental constraints, function, and individual choices on variability, and are based on biased samplings, and suffer from inaccurate element classification, we must recognize at least two things:

1. Present style assignments are arbitrary classifications that may or may not reflect any emic (actor-recognized) relationships.

2. Present rock art style assignments in Utah have been made in the absence of a body of tested ideas about panel function, symbolism, creator ethnicity, and epoch of creation and/or use.

Summary

Photographing, preserving a visual record of, and aesthetic appreciation of rock art are perfectly valid, historically important, and very satisfying pursuits. In those pursuits, it is difficult not to mentally categorize observed rock art into "styles." However, the point I have attempted to make above is that if, in addition to appreciation, one is also doing research using the archaeological artifact/feature that is rock art, then art history becomes only one of many sources of information contributing to investigation of rock art. Styles assigned from an art history perspective, while aesthetically serviceable, may be unserviceable in science-based approaches. If uncritically accepted as answers to rock art questions, they may impede further progress in the archaeology or aesthetic appreciation of rock art.

For use in rock art recording, study, interpretation, or hypothesis formulation and testing, we need to develop a Grand Unified Theory of rock art variability that considers the interplay of surfaces, locations, purposes, interactive templates, seasons, representation, techniques, technology, motifs, tradition, and individual capabilities to explain rock art similarity and variation. If the concept of style is ultimately useful in understanding rock art, it will not be as a descriptive device substituted for careful scientific study. Rock art style will be useful only if used to help accurately classify panel, site, temporal, and areal variability, thus advancing our understanding and appreciation of the people who created rock art.

REFERENCES

Binford, Lewis R

In Pursuit of the Past: Decoding the Archaeological Record. New York: Thames and Hudson, 1983.

"Styles of Style." *Journal of Anthropological Archaeology 8.* (1989): pp 51-67.

Burton, Robert Jordan. "The Pictographs and Petroglyphs of Dinosaur National Monument." M. A. Thesis, Department of Anthropology, University of Colorado, Boulder, 1971.

Francis, Julie E., Loendorf, Lawrence L., and Dorn, Ronald I. "AMS Radiocarbon and Cation Ratio Dating of Rock Art in the Bighorn Basin of Wyoming and Montana." *American Antiquity*, 58:4 (1993): pp 711-37.

Hartley, Ralph J., "Rock Art on the Northern Colorado Plateau: Variability in Content and Context." *Worldwide Archaeology Series, 1.* ed. Ross Samson. Brookfield: Avebury, 1992.

Johnson, Clay. "Rock Art as an In-Situ Artifact." *Patina* 1, Sec. 3. Compiled by Vernon E. Bush. Salt Lake City: Utah Rock Art Research Association, 1993

"Sculpting: The Missing Part of the Panel." *Utah Rock Art* 13 (1995a). Salt Lake City: Utah Rock Art Research Association., pp 71-80.

"Patterning to Northeastern Utah Rock Art Sites". Paper presented at the 15th Annual Symposium of the Utah Rock Art Research Association (1995b) Blanding, Utah.

"Some Terrain Features Represented in Rock Art." *Utah Rock Art* 14. (1995c) Salt Lake City: Rock Art Research Association, pp 53-8.

Schaafsma, Polly.

"The Rock Art of Utah." Papers of the Peabody Museum of Archaeology and Ethnology, Harvard University 65. Cambridge: (University of Utah Press edition:1994), 1971.

Indian Rock Art of the Southwest. Albuquerque: University of New Mexico Press, 1980.

Schapiro, Meyer. "Style." *Anthropology Today*. ed. A. L Kroeber. Chicago: University of Chicago Press, 1953, pp 287-312.

Sharrock, Floyd W. "An Archaeological Survey of Canyonlands National Park." *University of Utah Anthropological Papers* 83. Salt Lake City, 1966.

Experimental Horticulture of Dent Corn in Northeastern Utah after Year One

Clay Johnson

Abstract

Questions as to the nature, horticulture, economic feasibility, and extent of dependence on dent corn by Formative Period Fremont populations in northeastern Utah have occupied archaeologists for fifty years. First seen as an occasional, late adjunct to Fremont hunting and gathering, corn has recently been suggested to have been a mainstay of subsistence. Corn horticulture developed rather early in the Fremont period. It is not at present understood how or where this maize variety was perfected, how it was so successful in a relatively harsh environment, or the exact conditions under which it was planted and grown. Study of interactive rock art may offer insights into corn horticulture. This presentation is an initial report on an experiment in corn horticulture in northeastern Utah, begun in 1996 using modern Mexican dent varieties, directed toward understanding corn horticulture.

Fremont Corn and Horticulture

Domestication and development of corn (*Zea mays* or *maize*) began by 7000BP (Woodbury and Zubrow 1979:46), and corn was traded or carried northward through Mexico into the future United States of America by 4000BP (Winter 1973:442). Corn appeared in Utah by the beginning of the Christian era (Winter and Hogan 1986:133-7, Madsen 1989:7). Coltrain (1994) estimates, based on a study of stable carbon isotope ratios in bone collagen for the Elsinore burial, that corn may have accounted for up to one-third of the diet at that time. During the five-hundred year period following AD500, corn was apparently a staple of subsistence over much of Utah. After approximately AD1300-1400, corn horticulture (and the Fremont as a horticultural entity) effectively disappears in Utah.

Fremont corn, like much else about the Fremont, is somewhat enigmatic (Burgh and Scoggin 1948, and Winter 1973:439-52). Fremont dent corn (typically) is a fourteen-row red-dent variety characterized as "...a distinctive and productive variety essentially unique to Utah. Presumed to have been particularly hardy..." (although see Jennings 1978:251). Jennings suggests Fremont dent corn mutated or was developed in northern Utah, becoming later and less distinctive as one travels south toward Anasazi areas. Recent Brigham Young University research (Richens 1995, Talbot 1995) at Steinaker dam in northeastern Utah suggests growing (and possibly irrigation of) corn as early as AD300. Stable carbon isotope studies (Coltrain 1995) suggest that corn may have comprised more than 50 percent of the diet at this early date.

Jennings states that effective moisture in Fremont areas today is insufficient for dry land farming of corn (Jennings 1978:13). However, as Madsen (1989:33) points out, many Fremont sites are adjacent to small streams on alluvial flood plains at the mouths of small canyons. Thus, occasional floods, deep soils, and ease of hand watering or simple irrigation could all contribute to the feasibility of farming. Good evidence of irrigation for the Uinta Fremont has not yet appeared (Richens 1995, Talbot 1995). Extensive or sophisticated irrigation systems found for the Anasazi are, so far, sparse or non-existent for northern Fremont sites. In the high, cold desert country of northeastern Utah, precipitation

regime (very little summer rainfall) and poor soils today do not seem compatible with dependable corn horticulture. However, corn has a considerable range of genetic variability and thus the potential to adapt quickly to new conditions.

In selected locations typical of lower elevations along the south flank of the Uinta mountains (Dinosaur National Monument, Dinosaur Quarry, Jensen, Vernal Airport), the growing season is approximately 116-136 days (Ashcroft, Jensen and Brown 1992). However, the season ranges from 60-199 days, and a string of short growing seasons might be as likely a factor as drought in discouraging horticulture. Spring and fall freeze dates are approximately May 20 and September 22, although range for both dates extends nearly a month earlier and later. Annual average precipitation ranges from 8.13 inches in the valleys to 13.55 inches on the benches, with most falling as winter snow. Lowest precipitation is normally in July and August.

Brew (1979:515-6) lists four techniques/physical situations utilized by the Hopi for corn crop production. Of these, irrigation is typically used today by Anglo farmers. The other three types are planting in the flood plains of major streams and watering by stream overflows, planting in sand dune fields forming against escarpments, and planting in alluvial fans at the mouths of arroyos. Additionally, I suggest that moist areas adjacent to occasional small seeps, springs, or streams scattered throughout this area might serve the purpose. Both Nabhan (1987:107-121), for the Sand Papago in the Pinacate, and Cushing (Green 1979:249-281), for the Zuni report fields at considerable distance from habitation and thus from full-time husbandry. Cushing's Zuni fields were as much as forty miles from the village. Kennard (1979:555) reports corn fields twenty or more miles from Hopi villages, although feasible distance might shrink by a factor of four or so when travel is not by horse or motor vehicle. Even a ten-mile radius in the Uintah Basin would include a considerable number of small plots with the conditions discussed above.

It is unknown how, when, and where Fremont dent corn was developed, the extent to which the Uinta Fremont depended on corn, what planting and harvesting dates were used, in what situations/soils Uinta Fremont corn was grown, the extent to which crops were irrigated, weeded, actively protected from plant predators, or otherwise tended, what yields were achieved, and how corn horticulture fit into other Fremont subsistence activities.

Planting dates would be critical in areas with a short growing season. Plant too early, and the seed rots or the tender young shoots freeze. Plant too late and the seeds lack sufficient ground moisture to germinate or the crop is more affected by mid-summer heat and lack of moisture, and consequently may not mature.

Corn in Uinta Fremont Rock Art

My interest in experimental corn horticulture came about through my study of interactive rock art attributed to the Uinta Fremont (Truesdale 1993:71-88). Interactive rock art was designed using shadows on the rock surface on specific days of the year (key days) as templates for the placement, shape and size of rock art elements. Uinta Fremont panels especially are composites, with different elements on the same panel designed on different key days throughout the year. Thus, on days analogous to the day of design, the recurring shadows interact with and emphasize elements designed on that key day. The Fremont attached importance to Summer Crossquarter, a date approximating May 3-7 and August 3-7. Data from Summer Crossquarter interactions in Uinta Fremont rock art showed many interactions stressing variations of the rake element. In particular, an elongated element resembling a lance or coup stick with feathers secured along one side, associated with digging stick-like and mask-like elements, was subject to interactive alignments suggesting the act of planting. Although lances or coup sticks are to my knowledge unknown in the Uinta Fremont artifact assemblage, corn is omnipresent. The lance-like element might be seen as a corn stalk with leaves. The May date seemed feasible (if a bit early) in the Uinta Basin, if not as a specific date to plant corn, then as the date to begin ceremonies or activities connected with planting later in the month. Corn planted during May might mature before Autumnal Equinox, when rock art interactions stress hunting. Could an experiment shed light on the timing and nature of Fremont horticultural practices?

The Experiment

Replicative experiments in archaeology do not reveal exactly how a specific task was accomplished in the past, but they can certainly suggest how a task was not done, suggest ways to test hypotheses, and generate new questions. The experimental horticulture of corn occurred independently to me, Wayne Prokopetz, DINO archaeologist, and Mary Prokopetz, an archaeological consultant. The Prokopetzes were unable to participate in 1996. In cooperation with archaeologists Blaine Phillips of the BLM and Byron Loosle of Ashley National Forest, I began in 1996 experimental planting of selected Mexican dent corn varieties generally similar to Fremont dent corns, preadapted to the extent of available seed varieties for high altitude, short growing season, and arid conditions. Locations were on BLM and Forest Service lands, with a patch in a home garden for a control. Locations were selected to test sprouting, growth, and plant predation problems in the three principal situations: in sand dune situations at the base of massive rocky areas, in alluvial fans watered only by rainfall concentrated by rocky surfaces in small dry canyons, and in moist areas generated by small seeps, springs, or streams. Planting was by digging stick into unprepared ground, deep planting of seed (8-12 cm deep) in clusters, six to eight kernels to a "hill." Surfaces were not otherwise prepared or weeded. Only a small number of "hills" were placed at any one location. Planting occurred at weekly intervals beginning the second week of May and ending the second week in June. Each site was monitored on a weekly basis.

Summary of 1996 Efforts

Variety tested was Maize Rojo from Native Seeds/Search. Summer precipitation was low in 1996, a drought year. At planting sites on BLM land, no rain fell within the three weeks before the first planting, or for more than two weeks after the first planting. In the first two weeks of July, all corn except that planted in the watered garden was lost; final loss due to desiccation. Chronologically, seeds planted May 8-11 sprouted beginning

May 20-27 and continuing through June 8. Eventual germination approached 100 percent for one participant and was very low for other participants/sites. The reason for this disparity is unknown. All plants not suffering from animal predation averaged 8cm (range 4-18cm) high by June 8. By June 21, plants on BLM land were about 13-18cm high where not damaged by animals, while some corn in the garden exceeded 30cm. By July 21, all corn except that in the garden (averaging .9m high) was lost. Corn in the garden acquired tassels beginning as early as July 23, silks in early August, and ears with the silks drying by about September 10. An ear salvaged from a fallen plant on September 12 was approximately 12cm long, a light variegated red color, and had about nine rows of kernels. This ear, boiled with some sweet corn, proved to have a rather bland, not at all sweet, somewhat starchy taste. Plants were still green on September 15, but beginning to dry by Autumnal Equinox on September 22. The remaining five large and well-formed ears could have been successfully harvested and dried on that date. Unfortunately, I elected to leave the ears on the stalks for an additional week, during which a raccoon ate them all and left the cobs on the ground.

Occasional predation from large animals (deer and cows) resulted in loss of entire plants. Predation from small animals and insects resulted in plants being nibbled back, but these plants generally recovered. Lost plants are attributed to desiccation or competition from other plants, occurring by mid-July.

All my plantings used a digging stick made from a juniper limb trimmed by a road crew. The stick was debarked and smoothed on a piece of Frontier sandstone in my yard, taking approximately ten minutes and leaving no mark on the sandstone. This suggests that the grooves at many rock art sites are not made by rubbing wood pieces, unless a lot of people were spending an extensive amount of time rubbing wood. The digging stick proved very effective in damp ground, where the stick could be inserted to a depth of 10-12cm, pried upward to leave a hole along the lower side of the stick, the seeds dropped in, the stick then removed, letting the hole collapse and covering the seeds. The digging stick was worthless in dry ground.

Some Ideas Suggested by the Data

The timing of effective planting, pollinating, and probable harvesting dates for this variety nearly approximating Fremont corn, and the skimpy analysis so far performed on interactive rock art elements that may represent corn, suggest there may well be some time-keyed information on multiple phases of corn horticulture in Uinta Fremont interactive rock art, including possible support for Schaafsma's suggestion that masks relate to crop fertility and rain (Schaafsma 1992). Early May appears to be a feasible, even a necessary planting date if corn is to mature in this area. Corn horticulture seems unlikely (based on this year's results) to have been effective without some kind of fairly constant human presence in the fields. Deep planting of seed did seem to prevent, at least for one participant, the rather common garden problem of birds or squirrels digging up and eating the seed. In future years, the team hopes to investigate effects of full versus partial sun, specific soils, hand watering, weeding, and preventative measures for animal predators.

References

Ashcroft, Gaylen L., Jensen Donald T, and Brown, Jeffrey L. *Utah Climate.* Logan: Utah Climate Center, Utah State University

Brew, J.O. "Hopi Prehistory and History to 1850." *Handbook of North American Indians: Southwest,* Vol. 9. ed. Alphonso Ortiz (1979): Washington, D. C.:Smithsonian Institution, pp. 514-23.

Burgh, Robert F., and Scoggin, Charles R. "The Archaeology of Castle Park, Dinosaur National Monument." *University of Colorado Studies, Series in Anthropology* No.2 (1948): Boulder:

Coltrain, Joan B. "Fremont Foragers and Farmers: A Stable Carbon Isotope Study." Paper presented at the Twenty-Fourth Great Basin Anthropological Conference, Elko, Nevada, October 6-8, 1994.

"Stable And Radio-Isotope Evidence for Early Agriculture on the Northern Colorado Plateau: The Steinaker Gap Example." Paper presented at the Second Biennial Rocky Mountain Anthropological Conference, Steamboat Springs, Colorado, September 28-October 1, 1995.

Green, Jesse. *Zuni: Selected Writings of Frank Hamilton Cushing.* Lincoln: University of Nebraska Press, 1979.

Jennings, Jesse D. "Prehistory of Utah and the Eastern Great Basin." *University of Utah Anthropological Papers,* No. 98. Salt Lake City, 1978.

Kennard, Edward A. "Hopi Economy and Subsistence." *Handbook of North American Indians: Southwest,* Vol. 9, ed. Alphonso Ortiz (1979): Washington, D.C: Smithsonian Institution, pp 554-64.

Madsen, David B. "Exploring the Fremont." *Utah Museum of Natural History, University of Utah Occasional Papers* No. 8. Salt Lake City, 1989

Nabhan, Gary Paul. *Gathering the Desert.* Third Printing. The University of Arizona Press. Tucson, AZ, 1987.

Richens, Lane D. "Pithouses, Wickiups, and Corn: Prehistoric Settlement and Chronology of the Steinaker Basin." Paper presented at the Second Biennial Rocky Mountain Anthropological Conference, Steamboat Springs, CO, September 28-October 1, 1995.

Schaafsma, Polly. "Imagery and Magic: Petroglyphs at Comanche Gap, Galisteo Basin, New Mexico." *Archaeology, Art, and Anthropology.* (1992) 18:157-74.

Talbot, Richard K. "Steinaker Gap: Basketmaker Farmsteading on the Northern Colorado Plateau. " Paper presented at the Second Biennial Rocky Mountain Anthropological Conference, Steamboat Springs, Colorado, September 28-October 1, 1995.

Truesdale, James A. "Archaeological Investigations at Two Sites in Dinosaur National Monument: 42UN1724 and 5MF2645." *Selections from the Division of Cultural Resources* No. 4 (1993) Denver: Rocky Mountain Region, National Park Service.

Winter, Joseph C. "The Distribution and Development of Fremont Maize Agriculture: Some Preliminary Interpretations." *American Antiquity*, 38, No. 4 (1973).

Winter, Joseph C., and. Hogan, Patrick F. "Plant Husbandry in the Great Basin and Adjacent Colorado Plateau." *University of Utah Anthropological Papers*, No. 110 (1986): Salt Lake City.

Woodbury, Richard B., and Zubrow, Ezra B.W. "Agricultural Beginnings, 2000 B.C.-A.D. 500." *Handbook of North American Indians: Southwest*, Vol. 9, ed Alphonso Ortiz (1979): Washington, D.C: Smithsonian Institution, pp 43-60.

Tribal Identities in Petroglyphs of the Western United States

Carol Patterson

Tribal identities are often based upon what primary food substances were harvested and eaten most readily. Though many tribes of prehistoric indigenous people are put into general categories such as "hunter/gatherers" and "agriculturalists," there are distinctions within these generalities that distinguish one tribe from another. Many tribes use their food base as a means of identifying themselves as a culture. In today's society there are food groups that are associated with certain cultures, like those who eat primarily pasta, or beans and chili, or rice and fish, or fried chicken and mashed potatoes. What is preferred as a staple becomes a cultural identifier for a tribe or nationality.

Shoshone

For the Colorado Plateau, several linguistic groups were generally hunter/gatherers. The Paiute, Ute and Shoshone distinguished themselves by different food groups that were their staple food source. Figure 1 is a map of the nineteenth century territory. The labeled arrows show seasonal movement and acquired food resources. Modern reservations and major reservoirs are indicated in tone. Camas Creek is located in central Idaho. The Northern Paiute and Shoshone harvested the camas plants in Idaho particularly where the first panel is located. The petroglyphs found at this site date around A.D. 1100-1400 with archaic sites as well as historical panels mixed together. In this remote area, there are few trees, mostly rough and barren hills with scattered springs that create marshes and refuges for game and waterfowl. Camas Creek is named so perhaps for its abundance of camas growing along the creeks, springs, and hill sides. The blue, edible camas favors the low marsh land, while the white, poisonous plants prefer the dry hillsides. If not in bloom, it would seem difficult to determine one species from the other. The following petroglyph panels describe many aspects of harvesting and processing the camas plant. The plant itself is not depicted realistically, but instead is described in "words." The words create a unique image that, to a non-reader, is entirely unrecognizable.

From my rudimentary knowledge of sign language, I was able to identify many of the "words" in these panels. There is a high degree of repetition, showing the same symbol over and

over in variation and in a slightly different context to allow the reader to fully understand the meaning of the symbol. I was further convinced, a year later, by several other Indian people who were also able to recognize the "words" from their knowledge of sign language. The validation of the interpretation of these symbols comes also from the geographical context with beds of camas plants, the archaeological evidence of camps used over hundreds of years for harvesting camas and historical documentation of the tribes who frequented these sites to harvest camas.

Figure 2 is a panel describing the camas harvest.

Figure 3 is another explanation of the camas plant. Here it is described as something that grows, "the same" or repetitively over and over again (every year). Figure 3a is a graphic of this concept of "growing up."

Figure 4 is a panel that simply identifies the camas plant using the words "emerging out," which combines "leaves" and another symbol, "crossing over," according to Paiute idioms means to come to maturity. (Ibid.) Figure 4a is a graphic representation of this image.

The symbol breakdowns are given in Table 1 along with a contextual explanation for a few of the basic symbols discussed in this paper. The first column is the graphic found in the Shoshone camas petroglyph sites. The second column is a description of the symbol. The final column is the sign language basis for the symbols.

Figure 5 is a camas plant shown growing above a crack that represents the ground line. Below the ground is the bulb of the plant. The arced lines are wider apart in this panel and refer to "separate," a process involved in harvesting the camas. One must separate the leaves from the bulb before it is prepared for eating (Martineau conversation 1996).

Figure 6 is a panel that depicts a person with arms in the sign language gesture of "lifting out." The legs are in the gesture that shows "stepping up" from below the ground line (crack) to indicate that what the person is holding came from below the ground. The image in this panel is of a person lifting something wet and dripping from the earth. Figure 6a is a graphic depicting the body gestures and relationship to the crack.

In the marshy areas in front of these panels are fields of camas growing. All were in bloom, like pools of blue everywhere, ready for harvest. Figure 7 is a color photo of these fields of camas at the foot of these panels.

Table 1

Image	Explanation	Sign language equivalent
	Something that grows like a bulb below the ground. The ears are separated from the bulb.	sign language "separate" "ears, leaves" bulb below the ground
	Something that emerges out from the ground. It crosses over, or makes a transition from one form to another	Sign language: "emerge out" "cross over" "mature" "transform"
	Something that grows up from the ground. A person sits among them and with hands that get muddy, digs them up.	Sign language: "Growing up" "sitting among them" "muddy or bloody hand"
	Ground line is distinguished by the crack. Spatial positioning and rock incorporation help to clarify what the image represents.	Sign language: "emerge out and separate" "ears" "leaves"
	Ute panel north of Green River, Utah shows the "wild carrot" and the concept of tubers as well as layers of skins.	Sign language: "emerge out" "arms" & "feet" extensions "layers of skin"
	Two Ute panels have similar symbols that represent something emerging out of the horizontal ground.	Sign language: "emerge out" from the "ground"
	Two Ute panels have similar symbols that represent something "emerging out" and growing upward. The "leaf" on one side indicates a plant.	Sign language: "grow" "plant"

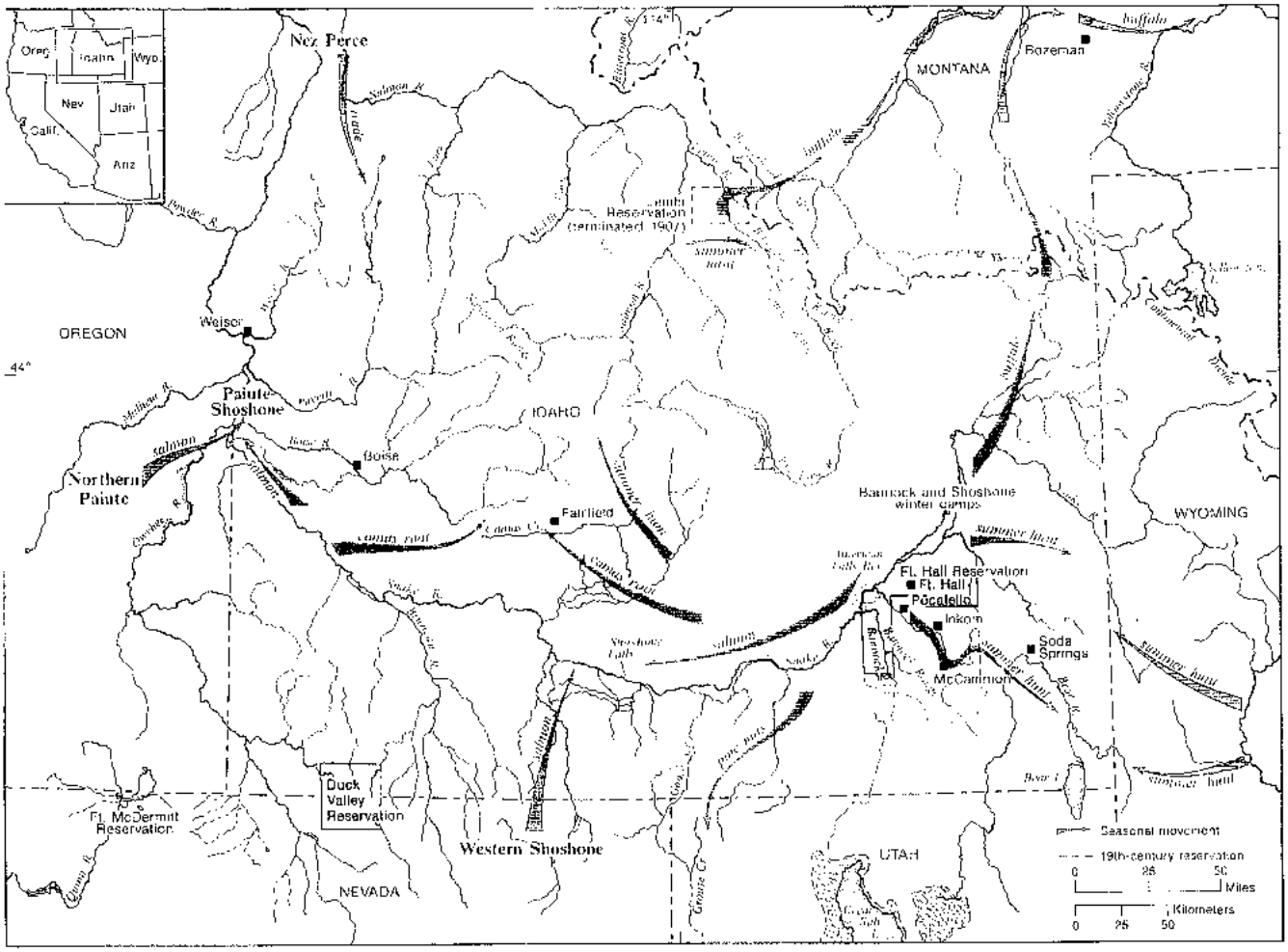


Figure 1. Nineteenth-century territory of the Western Shoshone showing seasonal movement for food resources.(after HNAI 1986:286)

Figure 2. Camus Creek harvest panel.

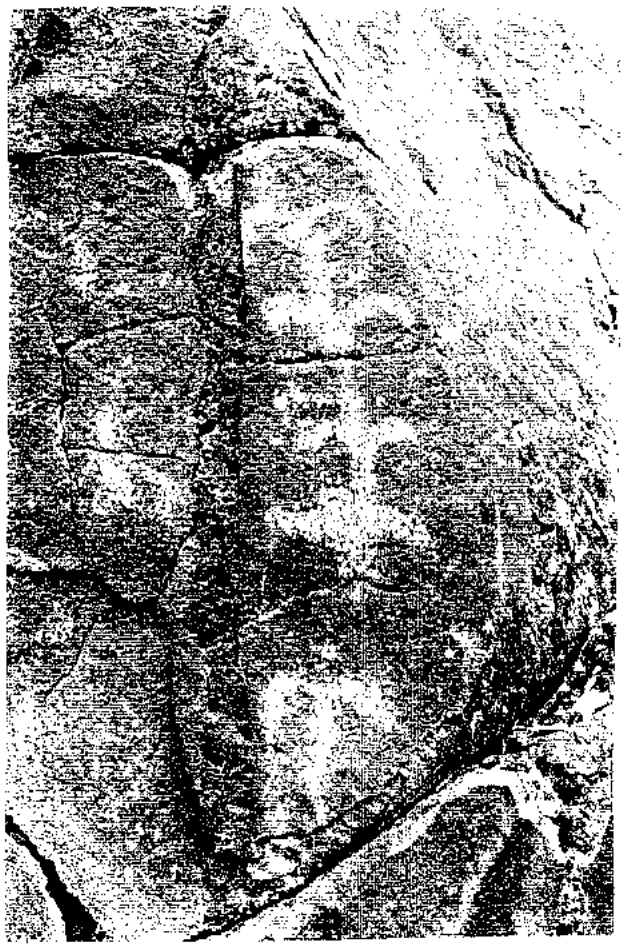


Figure 3. Camus plant growing back each year.

Ute

The Parusanuch and Yampa Utes originally occupied the river valleys of the White and Yampa Rivers and North Park and Middle Park in the mountains of northern Colorado, with their territories extending westward to eastern Utah. Under the 1868 treaty the Parusanuch and Yampa bands, then called the Yampa and Grand River Utes, came under the jurisdiction of an agency at Meeker, Colorado, called White River. These two northern Colorado bands later came to be known as the White River Utes. In the 1880 treaty council the White River Utes, who had participated in the Meeker Massacre, were forced to sell all their land in Colorado and were moved under armed escort to live on the Uinta Reservation (Callaway, Janetski, and Stewart 1986, 339).

The Utes developed a taste for buffalo and are identified with many of the cultural aspects associated with this food source. Ute petroglyph panels that date from the late 1700s into the mid-1800s depict Ute horsemen and buffalo. Each Ute band was named after something characteristic of the landscape or identified a particular plant that they liked to eat. Among the Ute names are *Kumoo 'tuhkuts*, Rabbit Eaters; the *Pawguh 'utuhkuts*, Fish Eaters; and the *Yumparika*, of White River are the Wild Caraway Eaters. The *Yumparika* are said to have originally lived in eastern Utah in the Green River area and up in through Nine-Mile Canyon, northeast of Price. They favored the White River areas for hunting in the summer and were eventually settled there permanently on the reservation by the American government. Figure 8 is a map showing the range and migrations of the Utes at the time of contact.

The Utes at the time of contact inhabited the greater area of Utah and western Colorado. Figure 9 is a petroglyph from a site north of Green River. Figure 10 is a detail of the central image that depicts something that has several layers of skin and "emerges" out of the ground. It has multiple extensions as well as "feet." These are characteristics of the tubers harvested by the Utes. The panel also depicts a buffalo that was hunted by the Utes and appears in many Ute panels. (See Table 1.)

Figure 11 is Warrior Ridge in Nine-Mile Canyon. These panels identify the Utes of the White River bands, *Parusanuch* and *Yampa*, Wild Carrot Eaters. These bands claim the White River area and now reside near Meeker, Colorado. The symbol for "emerge out" is again used to describe a plant that grows out of the ground and has a bulb at the bottom. Figure 12 is the image

Figure 3a. Graphic of the camus plant conveying the idea of repeating growth year after year.

Figure 4a. Graphic of a camus plant using the "emerging out" symbol. "Ears" represent leaves, and cross bar represents "crossing over to maturity."

Figure 6a. Graphic of a figure holding something wet. One foot is below the crack, the other is steping up.

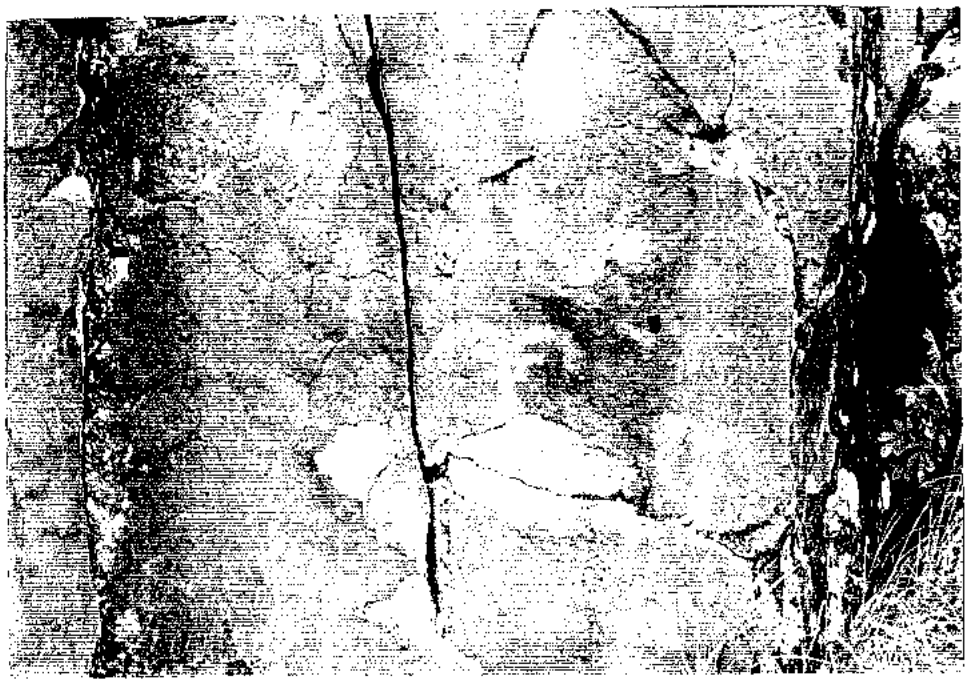


Figure 4. A camus plant described by the "emerging out" symbol.

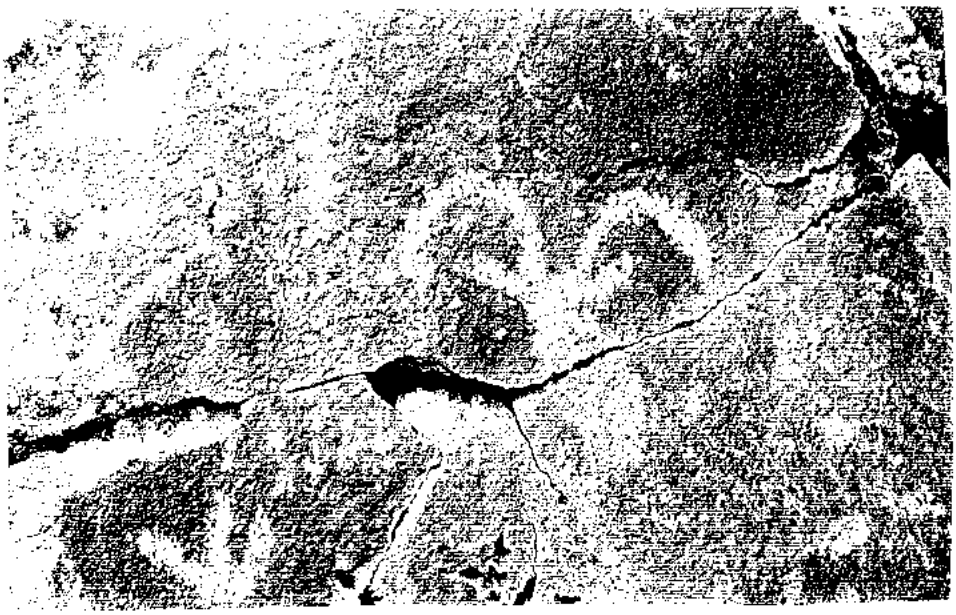


Figure 5. Camus plant with the bulb "underground". The crack is utilized in this panel to indicate the ground line, and the lightly pecked "bulb" is drawn below the crack.

Figure 6. Is an image of a person carrying something wet and dripping

Figure 7. Camus plant in bloom.

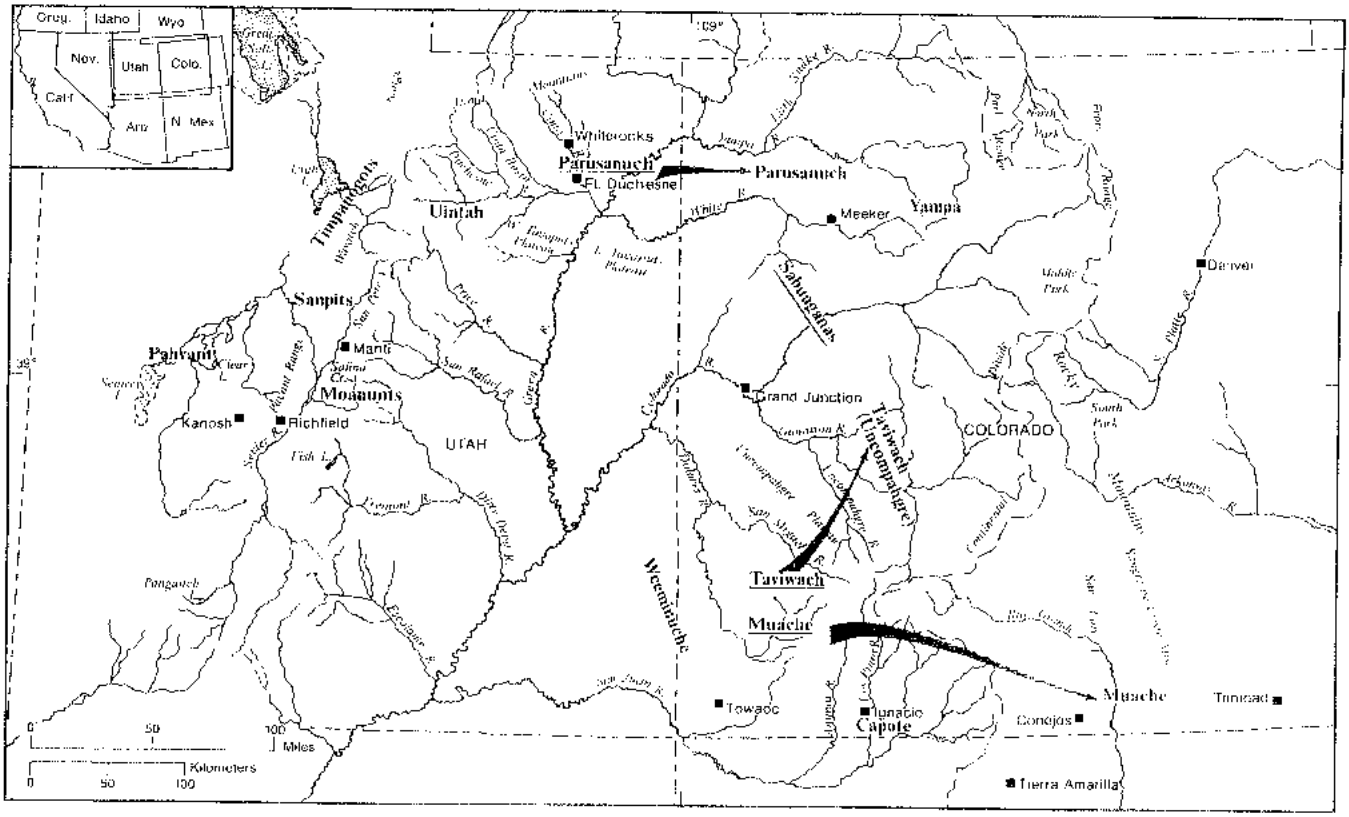


Figure 8. Ute bands in the 18th century locations. (HNAI 1986:337)

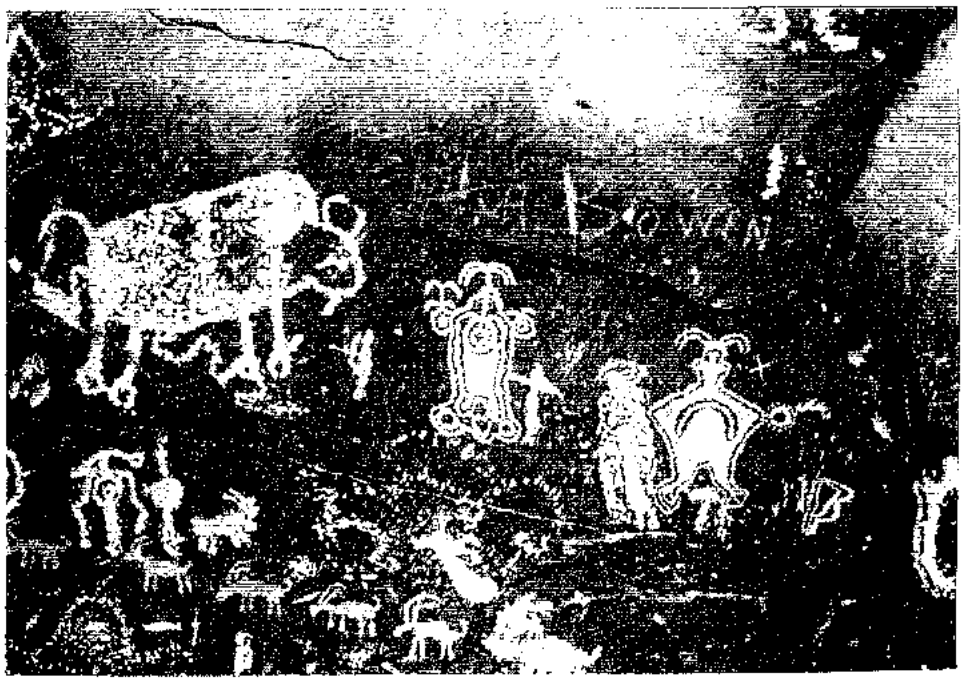


Figure 9. Ute panel from a site north of Green River, Utah

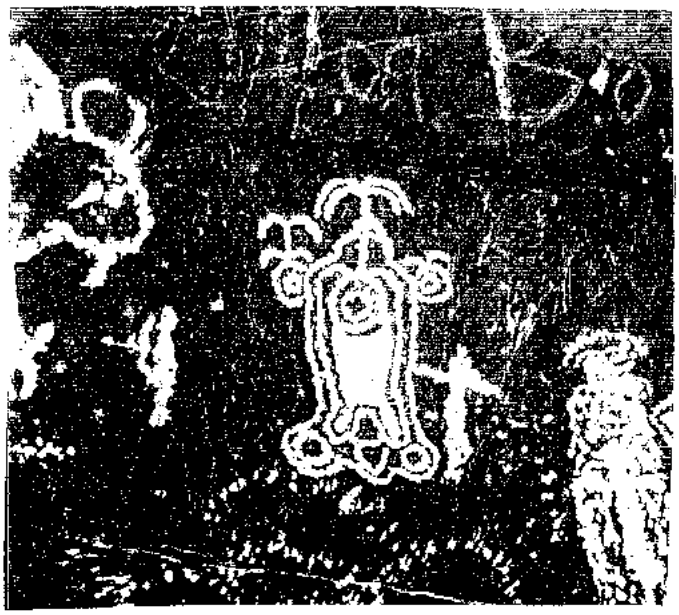


Figure 10. Close up of central image in Ute panel.

of a plant and human with arms and a head that indicates the tuber may be a name for the "people." The panel also shows a shield figure of a Ute surrounded by enemies of another tribe with shields.

Figure 13 is the wild carrot depicted in these panels, *Cymopterus acaulis* and *Cymopterus montanus* of the Colorado Plateau. *Perideridia gairdneri*, Yampa was known to be a favorite tuber of the Eastern Ute, eaten raw, baked in earth ovens and dried, ground on a metate, and stored in buckskin bags. *Cymopterus spp.*, biscuit root was eaten raw in spring but peeled, boiled, baked or roasted and ground in summer.

The transition to the horse culture is evident from the petroglyphs found in the Book Cliffs, and these Ute panels depict historical events as well as containing signatures of their tribal identity. Figure 14 and Figure 15 are Ute panels that make reference to their tribal identity with the "emerge out" plant symbol placed on or inside the horses. Figure 16 and Figure 17 also contain the wild carrot symbol. (See Table 1.)

Plains

The Plains tribes east of the Rocky Mountains hunted buffalo as well, calling them and driving them off cliffs as part of their livelihood. This panel at Hickland depicts the Buffalo Cult, describing a buffalo jump and prayers to the great spirit to bring back the buffalo. Figure 18 is a panel found in Hickland Springs, along the Purgatoire River in southeastern Colorado. It dates around 1600-1800 A.D. Figure 18a is a graphic representation with the following explanation:

The large figure in this panel (a) is depicted with the hand gesture for "calling" or "doing." In context with the buffalo, this refers to "calling" the Buffalo. This figure is found in several areas associated with buffalo jumps in southeast Colorado. The buffalo with the arrow going inside (b) to the heart is symbolic of asking or praying that the arrows of the People find the heart of the Buffalo. But this buffalo is backing off. The front feet are braced forward in a gesture to indicate reluctance to come to the People.

A second figure (c) has been pecked over the leg of the large figure. Both arms are raised and the penis is exaggerated, representing fertility. Underneath is a water symbol to convey the idea of fertility of the land, "rain that brings the grass will bring the buffalo."

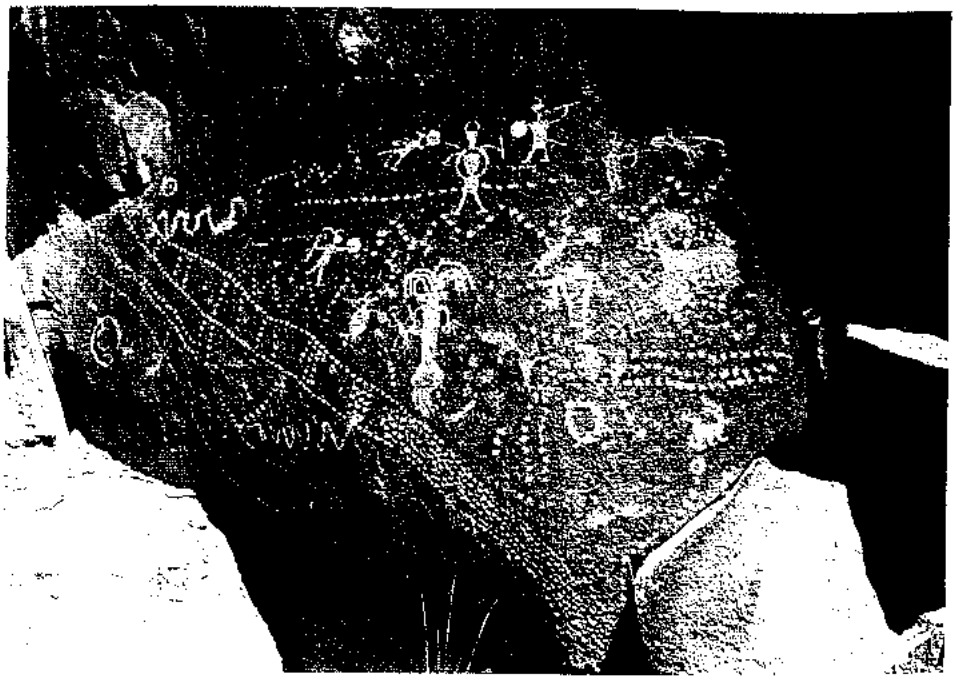
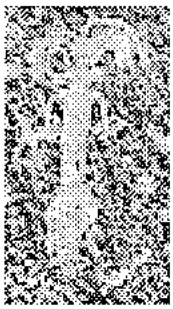


Figure 11. Carrot/human figure in a Ute panel on Warrior Ridge, in 9 Mile Canyon northeast of Price, Utah.

Figure 12. Closeup of carrot/human figure in Ute panel on Warrior Ridge.



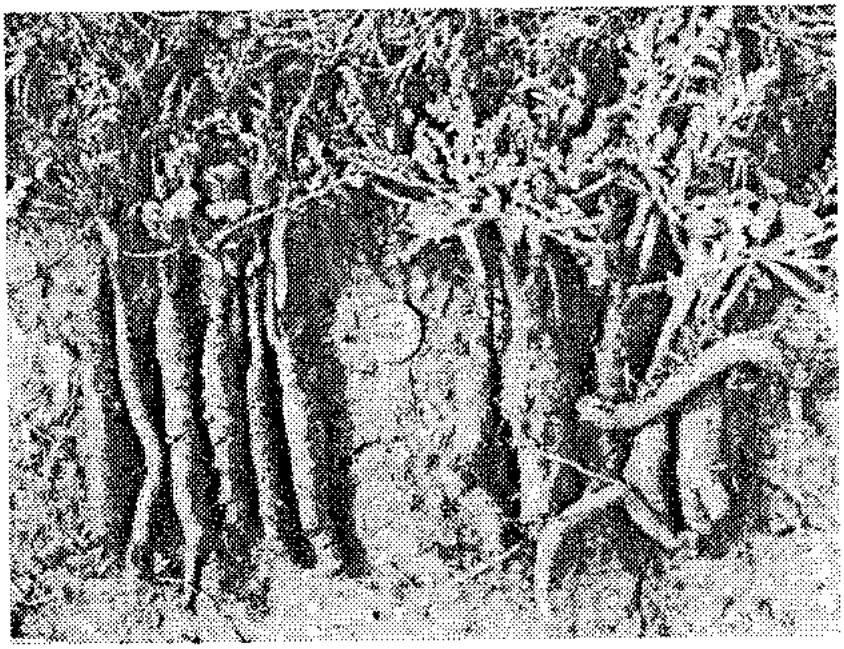


Figure 13. Photograph of the wild carrot.

Figure 14. Ute panel from the Willow Creek, Book Cliffs area of Utah, showing the "emerge out" symbol that refers to the wild carrot.

Figure 15. Ute panel from the Willow Creek area of the Book Cliffs, showing the "emerge out symbol that refers to the wild carrot..

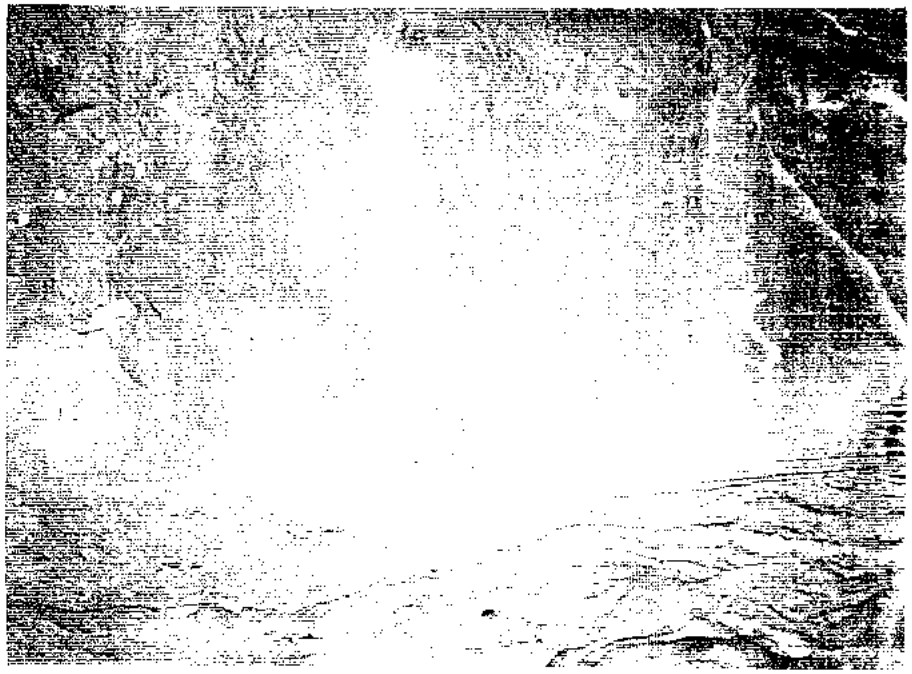


Figure 16. Wild carrot symbol on Ute panels in Willow Creek, Book Cliffs, Utah.

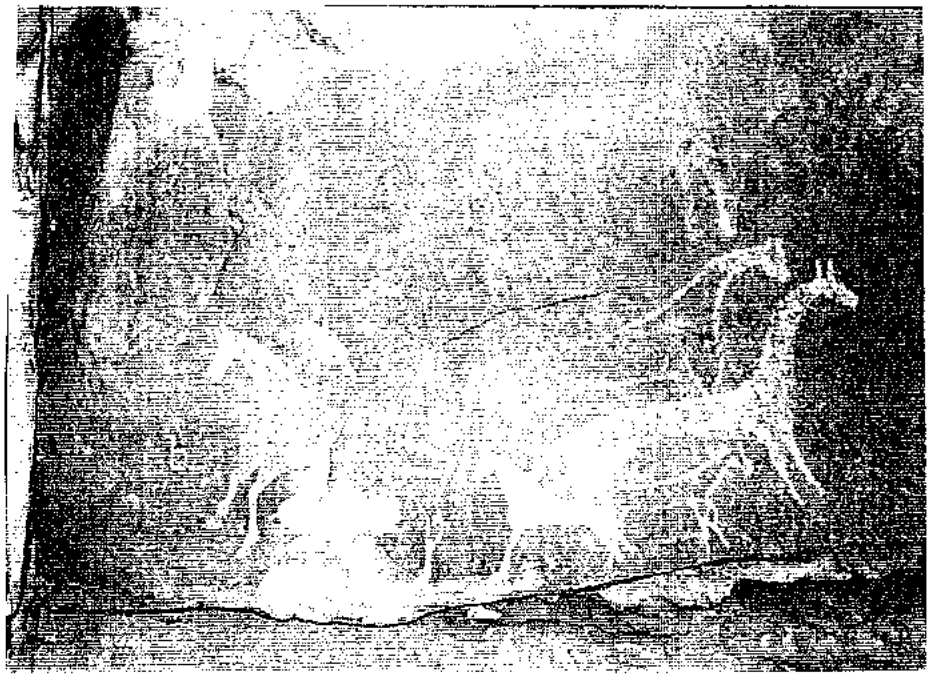


Figure 17., Wild carrot symbol on Ute panels in Willow Creek, Book Cliffs, Utah.

Figure 18. Farrington Springs, Colorado depicting a buffalo drive over a jump.

Figure 18a. Farrington Springs, Purgatoire River, SE Colorado. 1600-1800 A.D. Plains Indian Buffalo Jump.

Figure 19. San Cristobal, New Mexico, showing corn planting and corn growing.

The small horned anthropomorph on the right (d) is connected with a line to the back of a buffalo. This indicates that the "strength" of the people is "carried" on the buffalo. They depend upon the buffalo for strength and prosperity. They are "People of the Buffalo."

On the left side a buffalo (e) is standing on a curved line that represents a "high hill." At the bottom of the hill is a combination of a diagonal line and up-and-down line (f). The diagonal line means to "get up" or "depart," and the up-and-down line represents "rough" or "difficult," commonly used to describe canyons. These two lines incorporated together convey the idea of "difficulty getting up." Combined with the "high hill" it describes a Buffalo Jump. The buffalo are broken by jumping over the edge.

The panel contains many upraised arms and hands (g). These upraised arms refer to many people hiding in the brush along the route to the jump. By suddenly raising their arms, they scare the buffalo enough to stampede over the jump.

Pueblo

The Pueblo people in the Southwest were known as Corn Eaters, and distinguished themselves from other tribes by their agricultural produce. The following two petroglyph panels from San Cristobal Pueblo, New Mexico, date around 1600-1700 A.D. Figure 19 shows corn planting and the growth of corn from mounds of earth. It simply shows the relationship between planting and producing life-sustaining corn. Figure 20 is a corn shrine, showing the corn incorporated with a natural water basin.

Conclusion

The panels discussed in this paper are just a few examples of food that carry a social and cultural significance that binds the people together in a single identity. These people "are what they eat." It is a simple way of identifying by display what food staple is most important to them. Along with survival from these sources of food comes ritual and ceremonies that accompany food procurement either in planting and harvesting, or hunting and gathering. Cultures are made up of people working together who collectively produce enough food to survive. These food-gathering habits tie them together as a family, band or tribe, and become their cultural identifiers that are displayed visually in the petroglyph panels.

References

Handbook of North American Indians, Great Basin, Vol. 11. Washington: Smithsonian Institution, 1986.

Callaway, Donald G., Janetski, Joel C., and Stewart, Omer C. Ute.

Murphy, Robert F. and Murphy, Yolanda. Northern Shoshone and Bannock.

Martineau, LaVan. *The Southern Paiutes, Legends, Lore, Language and Lineage*. Las Vegas: KC Publications, 1992.

Trenholm, Virginia Cole and Carley, Maurine. *The Shoshones, Sentinels of the Rockies*. Norman: University of Oklahoma Press, 1964.

Figure 20. San Cristobal, New Mexico, Corn shrine depicting the corn plant and water catch basin.

Sound Within Rock Art

Janet Lever

This paper came together after a series of experiences in the field and at the kitchen table. Through recording rock art and redrawing the tracings, I have noticed, when tapping with a pen, marking each peck, a rhythm is created, and after working a few hours, a trance state occurred. I observed at another site in southeast Colorado, while measuring and counting ground-stone surfaces, that a bedrock mortar had been deftly transformed into a zoomorph. It occurred to me that here was a place where ritual and art intersected. I started looking at other ground-stone sites; these rock surfaces were abraded, incised, pecked, drilled, deeply ground, and painted. There was something beyond food processing going on here! (1) (2)

David Lewis-Williams, in an essay called "Rock Art and Ritual" suggests that rituals involving altered states of consciousness were implicated in a series of four stages in the production and consumption of rock art:

1. The acquisition of some of the art's subject matter (as in a vision quest).
2. The making of paint (3).
3. The painting or pecking of the images themselves.
4. The use of the paintings or petroglyphs once made.

Rock art sites have a certain energy within and around them. How often have we seen hand prints from a later culture "relating to" earlier images? The negative and extreme response to this is in bullet holes and spray paint—offensive and discordant! I was recently reminded of the acoustic properties of these sites; echoes are easily created, and silence and sound seem acute.

Excerpt from A Natural History of the Senses:

> When we sing, not only do our vocal cords vibrate, but so do some of our bones . . . our pupils dilate and our endorphin levels rise; music engages the whole body and there is a healing power to it.

Walking through the cave of Tuc d'Audobert, we noticed broken stalactites

(4A)—appropriate percussion instruments. Silence is powerful within the

caves; singing resonates within rounded chambers. I know; I dared to sing. As toolmakers we were busy striking, rubbing, scraping, shaking, swinging, making noise. From rhythmic sound to sacred dance, there was a natural progression. Man created accompaniment with clapping hands and implements of wood, bone, skin and stone. (4B)

What we call sound is really an onrushing, cresting and withdrawing wave of air molecules that begins with the movement of any object, however large or small, and ripples out in all directions . . . waves of sound roll like tides to our ears, where they make the eardrum vibrate; this in turn moves three colorfully named bones (hammer, anvil, stirrup). The three bones press fluid in the inner ear against membranes that brush tiny hairs, trigger nearby nerve cells, and telegraph messages to the brain: WE HEAR!

(Ackerman 1990)

Here are some images of what I suggest are heightened awareness to sound and vibration (5).

For nine months we live in the womb, listening to the orchestra of our mother, entrained with her. Then we are born and the first thing that happens is a massive dose of rhythm. Our lungs begin pumping, our heart beat settles into its steady pulse; our senses begin scanning; vibrations rush in our eyes and ears, up the nose, into the mouth, pulsing against the newborn skin.

(Hart 1990) (6)

After a mind-altering evening of listening to Bela Bartok, I came up with these thoughts: If music and rhythm are about time, and visual images are about timelessness, then what happens at the confluence of the two constructs? What ritual connects the heartbeat and the footstep with the planetary rhythms and the greater powers? We experience solar, lunar, and circadian cycles. All biological functioning is affected by light and dark. Our nervous system synchronizes our

internal machinery to the patterns and currents of our world. Despite all our power and progress, we are still part of nature. I propose that the creation of rock art is such a ritual, connecting man to the worlds of nature and spirit. (7)

Returning to the landscape we are familiar with here in the Southwest, what sounds do you associate with your experience at rock art sites? Is it the silence of rock, the sound of falling water, a rattlesnake warning, a deer passing, the rustling leaves, a chorus of voices from the stone, and, of course, that flute player? We need to listen.

Shamans are drummers, rhythmists, and trance-masters who have understood something fundamental about the nature of the drum. A shaman sings the songs that alert his spirit allies. His trance deepens until the soul slips out of this body and flies across the world to the tree that stands at the center of the universe. Then he begins to climb into the branches; his destination is the heavens or down to the roots, the underworld. The songs and dances of the shaman imitate animal allies that the shaman commands.

"This I think is the drum's function. It sets up a ripple in time, ensuring that the shaman can find his way back from timelessness" (Hart 1990). (9)

The danger to the shaman who has ridden the drum out of his body is not so much being lost in space as being lost in time. In a sense, the drum functions as an extension of the heart that is beating in the shaman's empty body, back here in human time.

I think these images in certain rock art are about time and timelessness. Petroglyphs on stone do not move! They interact with the rock surface and are slowly weathering back to the original rock. It is difficult not to think of stories, rituals and prayers made by the creators of these stone canvases. We are still trying to mediate our particular voice with the greater silence that surrounds the living world. (10)

So now with a little humor and some dear rock-art voices, I would like to visit some landscapes, some sound-scapes. (11)

DRUM by Linda Hogan
Inside the dark human waters
of our mothers
inside the blue drum of skin

that beats the slow song of our tribes
we knew the drifts of continents
and moving tides.

We are the people who left water
to enter a dry world.
We have survived soldiers and drought,
survived hunger
and living
inside the unmapped terrain
of loneliness.
That is why we have thirst.
It is why
when we love
we remember our lives in water,
that other lives fall through us
like fishing swimming in an endless sea,
that we are walking another way
than time,
to new life, backward
to deliver ourselves to rain and river,
this water
that will become other water
this blood that will become other blood
and is the oldest place
the deepest world
the skin of water
that knows the drum before a hand meets it.

References

Ackerman, Diane. *A Natural History of the Senses.* 1990.

Hart, Mickey. *Drumming at the Edge of Magic.* 1990.

Hogan, Linda. *The Book of Medicines.* 1993.

Lewis-Williams, J. David. *Rock Art and Ritual: South Africa and Beyond.* 1994.

Petroglyphs and Pictographs of the Rio Grand: Time, Space and Culture

Dudley King

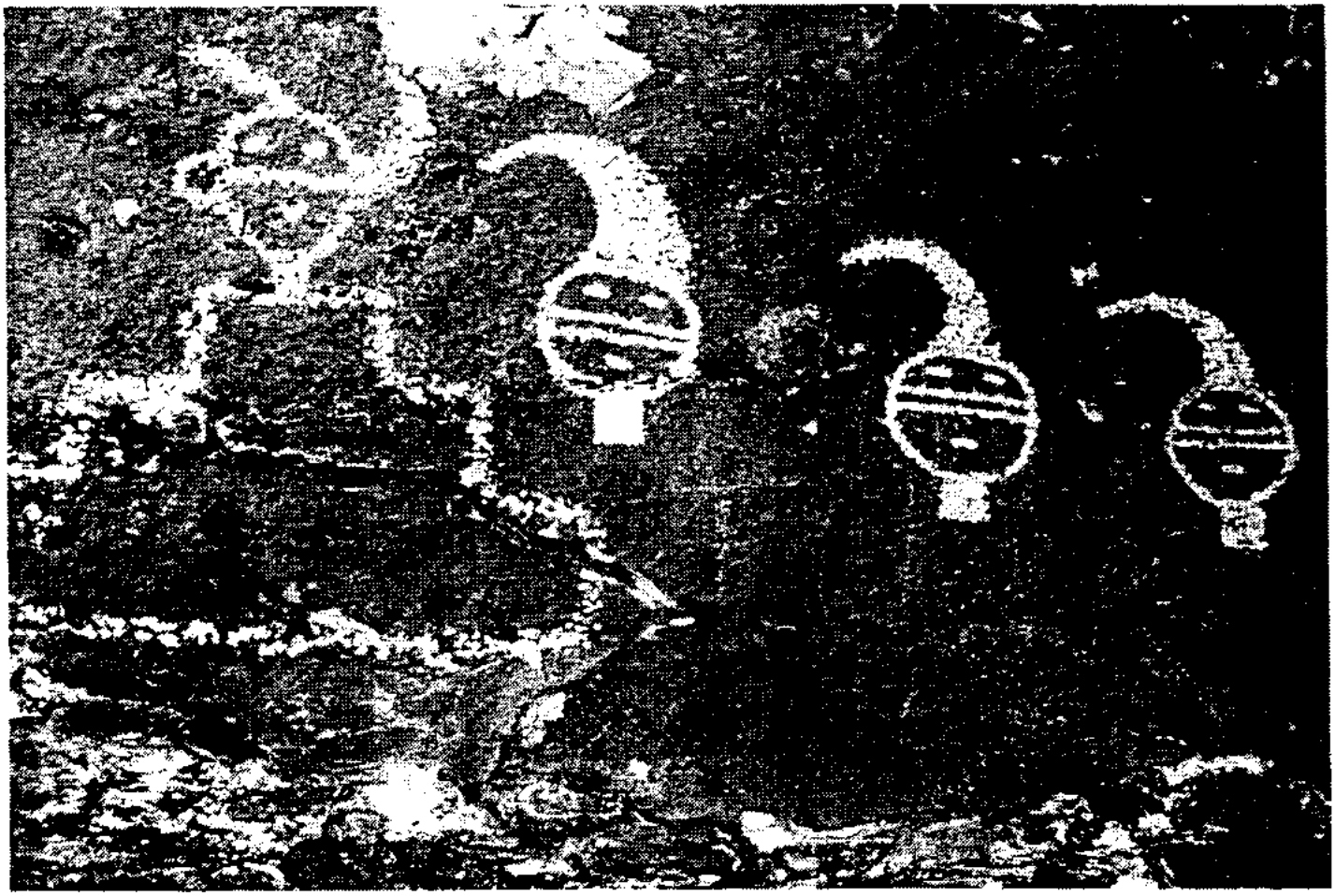
Pictographs (paintings) and petroglyphs (engravings) are found on rock formations in many places within 100 miles of Albuquerque. I began photographing at some of these sites more than twenty-five years ago. Most of my pictures are of images made by Pueblo Indian people during the Pueblo IV period (c. 1300-1600), a time of great population expansion. Many refer to spiritual beliefs that remain a foundation for modern Pueblo societies that honor the images and may hold sacred the places where they were made, no matter current land ownership.

The configuration of these images within the natural environment suggest that site and image were conceived as unified and that together they express the interconnectedness of humans and nature. Even the passage of time, as witnessed by the inexorable destruction through natural means of all physical things, is part of the story. Because they were made within nature, the art is subject to natural processes of decay. The art is also of nature—changing minute-by-minute as clouds and sun move across the sky, with the seasons as the sun moves north or south, and over decades and centuries as rain, ice, humidity, lightning, mosses, and lichen eat at the rocks themselves.

The art tells of the Pueblo world and also about time, space, and the dynamics of the natural world. To experience it in its natural settings is to share with long-ago artists their knowledge, and to feel for those dynamics and their certainty that decay is the way of nature.

The people who made the images, knowing that their pictures must eventually disappear, sometimes speeded the process by making new drawings directly over the old ones, incorporating the past into their present. Wanton destruction in ancient times was unusual. However, vandalism has occurred in this century destroying these relics of the past. The responsibility lies with each of us to police and educate others.

The photographs do much more than record pictures on rocks; they are straightforward, sensitive, evocative representations that show the interconnections between past and present—them and us—space and time—culture and nature.



1) A group of images and emblems.

2) Animated human figure wearing feathered headdresses.

3) Horned heads or masks and "cloud terrace"

4) Long-beaked bird, human foot, serpent, etc. on basalt lava flow at Petroglyph National Monument

The Roaming Gentle Giants

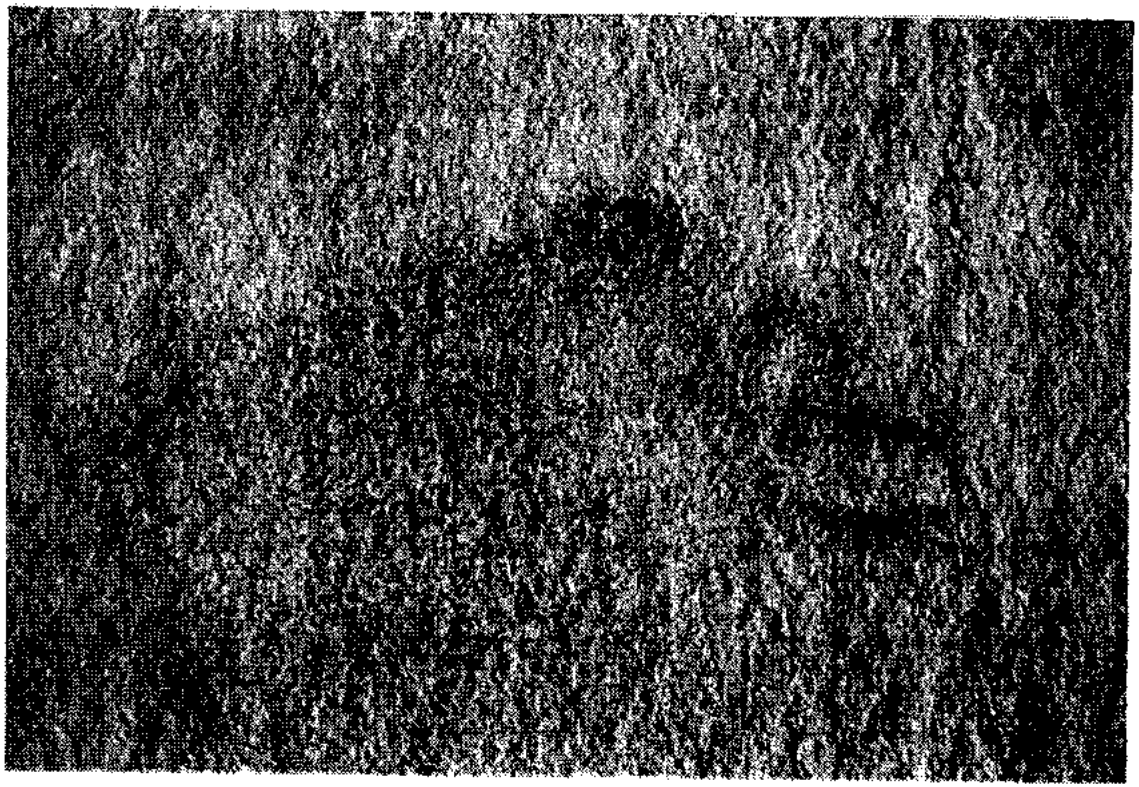
John I. Henry

Tracing the wanderings of the mammoth brought me from what is now the African Continent, through Europe, Siberia, Canada, and North America; their descendants made it all the way to South America. The following is a brief synopsis of some of my research findings and beliefs. Let it be known that I am only an amateur researcher.

The domed skull of the woolly mammoth (mammuthus primigenius) found on cave paintings at Font-De-Guame, France, closely parallels rock art in Ferron Canyon, Utah, and what appears to be a Jeffersonian mammoth. Pictorial comparisons of cranial and other anatomical features were based on the excellent rock art photography of Mr. Ron Lee in the southwestern U.S., cave paintings in the Franco-Castilian region of Europe (Magdalenian era), and bone incision 3-D art from Siberia recorded by Paleolithic artisans. Whether the former is the progenitor of the latter is a debate I will leave to the experts.

I substantiate this claim based on osteopathic findings and point out several examples of mammoth remains found in the state of Utah including the findings of Dr. George Hansen, formerly of Brigham Young University. Although most of the orthopedic remains are disarticulated and damaged by construction crews or water erosion in low-level strata, they can be positively identified by experts in the field.

What I didn't get a chance to cover in my treatise is the woolly rhino, also apparently reflected in the rock art of Ferron Canyon, Utah. Similarities are also seen from Font-De-Guame, France. This creature, as featured in Utah, is hardly a buffalo since the bifurcated horns (anterior being longer and posterior being shorter) protrude face out, as opposed to lateral protrusion found on modern buffalo.

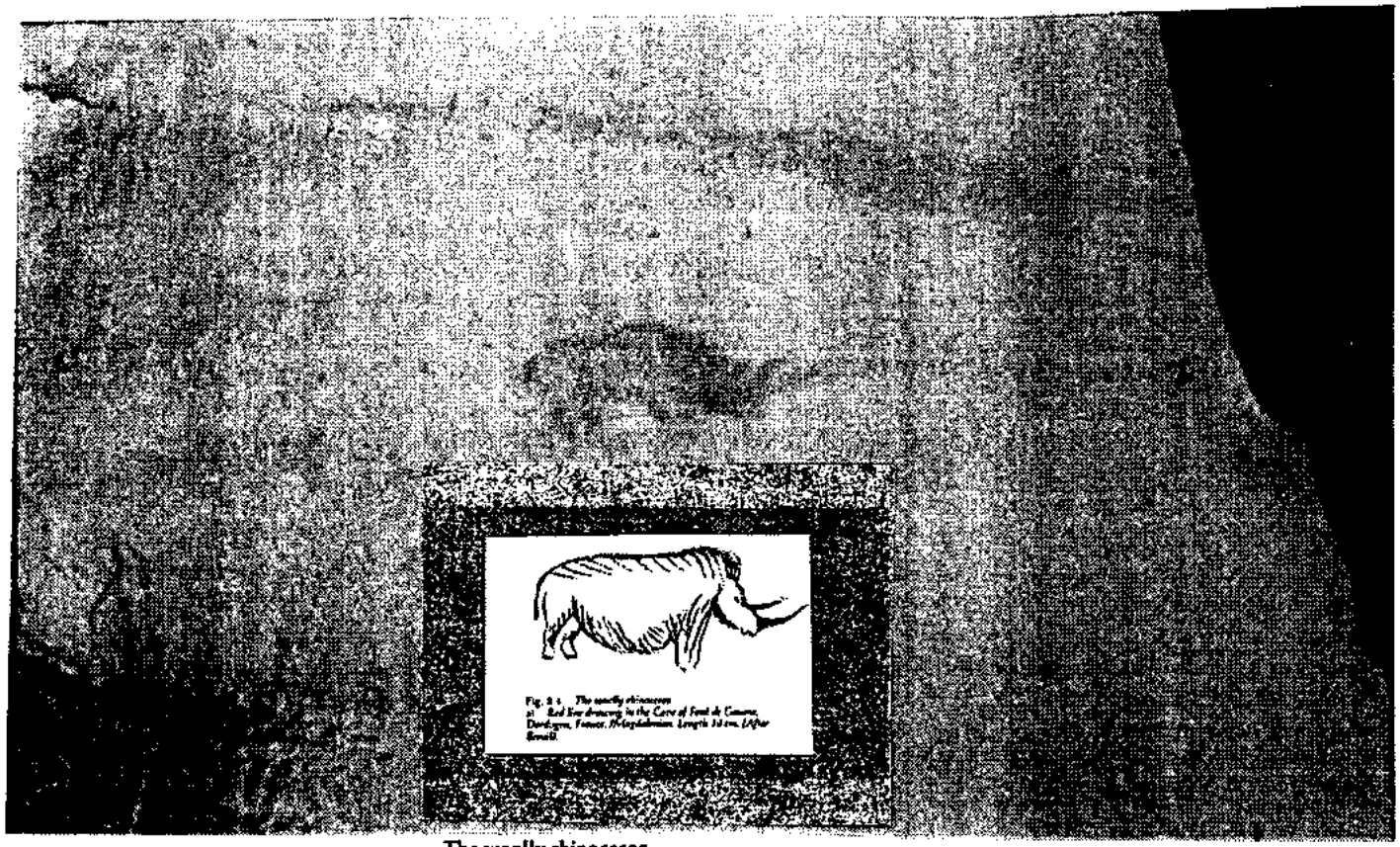


SUPPOSED MAMMOTH MONOCHROME FERRON CANYON, UTAH

The woolly mammoth

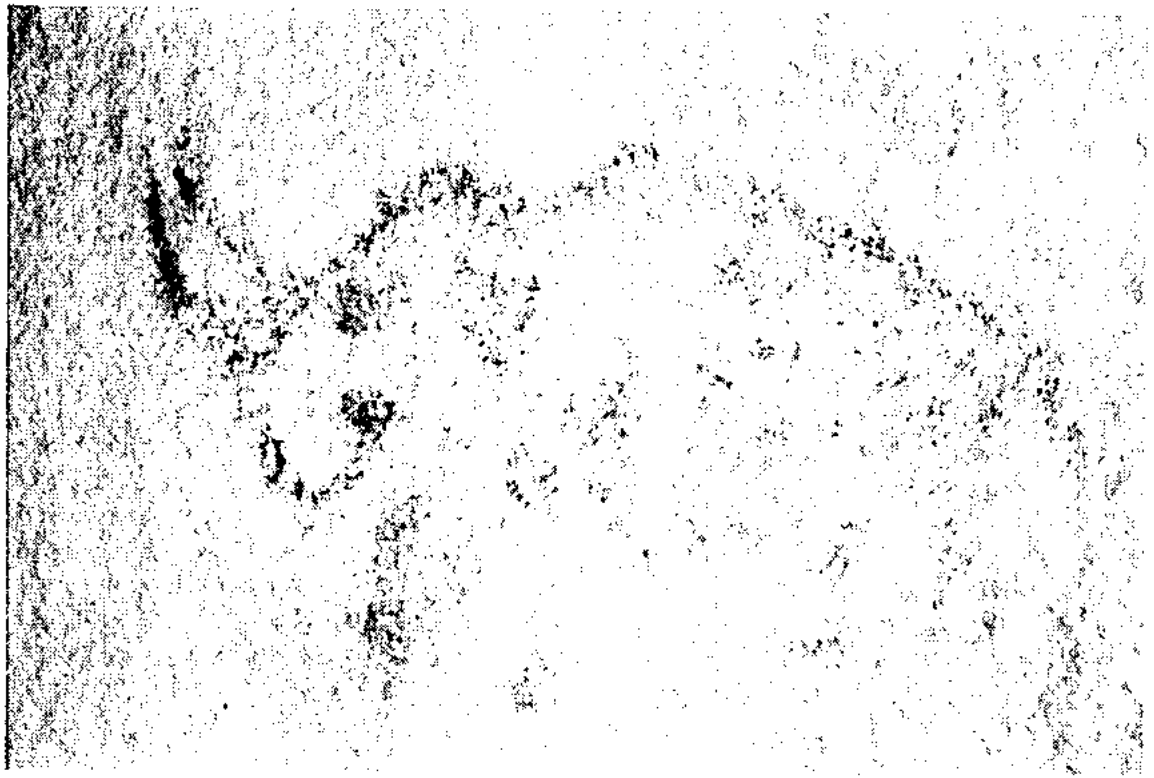
b) *Painted in red ochre on the wall of Kapovaya Cave, Southern Ural Mountains, USSR.*

FERRON CANYON UTAH



The woolly rhinoceros

Although depictions of the woolly rhinoceros are less numerous than those of the woolly mammoth, the appearance of the animal was nevertheless very clearly recorded by the Palaeolithic artists. Its most striking features were a remarkable shoulder hump and, when at rest, a steeply sloping neck and a downward inclined head. At first sight this posture seems unlikely, but it was recorded frequently by different artists and the downward inclination of the head is also substantiated by skeletal evidence and is in keeping with the inferred habit of this animal as a grazer. Some of the illustrations show hairiness of greater or lesser magnitude, especially along the lower jaw, around the back of the head and along the belly. The two horns, of which the anterior one was generally the longer, varied greatly in shape and direction, as in some living



RESEMBLING JEFFERSONIAN MAMMOTH FERRON CANYON UTAH

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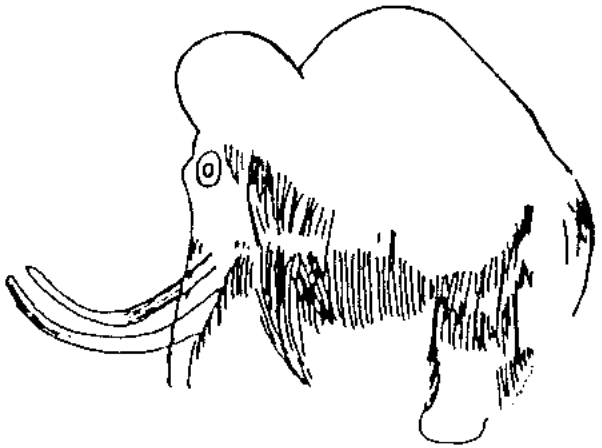
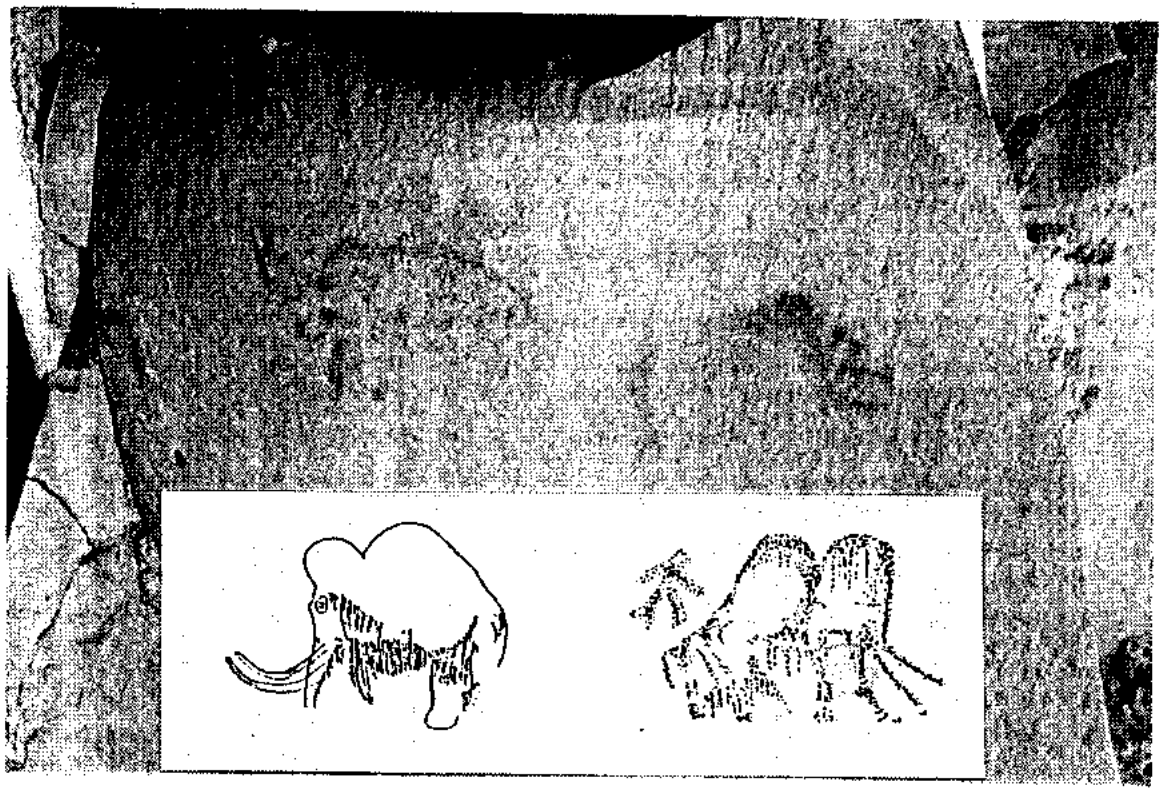


MAMMUTHUS PRIMIGENIUS FONT-DE-GUAMES FRANCE

UPPER PLEISTOCENE



MONOCHROME PICTOGRAM

SHOWING PANORAMIC FULL VIEW OF THEORIZED MAMMOTHS BACK TO BACK
FERRON CANYON UTAH

COMPARE BOTTOM SUPERIMPOSED INSET OF WOLLY MAMMOTHS FONT-DE GUAMES FRANCE ON LEFT AND KAPOVAYA CAVE USSR. ON RIGHT URAL MTNS.

The question is, How authentic are these rock paintings in Utah? Also, are they the only ancient representations of the mammoth in the Americas? The former question I will once again leave to the savants of paleontology. The latter answer is no. Pictorial representations of mammoths were carved on a whelk shell in the vicinity of the Delaware Water Basin, and documented by the Smithsonian Museum, Washington, D. C. and featured in the *Journal of Science*.

My next logical rhetorical question was, Have extinct rhinos ever been found within the geographical borders of the U.S? The answer was an emphatic yes! They have been found from southern Florida to Nebraska, and beyond to the western provinces of Canada. However, the comparison of outward physical and anatomical features, such as tubercles and skin folds, is rendered impossible solely utilizing fossil remains.

Study of old-world woolly rhino remains presents another problem since no known woolly rhino carcasses have been found to date (to the best of my knowledge) in the continental U.S. Perhaps some day a well-preserved carcass will be found in the ice of what is now Alaska just as they have been uncovered in the frozen tundra of Siberia. This would vindicate my theory that woolly rhinos shadowed the myriad migrations of the woolly mammoths.

Medical Anthropology and Evidences in Rock Art

Sadiq and Sarah Al-Tamimi

The presence of people who cure the ill represents a major part of any society for one simple reason: human beings are exposed to macro- and micro-organisms. These organisms represent serious challenges for the continuity of Homo sapiens.

My experience in the medical field in one way or another encouraged me to shed light on the medical aspect of Indian society. Through my part of this paper, I will give a little background about the medicine man, called a shaman in Indian society.

I would like to make it clear at the beginning that how Indians perceived and practiced medicine in the old world, and the way we dealt with disease before germ theory was established by Louis Pasteur are not that different. For Indians, medicine represented a sum of ideas and concepts. Medicine, according to Indians, was a mystery mastered by those people who were born with special talents and privileges, or those who gained it later in life if nature chose them.

Doctors in the old world society were different. The shaman's role expanded beyond the scope of healing, and included helping in cases of disaster, irregularity in the weather, and assuming a political role during military or civic crises.

The personality of a shaman is characterized by the following traits: 1) superior in relation to the society; 2) strong in body and dedicated in mind; 3) self-controlled; 4) capable of mental effort beyond that of most people in the society; 5) possessed a complex vocabulary of terms beyond that of lay people.

In spite of all we mentioned above, shamen were viewed by the society in a controversial way: shamen have been respected for their knowledge and power, but feared for their intimacy with the spirits. They were frequently hated for their avarice, but often rewarded lavishly for their success in prognostication and healing. Nevertheless, shamen were exposed to punishment for failures and in some cultures, even killed. Consequently, a shaman developed a keen sense for diagnosis which gave him the choice to refuse to treat a patient whose recovery was uncertain.

There were several ways to become a shaman. For example, the call to become a shaman might have come as an inner-voice from the spirit world; if the voice is unanswered, it can take a visible form. Another way it might have come is through an animal, plant, or natural object and this usually came in earlier life. For older people, the call came during a great misfortune, such as loss of family, property, or after a protracted illness. From this we see there was no specific age to become a shaman.

To finish the picture of the process of becoming a shaman, it is necessary to shed more light on this process. At the beginning of the call, the prospective shaman may feel ill, behave strangely, and refuse to eat. (Shamanism in different tribes begins and progresses differently.) Some shamen are called by supernatural power, but shamanism can also be taught and carried from one generation to another. For example, the Yakut shaman is taught by another shaman who takes his pupil to a mountain or forest. There, he dresses him in shaman's garments, gives him a rattle, and demands that the novice give up all that he likes and consecrate himself to the service of the spirits. Then the young man must kill a sacrificial animal and sprinkle himself with its blood. The flesh is eaten by those who are present at the ceremony.

Like any other medicine man in other societies, a shaman had special equipment. Shamen were equipped with paraphernalia which might have included special costumes made of animal skin. A medicine man's bundle contained charms, fetishes, the medicine stick which was used for offerings, warnings, or invitations, and some bags of herbs. The medicine man might also have a drum, rattle, and sacrificial instrument which was often made of flint, obsidian, or snake fangs, and a hollow bone for sucking, a mortar and pestle for mixing medicine, and in many places a syringe for injecting medicine into wounds or administering an enema.

Treatment

Before we talk about treatment, let us first take a look at how Indians perceived the causes of diseases. According to Indians, there are three causes of disease: 1) human agency; 2) supernatural agency; 3) natural causes. Supernatural agency comprises five divisions: 1) sorcery, 2) taboo violation, 3) disease-object intrusion where a material being such as a worm, snake, insect, or small animal enters the body. (These objects can be eliminated from the

body by drumming and singing, sucking, and by putting the patient in a place where the invader is uncomfortable.) 4) spirit intrusion, and 5) soul loss. These five causes are not equally important. Another cause is unfulfilled dreams or desire. Also, among the supernatural causes of disease were mistreatment of animals, disrespect of fire, and hunting animals without asking for permission, or offering tobacco for their spirits.

Medicine men used two types of therapeutic methods: treatment with medication and treatment without medication. Medications involved so many drugs that I will mention only a few. In anesthetics, while white people did not discover the properties of cocaine until 1884, the Indians used coca leaves as a stimulant. It is highly probable that coca was used as an anesthetic in trephination, skull surgery. Many other drugs were used such as narcotics, stimulants, birth controls, astringents, cathartics, and emetics to name a few.

Among drugless therapies was bleeding which has just returned to modern medicine as a way of draining blood from severe wounds to accelerate the healing time, cautery, moxa, cupping, sucking, enemata, fumigation, massage, psychic treatment, and surgery.

Considering Indian medical life, a question emerges: Why did Indians record the shamanistic part of their life on the rock? Was it a method of training a shaman? Was it part of the healing ritual, or did they want to preserve it for the benefit of the future generations?

On The Rocks

Ethnographies, ancient artifacts, and the traditions carried down to the modern Native American societies give anthropologists and archaeologists many clues to medicinal practices and social roles of shamen and medicine men in early societies. While this is vital to a basic understanding of any shamanistic society, information can be utilized in other ways. An analysis of data furnished by scientific processes then can be juxtaposed to visual information provided by pictographs and petroglyphs which have survived many centuries. What follows in this paper is not a scientific presentation of fact produced from countless hours of research and precise methodology; rather, it is a comparison of fact with imagery, a comparison through publication. I hope it will offer insights into the question, "What is rock art?" A question I believe cannot be answered by science alone.

> The participants gathered together the patient in the center of a room filled with the purifying smell of sweet grass. Boom-boom the rhythmic beating of a drum was a vehicle to carry the soul or mind to the world of the spirits. It is a drum twenty inches in diameter with one head; in Sioux "inyan wak'an" and literally means "the stone that speaks.[1]

Often I have wondered why so many rock art sites are located in areas of phenomenal acoustics. A healing ceremony held in such a place would indeed, have the stones speaking, and echoing, answering the sonorous drums. Fools Crow, an Oglala Sioux Medicine Man said:

> I can communicate with the spirits through the stones. There are the flying drums at the ceremonies...[The stones talk.] They tell me what the illness is and what medicine to get. I don't know myself. The stones say. They tell me what to do.[2]

These "speaking stones" drew my attention to the parallels of indigenous medicine and rock art symbols; for example, the appearance of medicine bags in rock art.

In the Northwest otter-skin medicine bags were common. In the Southwest fox, marmot, weasel or other small animals would have made a similar bag. These usually held red cloth and tobacco, and various herbal remedies.[3]

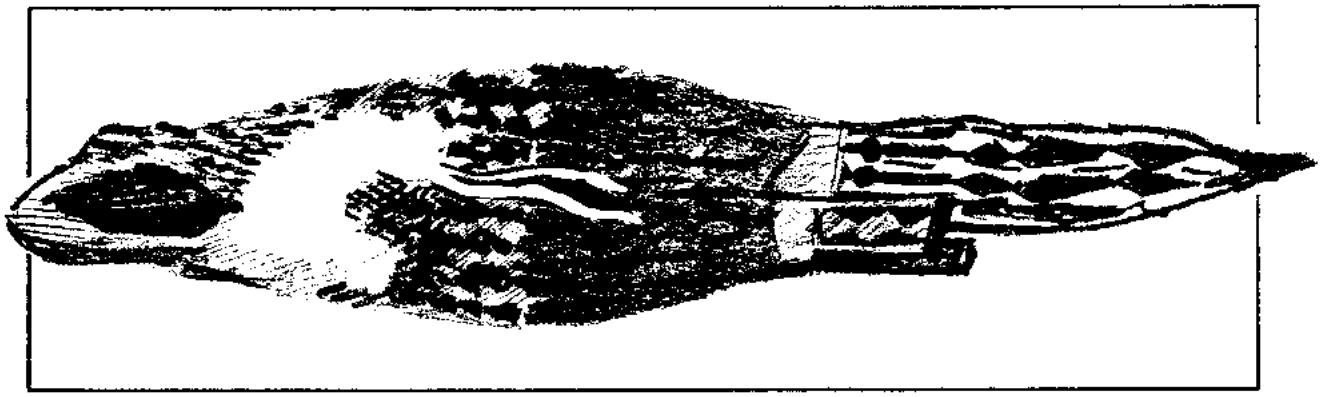


Figure 1: Winebago otter-skin medicine bag.

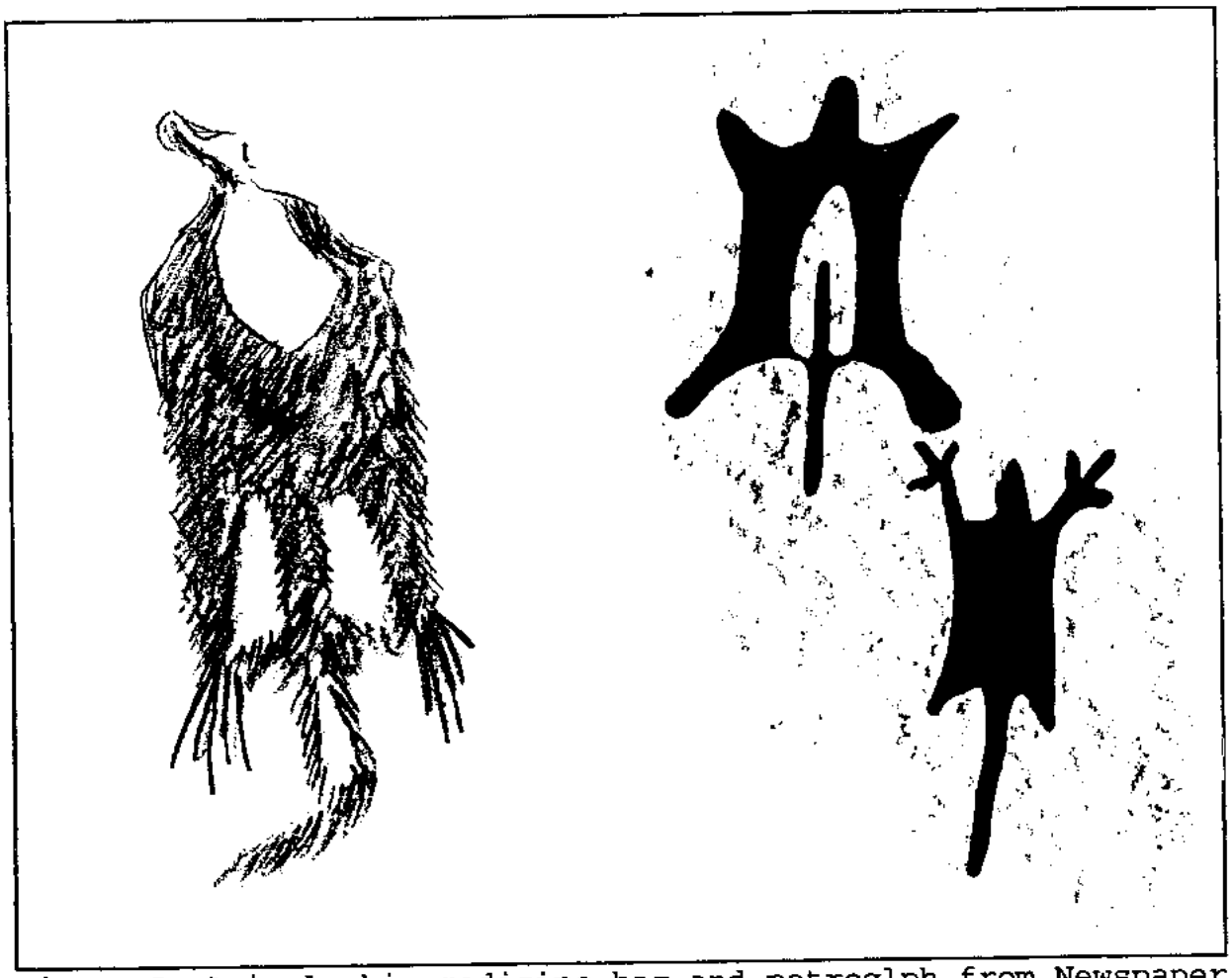


Figure 2: Animal-skin medicine bag and petroglph from Newspaper Rock.

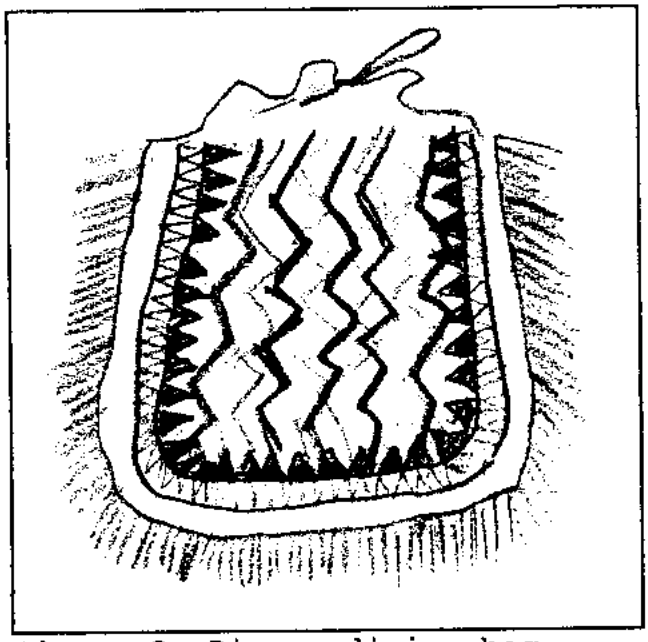


Figure 3: Pima medicine bag

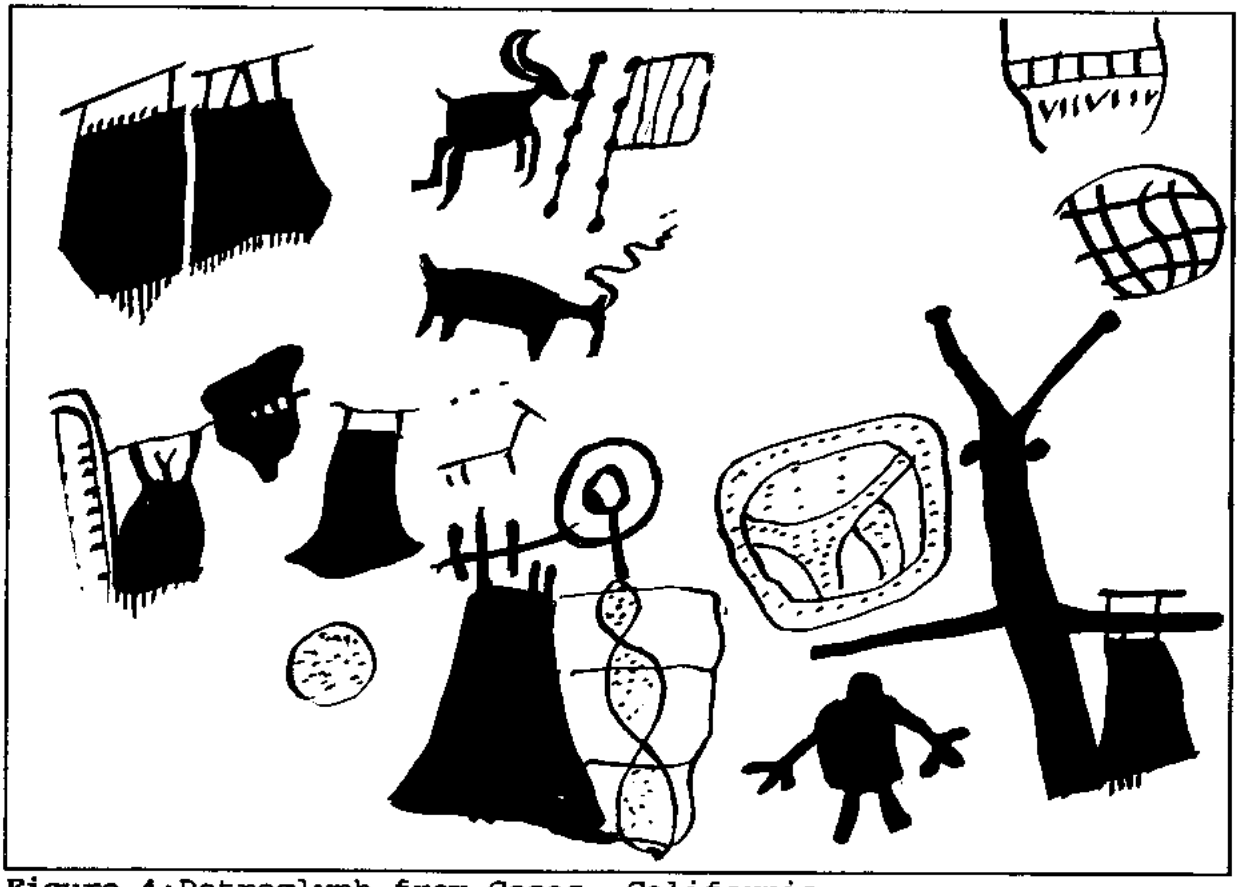


Figure 4: Petroglyph from Cosos, California

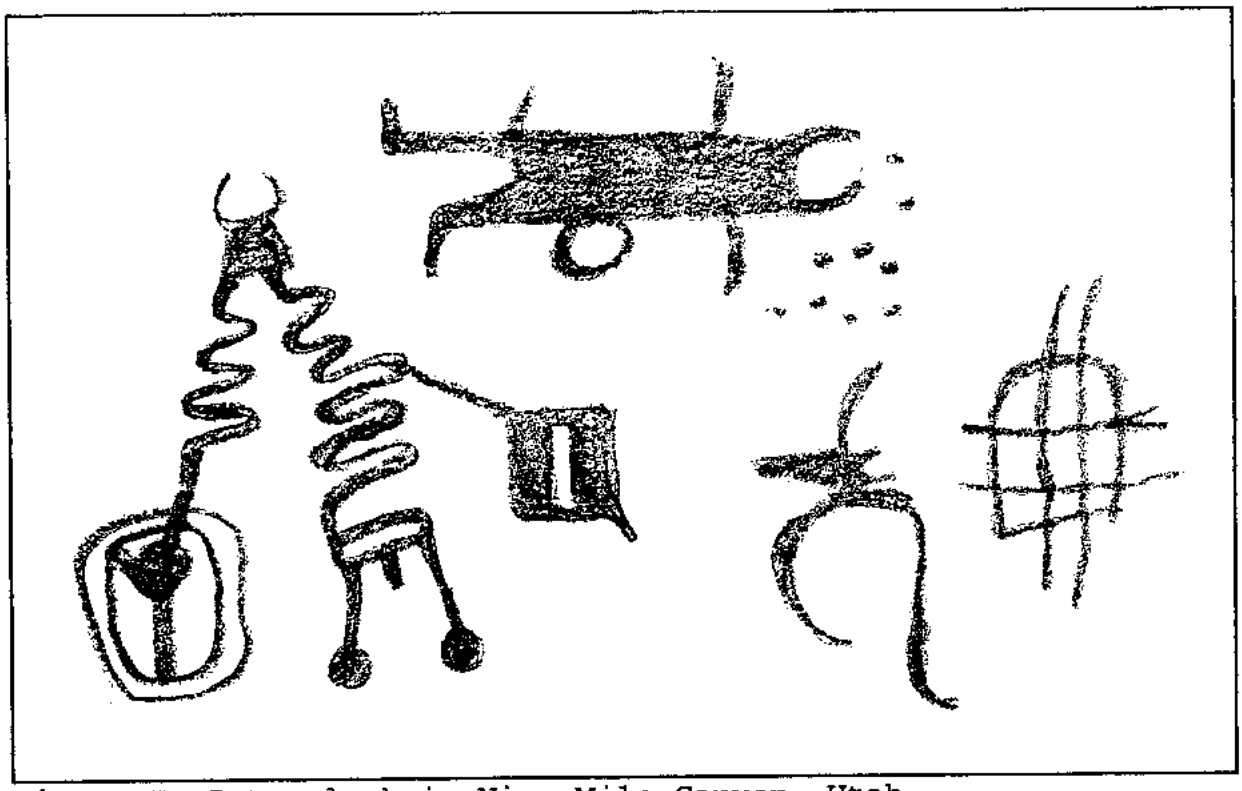


Figure 5: Petroglyph in Nine Mile Canyon, Utah

Figure 6: Mimbres pottery

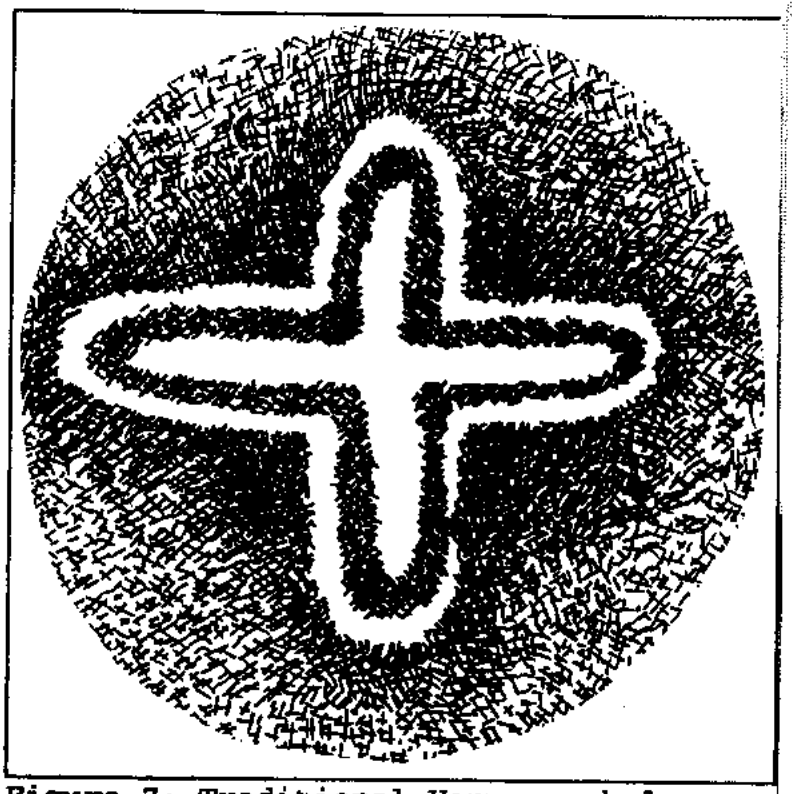


Figure 7: Traditional Venus symbol

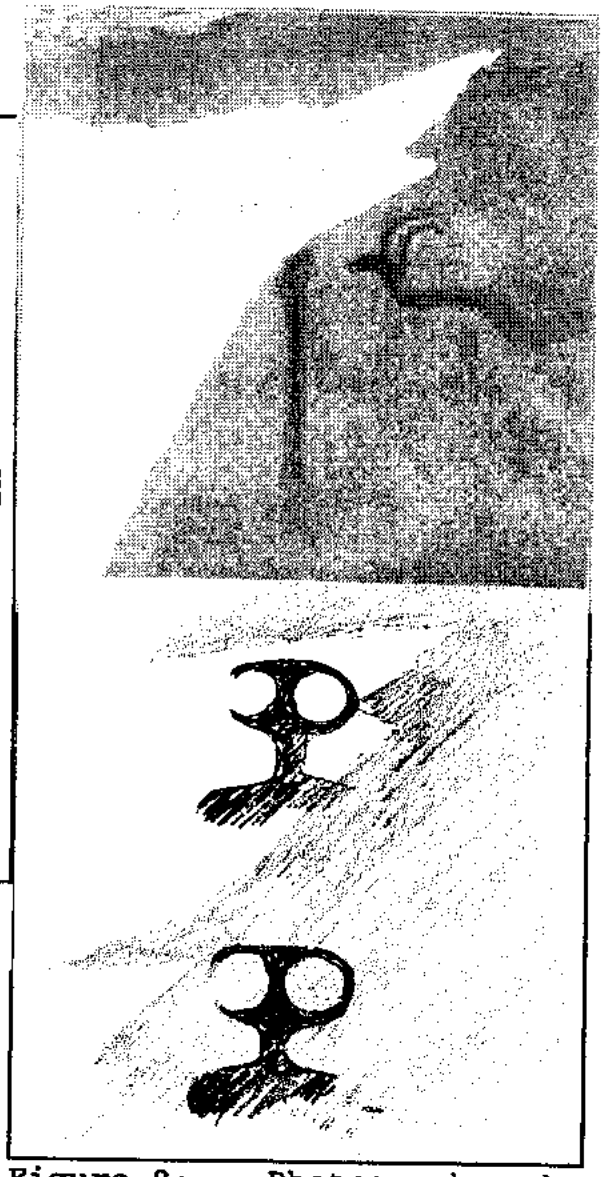


Figure 8: Photograph by Clifford Rayl

Figure 2 shows another medicine bag made of animal skin. On the right is a petroglyph from Newspaper Rock, stretched out in a similar manner. Notice the similarity of light and dark patterns on the bag and on the petroglyph. Obviously this is the same animal, but is this a glyph of medicine bag? Perhaps.

A better example, however, comes from the comparison of the following medicine bag (Fig. 3) and rock art site (Fig. 4). In the *Handbook of North American Indian*, this California panel is considered a "medicine bag panel."[4] Notice the fringe on the bags, the zig-zag patterns in the upper right, and the series of dotted lines. A medicine man has various means of marking his herbs. Common symbols were knots on the string on each individual bag. He could identify the species associated with the type of knot or the number of knots. In the lower right of this picture notice the Medicine man with a bag draped on his arm and under the other arm a small anthropomorph. Perhaps the patient?

Figure 5 is a petroglyph from Nine-Mile Canyon. Is this a shaman, medicine bag, and patient? This image is repeated in Figure 6: a medicine man, his bag, and below his arm, a small patient. This is a Mimbres Pot described by Boma Johnson, and up in the left corner notice a Venus symbol.[5]

The Venus symbol has also appeared in Native American medical history. According to Jake Herman, Sioux, some people use "hanblec'eya" to cure certain illnesses. "Hanblec'eya is the day crying, the morning cry to the morning star. They have four poles and four tokens and four winds."[6]

Figure 7 is the traditional Venus symbol. Interestingly, in rock art Venus is depicted as a cross, an image with four arms. Perhaps these "arms" represents the poles and the surrounding line represents the four winds. Venus figures are often involved with solar interactions. Important solar dates, solstice, cross quarter, and equinox were days of heavy ritualistic activity. There is no reason to believe that rituals regarding the health of individuals or the well being of the tribe were overlooked on such days. In fact, the sun itself was often used as a healing agent.

This is an excerpt from The Navajo Door by Leighton:

> All these people are gathered, their attention focused on the patient, bringing their influence and expectations to bear on his illness, their very presence implying that powerful forces are working for his well being. The Singer as the mouth piece of the Holy Beings, speaks in their voice and tells the patient that all is well. In the height of the ceremony the patient himself becomes one of the beings, puts his feet in their moccasins and breathes in the strength of the sun.[7]

Figure 8 is a sequence of slides, courtesy of Clifford Rayl, showing an anthropomorph inhaling the sun. This pictograph inhales and then exhales, absorbing the power of the sun.

Whether from the sun or other supernatural powers, the medicine man gets help. Fools Crow said to a patient, "bring red, yellow, black and white cloth and 405 cloth-wrapped tobacco offerings-one for each spirit."[8]

Holy Dance, Rosebud Sioux, said, "The spirits are very small. A good medicine man will have about 500 of them. If he is not so good, he will have less."[9]

Perhaps many of the miniature images we come across in rock art are these small healing spirits that help the shaman. At the Procession Panel there is a lengthy row of small spirits led by a shamen who can be identified by their crooks, "poros." Similarly, small spirit-like pictographs cover the walls of Wild Horse Cave.

In this petroglyph the shaman is accompanied by a flute playing spirit helper (Fig 10). He is also accompanied by two birds. In the *Ethnography of the Northern Utes* it is said, "The [medicine man] stated first the authority by which he practiced his profession, describing a past vision, usually of a bird or animal."[10]

One last example of medical anthropology evidenced in rock art takes us to Fish Cove and a Navajo account:

> A man of the Navajo Long Salt family became ill because of nightmares caused by restless spirits. His family sought help from an old Blind Medicine Man from Tsegi County who held a three-day sing. For his pay he asked for five butchered animals with the heads and the lower legs removed at the knees.[11]

In Figure 11 a deer was painted completely, then ritually slaughtered. Blood was painted on and the head removed by a second layer of paint that visually decapitates the image. Also, a close look reveals hash marks at the knees. There is a small anthropomorph hovering over an animal; perhaps this is the medicine man or a small spirit helper. Is this site part of a ritual, an exchange with the spirits for a cure?

I would like to conclude with a statement from Mel Brewster, a Northern Paiute:

> We have a medicine rock. We stop there and leave sage, or tobacco, or money and pray because that rock is powerful. . .old people told me. Those petroglyphs are there to heal people. When these white people go to them, they become happier. Some white people spend their whole lives looking at them and it makes them feel better. It makes their lives more meaningful. So even though they are white, those rocks are healing them.[12]

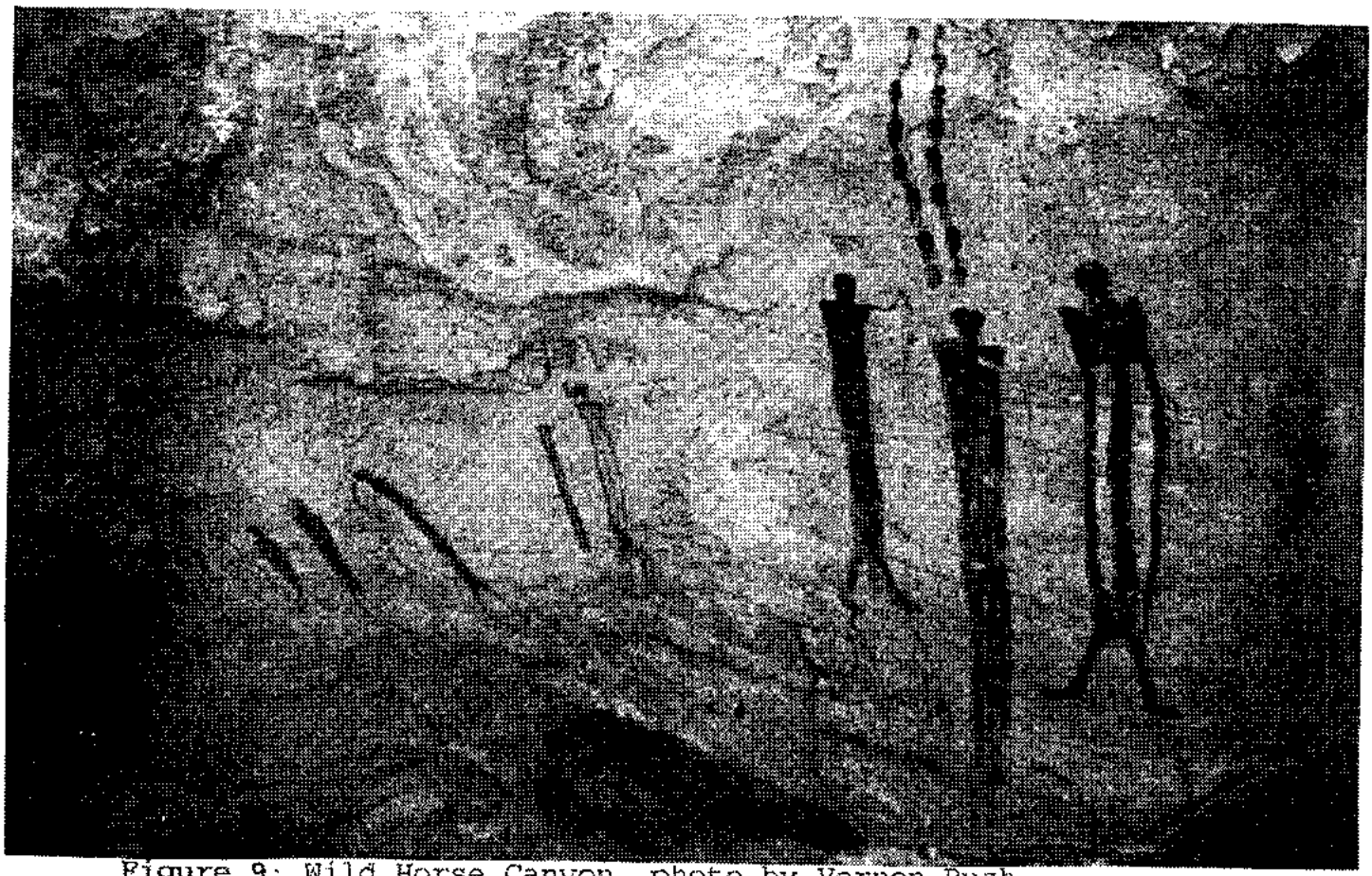


Figure 9: Wild Horse Canyon, photo by Vernon Bush

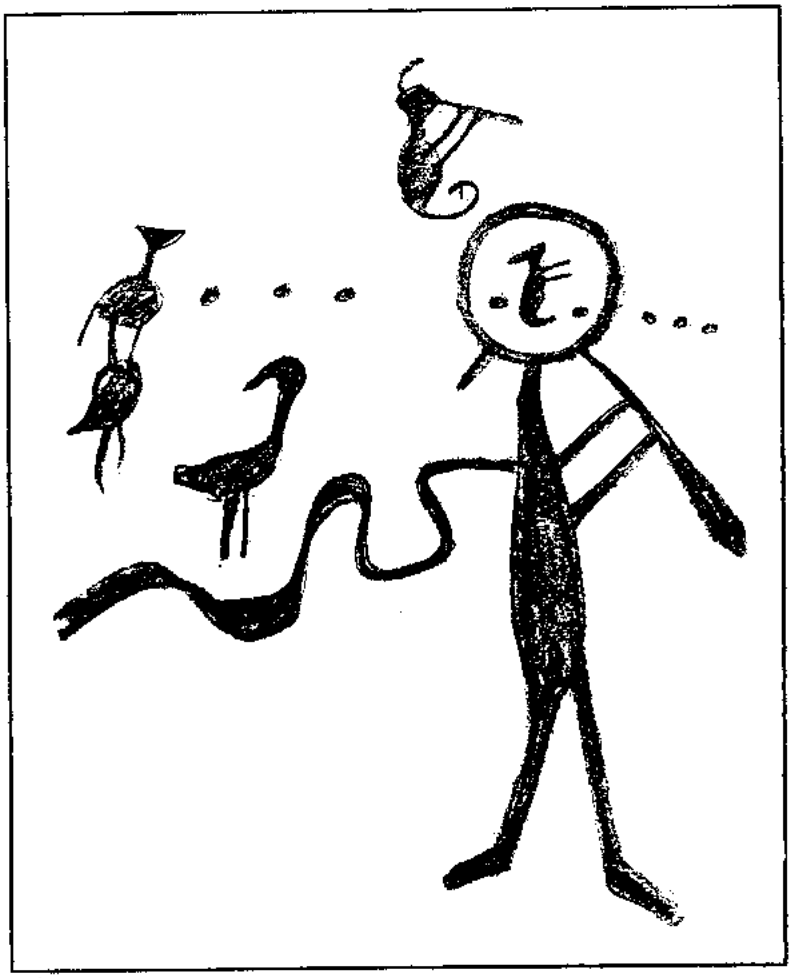


Figure 10

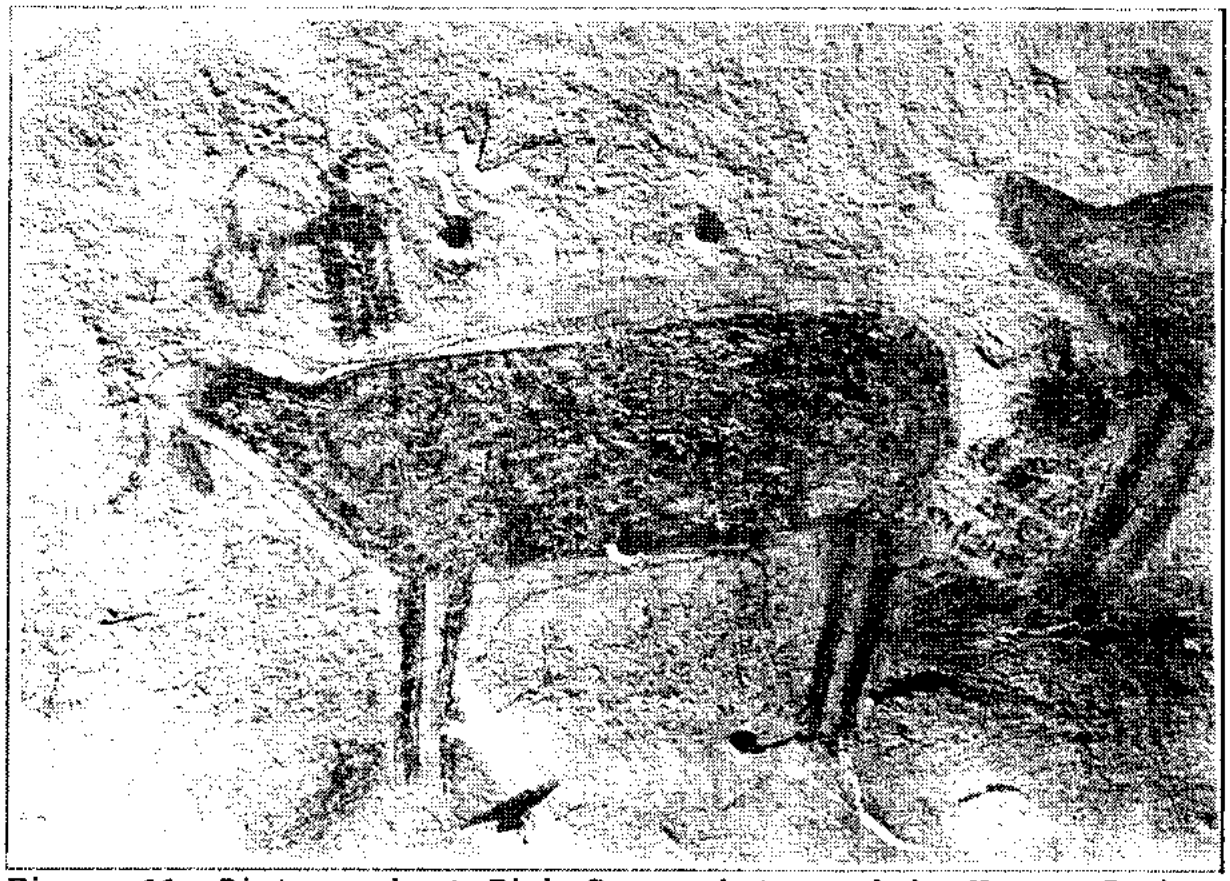


Figure 11: Pictograph at Fish Cove: photograph by Vernon Bush

Bibliography

D'Azevedo, Warren. *Handbook of North American Indians: Great Basin.* Washington D.C.: Smithsonian Institution, 1986.

Foster, George. *Medical Anthropology.* New York: John Wiley & Sons Pub., 1990.

Johnson, Boma. "A Unique Expression of the Venus Star Symbol Among the Petroglyphs of the Lower Colorado River," *Utah Rock Art Vol. XIV.* (1995): Salt Lake City: Utah Rock Art Research Association.

Kelen, Leslie. *Sacred Images.* Salt Lake City: Gibbs & Smith Pub.

Lewis, Thomas. *The Medicine Men: Oglala Sioux Ceremony and Healing.* Lincoln: University of Nebraska Press, 1990.

Smith, Anne. *Ethnography of the Northern Utes.* Museum of New Mexico Press, Santa Fe: 1974.

Spencer, Robert and Jennings, Jesse. *The Native Americans.* New York: Harper & Row Pub., 1977.

Steiger, Brad. *Indian Revival of His Spiritual Heritage and It's Relevance for Modern Man.* Doubleday and Company Inc., Garden City, 1974.

Endnotes

1. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 76.

2. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 78.

3. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 110.

4. W. D'Azevedo, *Handbook of North American Indians: Great Basin* (Smithsonian Institution, 1986) p. 220.

5. B. Johnson, "A Unique Expression of the Venus Star Symbol Among the Petroglyphs of the Lower Colorado River," *Utah Rock Art Vol. XIV* (Utah Rock Art Research Association, 1995) p. 72.

6. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 86.

7. Leighton cited in G. Foster, *Medical Anthropology* (John Wiley & Sons Pub,1990) p. 38.

8. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 76.

9. T. Lewis, *The Medicine Men: Oglala Sioux Ceremony and Healing* (University of Nebraska Press, 1990) p. 87.

10. A. Smith, *Ethnography of the Northern Utes* (Museum of New Mexico Press, 1974) p. 162.

11. B. Steiger, *Indian Revival of His Spiritual Heritage and It's Relevance for Modern Man* (Doubleday and Company Inc., 1974) p. 100.

12. L. Kelen, *Sacred Images* (Gibbs & Smith Pub., 1996) p. 76.

The Black Dragon Solar Solstice Markers and Calendar

P. A. Allee, J. Fountain, and R. Seely

Abstract

The Black Dragon pictograph site near Green River, Utah, has two styles of paintings: a Barrier Canyon pictograph panel, and a second panel with a number of cryptic line drawings and dots. On the latter panel some of the pictographs can be interpreted as clues to the solar position for the summer and winter solstices, when on those dates the sun's rays interact with physical features in the vicinity of the site. Also, there are a number of pictographs consisting of arrangements of dots. One of those pictographs, consisting of six rows of sixty dots, probably represents an annual calendar.

Introduction

After the URARA Labor Day symposium of 1995 one of the side trips my wife, Virginia (Allee), and I took was to the Black Dragon pictograph site, about 15 miles WSW of Green River, Utah, in a canyon of the San Rafael Reef. While there, and looking west up the Black Dragon canyon, it was noted that the dominant peak had a compass bearing of about 300° (corrected for magnetic deviation). At sunset a peak at this bearing on the horizon would mark the solar sunset position of the summer solstice (1). At that time a telephoto photograph of the peak was taken. It was at a distance of about two miles (3-4 km). Later when the picture was viewed, it was noted that the mountain peak site fulfills the criteria that a pictograph site may sometimes be chosen because of certain features on a cliff (2). Only in this case, the feature is remote from the pictograph site. The domed appearance of the mountain has cliff features below that are columnar. The effect is that it could be viewed as representing a cumulus cloud with a rain shower from its lower level. Such symbols are sometimes a criteria for the location of pictograph panels (2).

When going north upstream in the Black Dragon canyon about a half mile from the canyon entrance, the canyon makes a sharp turn to the west at the pictograph site. Just before the

canyon wall turns, the cryptic line drawings and dots are found on the right, the east wall of the canyon. The Barrier Canyon style pictographs are on the same side of the canyon wall, just beyond the turn on the north wall of the canyon.

Also, germane to this study is a nearby cave formed when a portion of a cliff above an alcove-type recession into the cliff fell in such a manner that the resultant scree left a "cave" between the scree and what was originally the top of the alcove. The cave is not visible from below, the scree being of such a height that the opening is screened from the view of an observer on the canyon floor.

Pictograph Analyses

The Black Dragon Pictograph Panel

On the north wall of the canyon at the pictograph site are several Barrier Canyon style pictographs. It has been noted (2) that many such pictographs are located where water may run, or appeared to have run, from within the cliff. There the artists painted their pictographs as invocations to the rain spirits within to assure water for their crops. The north panel is located near such a vertical crack in the cliff that may have been the source of apparent water flow from the cliff on occasion.

The panel and canyon have been named after one of the pictographs on that panel. The large surrealistic style "Black Dragon" painting has been identified as a flying-eared grebe, a crested water fowl with legs far back on the body that ranges and breeds in the area during the summer. This Black Dragon pictograph may have been an invocation to the spirit of the grebes to bring water to areas where the grebe was hunted.

The Cryptic Lines Drawings and Dots

Figure 1 is derived from the telephoto picture of the mountain peak on the western horizon. The accented heavy lines are the peak and columnar cliff below. The upper line of the sketch is the distant mountain skyline, the lower line is that of the nearby cliffs and scree that obscure the lower levels of the distant mountains.

A field trip to the Black Dragon site was made on the date of the summer solstice of 1996 to view the sunset from the site of the pictograph panel. It was a disappointment to see that the sun did not set directly on the top of the mountain peak. The sun's path was that taken by the

arrow on Figure 1, and the sun set on the flank of the peak. The arrow's directional path was derived from a table of solar azimuth, elevation and time for the summer solstice at a north latitude of 38^{o}.

However, with a last look at the left, or north end of pictograph panel, it was a thrill to discover the pictograph of the distant mountain. (See Figure 2.) It had a feathered feature with eleven barbs on each side that indicated the brilliant path of the sun just before it set behind the peak. The feathered shaft is red, the barbs were alternately red and black pigment with red barbs at the ends. The point at which the shaft of light would intersect the representation of the mountain peak was on the lower left flank of the peak!

If the outline of the mountain and arrow of Figure 1 is superimposed on the representation of the pictograph drawing of Figure 2, perhaps the artist of long ago made his angle of the path of the sun denoted by the feathered feature coincide within a very few degrees of the actual sun's path drawn on Figure 1.

On Figure 2, it can be noted that the artist used lines radiating from and in an upper direction above the mountain peak, probably denoting that immediately after the sun sets behind the mountain peak there is a strong afterglow of sunlight to be seen in the sky above the peak.

On Figure 2, the mountain peak is represented as it appears on the horizon, and has the rounded appearance of an inverted "U." Next to this diagram is an upright "U." This could be interpreted as a representation of the cave at the top of the scree on the north wall of the canyon. Dick Seely observed that only at the time of the winter solstice does the light of the sun penetrate the cave to its inner recesses.

The cave is represented by three lines. A red inner line represents the sunlight illuminating the interior of the cave. A middle black line represents the cave. A red outer line may represent the spiritual power residing within the cliff behind the cave walls.

Just above the cave symbol, Figure 2, is a red-pigment line drawing interpreted as the ray of sunlight that enters the cave on the winter solstice. The perpendicular barbs on the shaft of the direction line would represent the brilliance of the sun's rays. The depictions of the sun's rays in the two pictographs indicate that the artists were aware of the solar timing markers of the summer and winter solstices.

Figure 2 also shows the series of dots found in close proximity to the solar marker

pictographs. There are six rows of sixty dots probably representing an annual calendar. The top row is black pigment, the next four rows are red pigment, and the bottom row is black pigment. If one picks any corner of the calendar and proceeds through the sequence of dots line-by-line, there are 60 black dots, then 240 red dots, and finally 60 black dots. The colors of the progression suggest that if the corner dot is a winter solstice, the black dots represent the remaining cold and uncomfortable two winter-weather months. The red dots represent a season of warm, delightful, summer-like weather followed by another two uncomfortable months before the return of the winter solstice.

Moving to the right along the pictograph panel, there are many interpretative variations of the mountain peak, cave, rays of sunlight, and assemblages of dots. Other assemblages of dots appear to have an easily discerned solar, lunar, or celestial time frame to account for their origin. There are several representations of the solar disk.

Very few pictographs represent animals, the most prominent are what appear to be bear paw tracks, "killed" by petroglyphs (4) to send the power of the pictographs as invocations to the spirits of bears. One panel of bird tracks is in and partially circumscribing one of the mountain peak symbols-purpose unknown.

An interesting feature is a small hole, less than one inch in diameter, maybe natural, possibly drilled into the rock wall of the panel. It is surrounded by a small white disk. This might be a gnomon device to determine a specific day during the year. On one or two days during the year, when the sun was directly in line with the stick inserted into the hole, the stick will not cast a shadow on the painted disk. A measurement of the azimuth and the angle of elevation of the stick would determine from solar position tables the specific day(s) no shadow could be cast on the painted disk.

The panel features discussed above are located underneath, and have been protected from weathering by a shallow-arched overhang of the cliff. There are other pictographs on the canyon wall to the south of the arched overhang, but exposure to weathering has made any interpretation of their meanings virtually impossible. The panel extends south along the canyon wall only as far as the sacred mountain peak on the western horizon remains visible (4).

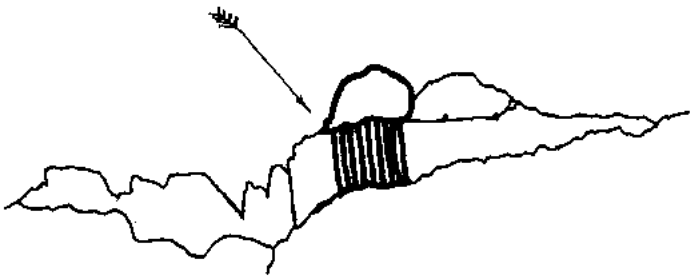


Figure 1. Skyline west of the Black Dragon pictograph site. The arrow represents the path of the sun as it sets behind a western horizon mountain peak at the time of the summer solstice.

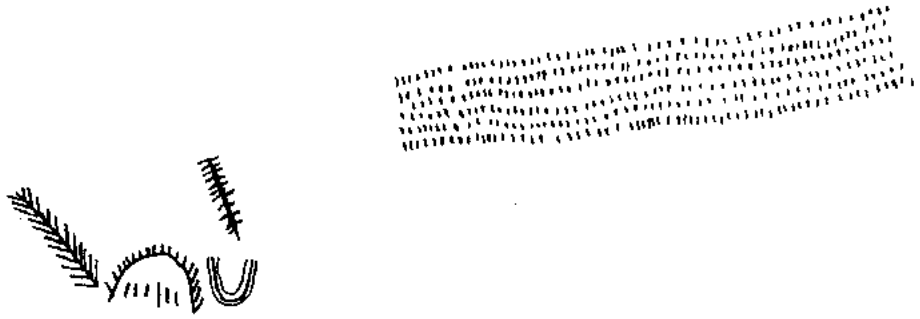


Figure 2. The pictograph panel. On the left is a representation of the sun's path setting behind the western horizon mountain peak of Figure 1 at the time of the summer solstice. To the immediate right is a representation of a nearby cave with a sun's ray shining into it at the time of the winter solstice. In the upper right hand corner is what we believe to be a calendar, with six rows of sixty dots.

Conclusion

The east wall of the canyon at the Black Dragon site appears to be mainly concerned with solar movement in relationship to nearby natural features, such as marking the summer and winter solstices, forecasting the seasons, and possibly the timing of certain rituals. In a sense, the east wall of the Black Dragon site could be described as being the site of a solar observatory.

The horizon art work at this site depicting the sun setting behind a mountain peak is a direct solar marker. Solar markers placed to interact with light and shadow have been defined as indirect solar markers. Examples of this are the usual type of solar marker found on pictograph panels (2).

There is another type of solar marker that has yet to be defined and is typified by the cave symbol at the Black Dragon site. This is an example of rock art placed and described in a nearby site where there is a solar interaction with a natural feature, but is not directly visible from the rock art site. It is suggested that this type of solar marker be classified as a *hidden direct* solar marker, or a *crypto direct* solar marker.

Acknowledgment

Nal Morris, leader of a 1995 URARA Labor Day symposium field trip to the Parowan Gap near Cedar City, UT, interpreted the art work and located sites from whence the sun setting through the Parowan Gap defined solar markers for the solstices and equinoxes. Sharing that knowledge with members of the URARA has enabled others to gain understanding and extend that knowledge to other sites.

Bibliography

1. Fountain, J. "Solar time, elevation, azimuth for the summer solstice, winter solstice, the equinoxes for 36^{o} and 38^{o} north latitude."

2. Allee, P. "The Barrier Canyon style pictographs: WHY, WHERE, WHAT, and WHEN they were painted." Paper presented at the Fifteenth Annual Symposium, Utah Rock Art Research Association. September 1995.

3. Allee, P. "Invocations to the Gods: the Southeastern Utah Fremont Pictographs." Paper presented at the Twelfth Annual Symposium, Utah Rock Art Research Association. September 1992, pp. 119-186.

The Shaman's Poro (Sacred Crook) in Native American Rock Art

Rev. Galal R. Gough

A Shaman's Poro or Sacred Crook is exhibited in the Visitor's Center at Mitchell Caverns in the Providence Mountains of the Eastern Mojave, with the following description: PORO

> Having the classic appearance of the shepherd's crook, the poro was the shaman's (medicine man's) sign of his or her position. It was also believed to have magical powers.

The poro or crook had been found in a cave in the Providence Mountains and was worn smooth on the central area of the staff, where it had apparently been gripped over years of use.

At the 1994 San Diego Museum of Man Rock Art Symposium, a paper was presented by Todd W. Bostwick on "Hohokam Petroglyph Bird Designs in the South Mountains, Phoenix, Arizona." During the course of his presentation, he showed slides of two separate petroglyph panels featuring groups of human figures, with one person in each panel holding what was called a "cane" (Figures 1 and 2). In both instances the crook is held at the center of the staff. The same two panels are also pictured in Polly Schaafsma's book, Indian Rock Art of the Southwest, pages 92 and 93 with the caption by each picture referring to the crook as a "cane."

The caption under each picture refers to the figures as holding a "cane." I am indebted to both authors for drawing my attention to the crook design in rock art, and stimulating my desire to do research on the crook, even though I believe referring to a crook as a "cane" is totally inappropriate.

Carobeth Laird, in her landmark book, The Chemehuevis, relates many crook insights and myths. At the beginning of her chapter on "Shamanism and the Supernatural," she writes about the chief symbol of office for a shaman in this Eastern Mojave tribe.

> The Chemehuevi shaman required no feathered headdress, no regalia of any kind, no eagle feathers or down, no sacred bundle, no collection of healing herbs. His one indispensable piece of equipment was his Poro (or pooro), a rod shaped like a shepherd's crook. This was an archetypal object of great power. . . . In the myth 'How Wolf and

> Coyote Went Away,' it is said that with a single twist of his poro Wolf tunneled through a great mountain and that Coyote used his poro to hook the wind down from its high level so that it might sweep across the surface of the earth. In that ancient, storied time, 'When the Animals Were People,' after all Wolf's or Coyote's warriors had been killed in battle, slaughtered by malevolent beings, or had died of thirst, they were revived by the touch of a poro in the hands of Wolf or of some other pre-human shaman. The poro was peculiarly the shaman's badge of office; it is not to be confused with piiri, a crooked stick upon which an old man might lean in his infirmity.
>
> (Laird 1976:31)

Carobeth had married the legendary anthropologist and ethnographer, John Peabody Harrington, in 1916. But her informant for her books on the Chemehuevi and source of information on the poro was her second husband, George Laird.

Harrington believed time was running out in the quest to record American Indian languages and culture. He drove himself and his young wife relentlessly, and forced her to give their child over to her parents to raise. She tells of her marriage to this eccentric genius in her book, Encounter with an Angry God. Perhaps she was looking for a way out when Harrington sent her ahead to Parker, Arizona, to find an informant from whom she could record the Chemehuevi language. It was in a blacksmith shop in Parker, after earlier failure to find someone who knew the pure Chemehuevi language, that she had been led to find a George Laird. She stepped into the dark shed to see his face illuminated by the coals of the forge . . . and they were never separated again until death parted them. She divorced Harrington and married her Chemehuevi informant. Carobeth was born in 1895; and George was twice her age, having been born in 1871 of a father who was three-quarters Scotch and one-quarter Cherokee, and a mother who was of pure Chemehuevi blood. In 1887, when George Laird was sixteen, he cared for a Chemehuevi man who was dying a slow and painful death. To enable the long months to pass with some diversion from the suffering, the dying man taught George the pure Southern Chemehuevi dialect, and the Chemehuevi myths and oral literature which even in 1887 were passing into oblivion.

Figure 1.

Figure 2.

Figure 3: South Mountain, Pima Can

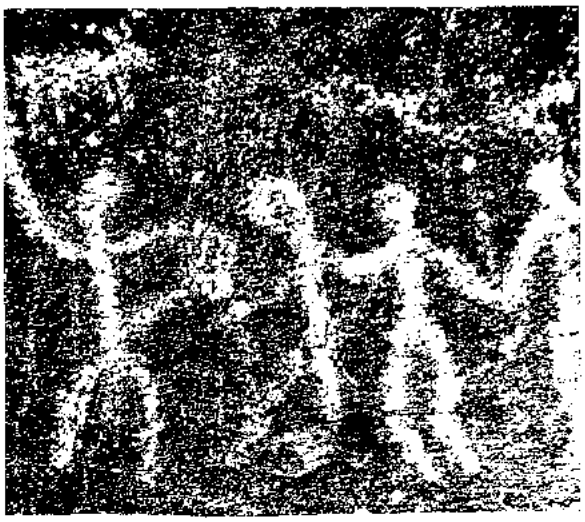


Figure 4. Migration Panel, Coso

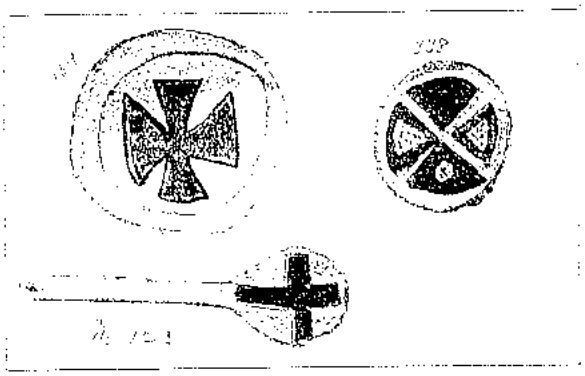
Figure 5. Processional, Butler Wash

Figure 6. Processional Crooks?

Fig. 8 ACross designs on vessels used in the feast celebrating a girl's attaining puberty."

Fig. 7 Grass Valley, Mojave

(Patterson 1994: 57 and 197)



The last book by Carobeth Laird was entitled Mirror and Pattern: George Laird's World of Chemehuevi Mythology. In it she writes about the shaman's crook and her excitement when the crook now exhibited at the Mitchell Caverns Visitor Center was discovered.

In mythic times, the one essential piece of equipment for a shaman was the poro, the sacred crook or wand by means of which he restored the dead to life. To what extent was the poro used in the aboriginal era? George described it to me; he spoke of a shaman as one who "carried the poro."

(Laird 1984:273)

George had told her of how the poro was used ceremonially and at special times, but Carobeth had never seen one.

Then on January 5, 1981, George Luteran, a member of the Sierra Caves Task Force of the National Speleological Society, while exploring a shelter cave in the Providence Mountains, discovered one of these sacred crooks whose very existence (except in myth) I had begun to doubt.

(Laird 1984:273)

Luteran recognized the importance of his discovery, and wrote to the Providence Mountain State Park Ranger that he was certain that he had found a shaman's poro. Carobeth Laird tells of her excitement upon seeing the poro a few months later, recognizing how valuable the insights George Laird had shared would be in interpreting the ceremonial and mythological role of the shaman's crook.

If John Peabody Harrington had not insisted upon sending me to Parker, Arizona; if I had not reluctantly gone; if I had not been intrigued by Ruby Eddy's description of George Laird's linguistic capabilities; if our eyes had not met across the blacksmith's forge - if at any place a link in this chain of events had been broken, I doubt if significant information on the poro and the mystique surrounding it would now survive. It was called to my attention that there is a smooth place on the wand where the hand of the shaman had gripped it. My hand found it easily. I gripped the rod where it had been polished by years of contact with a man of power.

(Laird 1984:274)

Other insights and mythic references in Laird's books will be quoted hereafter in relation to specific petroglyph sites and crook usages.

But returning to the South Mountain panel in Pima Canyon, my friend, Phil G. Garn, who guided

me to the crook sites, raised a question as to whether the "crook" might not have legs and be another person in the sequence of people (See Figure 3). This reminded me of the famous Migration Panel in Little Petroglyph Canyon in the Coso Range of the Mojave Desert, where some figures in the progression have crook characteristics (Figure 4). But even more suggestive is the Processional Panel up from Butler Wash in Utah, where the figures with crooks are very distinct as the panel begins (Figure 5), but where at the upper end some of the figures have the appearance of walking crooks (Figure 6). Could it be that the shaman and the crook were so intimately associated that the figures were on occasion symbolically merged?

The symbolic association between fertility and the shaman's crook is graphically portrayed in a petroglyph panel at the Grass Valley site located in the Eastern Mojave approximately 16 miles north and east of Mitchell Caverns. Here there are vulva symbols, encircled and enclosed crosses, with two crook figures below (Figure 7), one of which extends to the crack at the base of the basaltic surface and appears to have been chiseled and rechiseled for emphasis. Alex Patterson, in his Hopi Pottery Symbols, illustrates the encircled cross as an emblem of fructification in the girl's puberty celebrations (Figure 8), and refers to the enclosed cross as the eye of Co-tuk-inunwa, from which germinative elements descend to provide for life and fertility (Patterson 1994:62). The Grass Valley panel was pictured in my paper on "Native American Encircled and Enclosed Crosses Having Prehistoric Puberty/Fertility Symbolism," given at the San Diego Museum of Man Rock Art Symposium in 1994, when Todd Bostwick's paper raised my consciousness regarding the poro.

In the books of Carobeth Laird, Chemehuevi myths describe how the poro had great powers for fruitfulness:

Cottontail Rabbit pried open the crack with his poro and gave to all the world a plentiful supply of plants bearing edible seeds.

(Laird:The Chemehuevis,153)

Cottontail Rabbit with his poro (a typical Chemehuevi touch) opens the crack, and an abundance of seeds pours forth. . . . In the Chemehuevi story the dead mother of the orphans is the dead and barren earth; but when the poro opens the crack in the rock (vagina of the Earth Goddess), life and fecundity are restore.

(Laird: The Chemehuevis, 215-216)

Alex Patterson, in his A Field Guide To Rock Art Symbols Of The Greater Southwest, pictures a

petroglyph at Cedar Mesa, Utah, which shows a "copulating couple and a crook, graphically emphasizing a symbolic association between crooks and fertility." Carobeth Laird in her Mirror and Pattern also gives a powerful description of the poro's creating might.

Power for this miraculous creation was transmitted through that most powerful object, Wolf's sacred crook, which Coyote had ordered the girl to take with her.

(Laird: 1984, 244)

The Tylerhorse Canyon Creation Panel, actually located in the Gamble Spring-Burham Canyon locale in the Antelope Valley at the foothills of the Tehachapi Mountains in California, has what appears to be a crook above the polychromatic pictographs of the creation/fertility symbols (Figure 9). A crook appears to be similarly located to the above right over the most familiar section of the Rochester Rock petroglyph panel in UtahCa panel which has creation/fertility/birthing themes among the many symbols (Figure 10).

Carobeth Laird also records many myths and stories relating to the regenerative, resurrecting, and curative powers of the poro or sacred crook.

Back in the warrior's camp, Dove Boys found everyone dead for want of water. They went about raising up certain ones by touching them with the poro and giving them water; then those resurrected ones set about reviving the others.

(Laird: The Chemehuevis, 179)

That regenerating rod of power, by which those Immortals who had been killed in various ways were revived and by which in later times the shaman performed his curative work.

(Laird: The Chemehuevis, 216)

When Wolf and Mountain Lion raised up their slain companions and restored them to life, they did so, as always, by touching them with their sacred crooks.

(Laird: Mirror and Pattern, 370)

In the story time, restoration to life was a routine procedure: A a touch of the poro, the shaman's wand, was all that was necessary.

(Laird: Mirror and Pattern, 264)

Fig. 9 Tylerhorse Canyon Panel

Fig. 10 Rochester Rock Panel

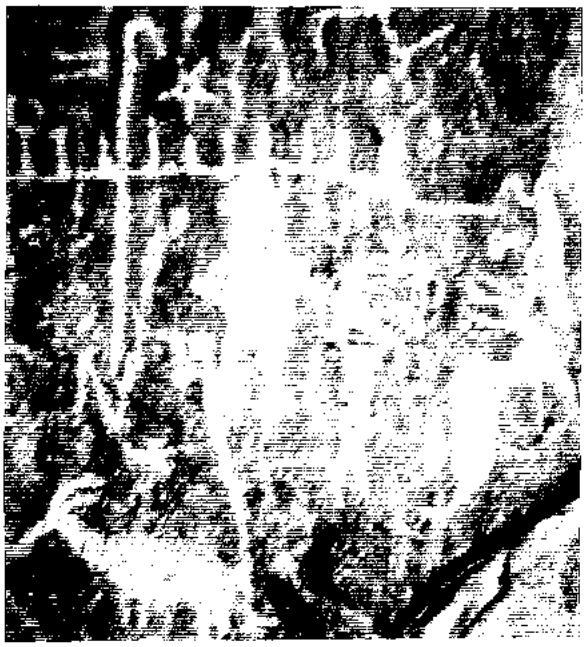


Fig. 11 Arrow Canyon, Nevada

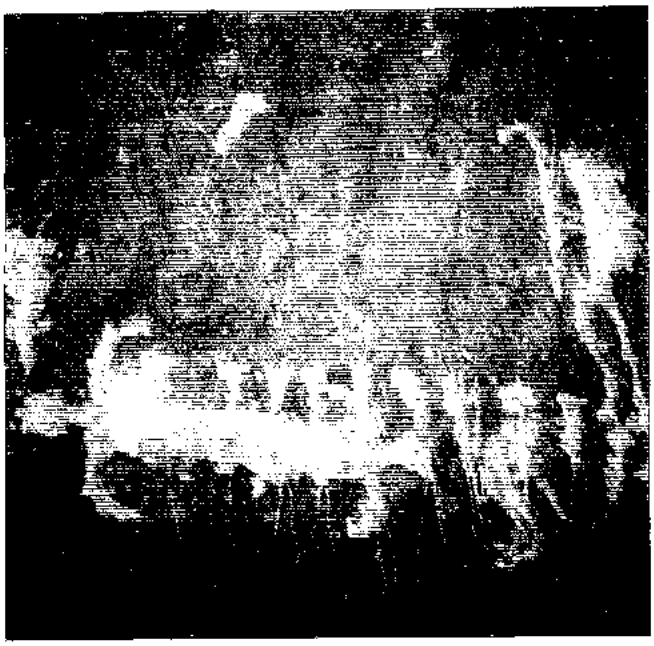


Fig. 12 Processional Panel, Utah

Figure 13. Natural Bridges, Rock Ruin

Figure 14. Second Rock Ruin Panel

Figure 15. Kachina Bridge, Utah

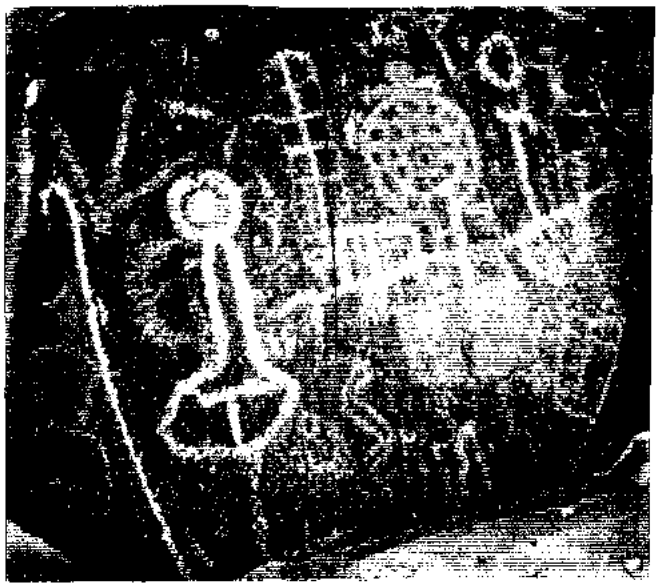


Figure 16. Warm Springs, Arizona

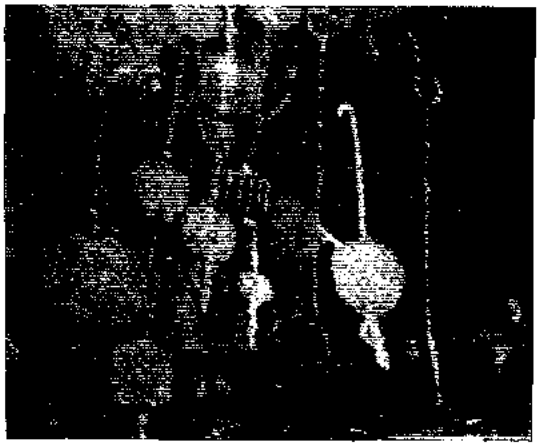


Figure 17. Renegade Canyon, Coso

Figure 18. Greenwater, Death Valley

Fig. 19 Swansea, Owens Valley

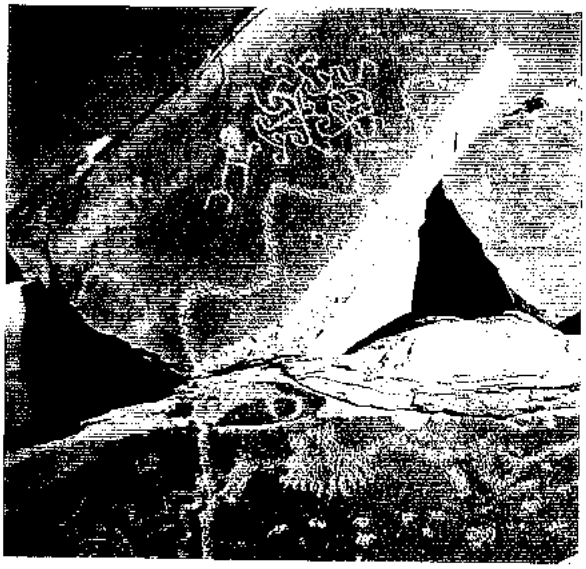


Fig. 20 Little Colorado River

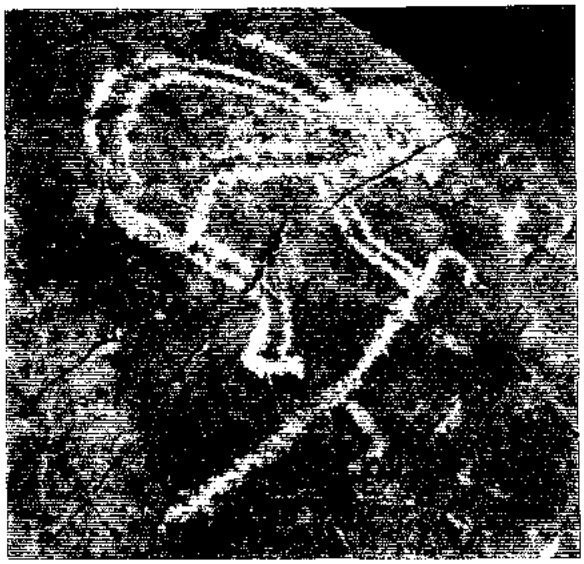


Fig. 21 Pony Hills Crook Bearer

Fig. 22 San Tan Mountain, AZ

Fig. 23 Cave of Life Staff with Bird Effigy, AZ

Fig. 24 White Rock Canyon, N.M.

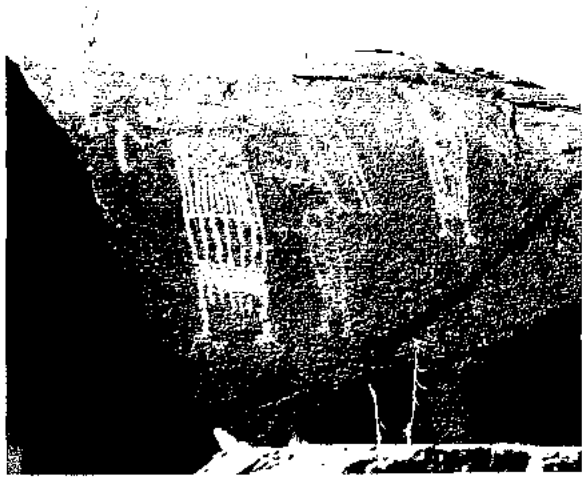


Fig. 25 Coso Range, California

In petroglyphs, when a figure is made upside down or sideways, it is usually felt that death or at least illness is being portrayed. While it is more difficult to definitely determine the intent of the shaman-artist with respect to resurrection and curative panels than with the fertility designs, the panel in Arrow Canyon in southern Nevada has a big-horn sheep in what appears to be a death position and another big horn under the crook which is upright (Figure 11). Then in the Processional Panel north of Butler Wash in Utah, there is a horizontal figure that at least appears to need the regenerative or curative powers of the approaching shaman with his crook (Figure 12).

The crook designs also seem to identify a locale of great power, as at the Rock Ruin site on a high cliff near Kachina Bridge at the Natural Bridges National Monument in Utah. Several crooks are also around the base of Kachina Bridge, including the twin crooks noted in Alex Patterson's A Field Guide To Rock Art Symbols, under the "Staff" designation on page 190. But if size denotes power, then the painted red crook behind the ruins on the western side, being more than 60 feet long, represents a strong energizing force (Figure 15). In fact, the white pictograph figure at the end of the empowering crook may well be one of those female underwater creatures associated with regeneration and life-giving rain (Leone Letson Kasner, Spirit Symbols in Native American Art, page 70). Other sites where crooks seem to have strong power associations are at Warm Springs in the Black Mountains of northwestern Arizona

(Figure 16), and in the crook and atlatl panel in Renegade or Little Petroglyph Canyon in the Coso Range (Figure 17).

The association of crooks and atlatls at Little Petroglyph Canyon in the Coso Range is a familiar and far-ranging feature, dealt with by J. Walter Fewkes in the The Mimbres Art and Archaeology, page 28. When the bow and arrow replaced the atlatl or throwing stick, the antiquity and veneration of the atlatl gave rise to symbolic and ceremonial uses. Hopi priests gave him the following explanation:

> These crooks or gnelas have been called warrior prayer sticks, and are symbols of ancient weapons. In many folk tales it is stated that warriors overcame their foes by the use of gnelas which would indicate that they had something to do with ancient war implements. Their association with arrows on the Antelope altars adds weight to this conclusion.
>
> (Fewkes: 1914, 28)

Two of the many examples of atlatls with crook characteristics are found at Greenwater Canyon, Death Valley National Park (Figure 18), and at the Swansea site on the Northeast side of Owens Dry Lake in the Owens Valley, California (Figure 19).

Fewkes' use of the Hopi word for crook or crooks, namely *gnela*, or the plural, *gnelas*, raises the issue of translation, and the many different tribal languages and words for crook. Alex Patterson in his Hopi Pottery Symbols spells the word "gnwela," and includes not only the crook, but also scroll-like figures, double ended, linked like waves, and in half circles (page 167). One of the best examples of these variations, including a person holding a crook, is found among the petroglyphs at Inscription Rock along the Little Colorado River in Arizona (Figure 20).

Crook symbols are found not only in California, Nevada, Arizona, Utah, and New Mexico, but also among the Plains Indians. There may be multiple interpretations and meanings, and their stratigraphy or chronological layering of usages and customs meaningful. Crooks have also been called prayer sticks or coup sticks. Dennis Slifer and James Duffield, in their book, Kokopelli: Fluteplayer Images in Rock Art, deal with the role of the crook "in modern Pueblo ceremony as badges of office, prayer stick bundles, and altar pieces" (page 7). They describe the Pochtecas, traders who carried baskets and walking sticks or crooks, and even advance a trader/pochteca hypothesis for the origin of the Kokopelli traditions. The Pochtecas traveled widely between Mexico and the Southwest, and even the Mimbres petroglyphs at Pony Hills in southwestern New Mexico seem to illustrate the humpbacked, crook-bearing human (Figure 21).

In translations to English, crooks have also been called wands, rods, poles, staffs, and canes. For the benefit of moving the terminology toward some consistency and differentiation, I would like to suggest the following definitions:

Crook - The Crook-necked staff was the shaman's instrument of great power and identifying authority (Laird:1976,31). See Crook Bearer petroglyph from the San Tan Mountains of Arizona (Figure 22).

Staff - A straight stick or pole, which may be decorated with pennants, crescents, geometric designs, bird and animal effigies (McCreery and Malotki:1994:150). See Cave of Life staff with bird effigy, Petrified National Forest, Arizona (Figure 23).

Rod -A short ceremonial stick, with wand-like powers, which was also a shaman's piece of equipment, as exhibited in the display case at Mitchell Caverns in the Eastern Mojave along with the Poro or Shaman's Crook. See White Rock Canyon glyph, New Mexico (Figure 24) and the famous patterned-body anthropomorph from the Coso Range Figure 25).

Cane - A Post-European contact corruption of crook symbolism, used both by the Spanish and the Lincoln administration, to confer recognition and demand allegiance, further diluted and destroyed the religious significance of the crook.

(Waters: 1950, 384-385, 393).

Each of the definitions above could have been illustrated by many different petroglyphs and pictographs, so the examples provided are intended only to show the types of instruments involved. Also, it is wise to emphasize the tentative nature of such illustrations; for example, the patterned-body anthropomorph in Renegade Canyon in the Coso Range could be holding a simplified atlatl in one hand and darts in the other, though the costume indicates a ceremonial intent. If this attempt to provide consistency of terminology leads others to advance better, more comprehensive definitions, my goal will have been realized.

Even more consciously to invite response and discussion, I want also to suggest a stratigraphy or chronological layering of crook usages and traditions. With the perspective provided by the uses, oral traditions, and mythology recorded by Carobeth Laird, as well as the

obvious antiquity of petroglyphs dealing with the Shaman's Crook, I am convinced that with the passage of time, the growing cross-cultural familiarity with the crook symbol, the use of the crook for more secular purposes and by persons who were not shamans, and, ultimately, the impact of the European invasion and the destruction of native culture, served to cause a chronological deterioration of crook symbolism and sacredness. As when a cave is excavated, the most recent deposits are at the surface and each layer thereafter is older and older, so also I am proposing a similar stratigraphy for crook usage and meaning, from the more recent to the most ancient, as follows:

Canes were given to Pueblo leaders by the Americans, and, earlier, by the Spanish, in appropriation of crook mystique for political purposes and in violation of the religious meaning.

Crooks were carried by traders/pochtecas, using a sacred symbol to obtain attention and safe passage as they traveled across lands occupied by peoples who gave to the crook great respect and veneration. Crooks developed multiple meanings with the passage of time, as the crooks of long deceased shamans gave sacredness to holy places like altar pieces and prayer sticks. Crooks were the shaman's indispensable piece of equipment and sign of office, having regenerative and curative power, attested to by myth and oral tradition.

The beginnings of a stratigraphy regarding the relation of fertility and fructification to the crook is also possible, again going from the most recent to the oldest:

Crooks are given to Apache girls in sacred ceremonies today in recognition of their advance into womanhood.

("Growing Up Apache," Arizona Highways, September 1992, pp. 19-23).

Crooks seem to have been used by others in Mimbres pottery designs, as in the bowl depicting a man and a woman holding crooks, with parrots also pictured, "having something to do with a love story"

(Pat Carr, Mimbres Mythology, p. 4).

> Crooks as the Shaman=s badge of office, had powerful implications for fertility and procreation, and had a relationship to "the generative organ, the phallus.
>
> (Laird: 1976, 216)

I think the concept of chronological layering is helpful, because not all areas in the Southwest have had access to ethnographic data on crook usage and mythology which might suggest a stratigraphy. On the other hand, there are examples of similarity across great distances, as in Laird's telling the story of Coyote using "his poro to hook the wind down from its high level" (Laird:1976, 31), and Fewkes describing the Hopi Flute ceremony where "a crooked stick is said to be used to draw down the clouds for the rain they contain is much desired" (Fewkes: 1914, 29).

Fewkes, in his Hopi Katcinas, illustrates supernatural beings holding crooks in plates X, XII, XXV, and XXX. A brief but helpful article on "Crook-neck staffs" on page 13 in Spirit Windows: Native American Rock Art of Southeastern Utah, by Winston B. Hurst and Joe Pachak, notes that hundreds of staffs were found in Anasazi Great Houses of Chaco Canyon, and that a staff found in Grand Gulch in Utah is now in the museum at the Edge of the Cedars State Park. The study of the crook in Native American rock art represents a fascinating and complex subject for study, and since I have not read previously of the writings of Carobeth Laird being quoted in papers on the Shaman's Sacred Crook, I hope my use of the recollections of her Chemehuevi husband, as to crook usage and mythology, will make a contribution.

The crook has been an intriguing subject for artists in this century. "The Procession" by Stephen Mopope, a Kiowa artist, features couples on horseback, with one carrying a crook, parading past onlookers. One of the most famous paintings of Western artist, Charles M. Russell, entitled "The Medicine Man," shows a shaman on horseback carrying his crook with great pride and dignity. "Autumn Hunt" by Donald Vann makes the crook carried by one of his figures the most compelling symbol. An Albuquerque artist, J. Yazzi, painted a procession with a figure in the sky holding a crook, and entitles his work, "The Long Walk with Chief Spirit." The crook also is the dominant symbol in one of the photographs of Edward S. Curtis, showing several braves on horses. So even in our time, what Carobeth Laird called the "mystique" surrounding the crook still persists.

Acknowledgments

I am indebted to Phil G. Garn for taking me to the South Mountain and San Tan Mountain sites; to John W. Fountain for his encouragement, letters and photo enhancements; to John V. Davis for guiding me to the Pony Hills site and showing me his collection of Mimbres inspired bowls; and to Jeff Matlock for being my guide to the Butler Wash Processional Panel. Finally, I want to thank Robert Wubben for drawing my attention to the Shaman's Poro in the Mitchell Caverns Visitor Center years ago, and for his interest in this paper on the Shaman's Crook.

References

Carr, Pat. *Mimbres Mythology*. Texas Western Press, 1979.

Fewkes, Jesse Walter

Hopi Katcinas. New York: Dover Publications, 1903.

The Mimbres Art and Archaeology. Avanyu Publishing, 1914.

Hurst, Winston B., and Pachak, Joe. *Spirit Windows: Native American Rock Art of Southeastern Utah*. State of Utah Natural Resources, 1992.

Itule, Bruce D., and Stevenson, Don B. "Growing Up Apache." Arizona Highways 9/92: 20-24.

Kasner, Leone Letson. Spirit Symbols in Native American Art. Philomath, OR: Ayers Mountain Press, 1992.

Laird, Carobeth

Encounter With An Angry God. Malki Museum Press, 1975.

The Chemehuevi. Malki Museum Press, 1976.

Mirror and Pattern: George Laird's World of Chemehuevi Mythology. Banning, CA: Malki Museum Press, Morongo Indian Reservation, 1984.

McCreery, Patricia, and Malotki, Ekkehart. Tapamveni: The Rock Art Galleries of Petrified Forest and Beyond. Petrified Forest Museum Association, 1994.

Patterson, Alex

A Field Guide to Rock Art Symbols of the Greater Southwest. Boulder. CO: Johnson Books, 1992.

Hopi Pottery Symbols. Boulder, CO: Johnson Books, 1994.

Schaafsma, Polly. Indian Rock Art of the Southwest. Albuquerque, NM: University of New Mexico Press, 1980.

Slifer, Dennis, and Duffield, James. Kokopelli: Fluteplayer Images in Rock Art. Santa Fe, NM: Ancient City Press, 1994.

Waters, Frank. Masked Gods: Navaho and Pueblo Ceremonialism. New York: Ballantine Books, 1950.

Manifestations of the Fremont Calendar

Nal Morris

Our story begins quite some time ago with my first visit to Rochester Creek. We noticed the panel in Schaafsma's first publication "Rock Art of Utah" (See Fig.1). The panel fascinated us for several reasons, but the most overwhelming characteristic of the panel was its mural quality. We did not know how to find the site so we inquired at the small town of Emery, Utah, for directions. The people we asked could not tell us where it was when we showed them the photograph, but they did give us a clue. We were told that the small town of Moore near by used to be called Rochester. That small bit of information gave us the hint we needed. My father, brother, and I found the site by identifying the drainage that flowed out of Moore and followed it until it joined the Muddy River. There on a narrow jetty of rock between the two drainages was the panel. At that time in 1976, I had no way of knowing how this site was going to change my life.

A few years later I was residing in Paris, France. My father had given me a three-volume set of the *Philosophy of Symbolic Forms* by Ernst Cassirer before he passed away. On my long train ride on the SNCF to and from Paris each morning and evening, I poured over the volumes and regarded them as parting wisdom from my father. (Actually Cassirer is quite ponderous and I would never have read the work under other circumstances.) In my need to experience the vast open spaces of Utah, I turned in the only direction I could—upward to astronomy. While in Paris, I discovered that if I grabbed a quick dejeuner I could get on the metro right outside the office and get off at Hotel de Ville. A few more steps up the Rue de Rivoli and I was at the Maison de l'Astronomy. This was a small shop with items and books for the serious amateur astronomer. Here I found the parts and information needed to finish my Newtonian telescope and discovered Duffet-Smith's first edition *of Practical Astronomy with your Calculator*. I purchased the book for a few francs and became fascinated by the simplicity and practicality of his methods.

A couple of years later we were home again in Salt Lake City and I returned to my interest in Native American rock inscriptions. When the "sun dagger" was discovered at Majoba Butte, I

became interested in exploring what was happening astronomically at my favorite site, Rochester Creek. Before research could begin in earnest, we needed field techniques and data analysis methods. The formulas and methods of Duffet-Smith rapidly evolved in an interactive computer model. Field techniques revolved around an army surplus theodolite with an inverted image that was calibrated in mills.

Why all this reminiscing? It is because each event played into the exploration as it led from one discovery to another. We started on the assumption that there was some kind of calendar device working at Rochester Creek. Our first approach listed several hypotheses by which calendar function could have been accomplished. Each hypothesis led to its own discovery even if that discovery was not what was expected. The hypotheses that concerns us here was the idea that the Indians could have placed some kind of gnomon in front of the panel that cast its shadow in such a way as to indicate a season or date. A quick examination of the panel suggested that there were only five markers or glyphs on the panel that could test calendric function. Across the top there were five marks with nothing between them. I surmised that if a calendar functioned with a shadow projected on these five markers the two extremes would have to indicate the solstices. After a computer profile of the horizon across the creek had been measured and recorded, I used the model to give me the sunrise azimuth of the summer and winter solstice. The next exercise was a simple problem in trigonometry. If the gnomon was placed at the intersection of the line azimuth running off to the winter solstice and the line azimuth running off to the summer solstice, then on these two dates the shadow must fall on their respective glyphic indicators. If a gnomon was in place, this must surely work, and represented no test or verification of the calendar function. The test of calendar function should come from a correct date reading at another event. The most obvious event would be equinox.

Between the solstice markers, but not midway, was a single, short line. This was assumed to be an equinoctial indicator. The model was employed to test this hypothesis. Yes, it was true. The same hypothetical gnomon that cast a shadow on the two solstitial marks at the solstices should also cast a shadow on an indicator at the equinox. With this much analysis indicating a working calendar function, we set out in September 1984 to test and observe in reality what looked so promising in theory.

I remember that it was quite brisk that morning. A pond of water in Rochester Creek below us had a skiff of ice on it. It is about a half-mile hike from the closest vehicle access to the panel. We carried with us the gnomon as designed from my telescope base. I had a machinist create an adapter for the base so that a six foot extension of pipe could be fitted on it to extend its height to about eight feet. It functioned much like a surveyor's tripod with a plumb bob that was suspended down through the center of the pipe to assure that the top of the pipe was precisely over the point as surveyed by the transit. The time of sunrise had been precisely calculated and more than enough time had been allowed to make the hike and setup the gnomon. All went smoothly on setup which left a good fifteen minutes to wait before the sunlight would work its way down the panel to where it would cast a shadow.

The brisk September morn only served to heighten my anxiety as we watched the eastern sky become brighter and brighter just below the ridge across Rochester Creek. Had I been careful enough with my calculations? Did that war surplus theodolite still function accurately enough to give the correct angles of elevation for the eastern horizon? As the first rays of sunlight cast a faint and then clear and strong shadow squarely over the equinoctial indicator, my emotions swung from relief to awe.

This little field test had in essence verified the gnomon calendar hypothesis. When the calendar worked it took into account many factors unique to the site geometry and topography. The equinoctial indicator was not centered between the two solstitial markers. The panel face was not facing due east but was aligned some fifteen degrees south of east. And the ridge was not level as it ran from north to south, varying between six and nine degrees of elevation. All these factors would influence the location of the equinoctial indicator. But now there remained in line with the equinoctial and solstitial markers two additional figures. What was their function and what dates did they indicate? The model was employed again and the two additional markers were looking like they indicated those dates that were midway between the solstice and the equinox or the equinox and the solstice. These dates have been termed the *cross quarters* and I usually abbreviate them "X1/4's."

The cross quarters are every bit as important to the Fremont calendar as the equinoxes and solstices. The five markers, as they function at Rochester Creek, divide the semester from

solstice to solstice into four equal parts where each part is very nearly equal to forty-five (45) days (See Fig. 2). The year was experienced in two halves because that is the way the Fremont People observed it. Each complete year required two solar traverses of the horizon between the solstitial points. These traverses were divided into four equal parts by the five key positions of the sun. These five positions were defined on the horizon marking the angular traverse of the sun at forty-five day intervals between solstices. I have termed these 45 day periods *solar months*. There are eight solar months in a solar year but, if a solar month is 45 days, then a 2 to 3 relationship was established between solar months and lunar months. Two solar months equal three lunar months with near equivalence.

Along side the main panel at Rochester Creek there is a smaller panel. The side panel contains some interesting symbolic characters but the glyphic elements that concern us here were twenty-two (22) small circles and three (3) larger circles. Let the three larger circles represent the moons, i.e., lunations, that occur during a season. Let the 22 small circles represent what we call a solar week. Two solar weeks make up a solar month. Remember that equivalence or commensurateness is always important. Let us now use the circle glyphs to create an abacus-like counting device and see what happens. Let each circle represent a small stone. There are three larger stones and twenty-two smaller ones. These are kept in two pouches, the number of solar months in a quarter, as a very practical and portable counting device or system. Start with all the stones in one pouch. On the first day of the quarter as determined by observation at the main panel, one of the small stones is moved from the first pouch to the second. Each succeeding day another stone is moved to the second pouch until they are all gone. At this time a large stone is moved to the second pouch and all the small stones are returned to the first. Twenty-three days have passed. The next day the process starts over again by moving small stones to the second pouch, one each day until they are all gone from the first pouch. At the end of the second moving of all the small stones, another large stone is moved to the second pouch and all small stones are returned to the first pouch. Forty-six days passes and then the process starts over again for the third time. When all twenty-two small stones have been moved to the second pouch, the transfer of the third and last large stone is done and the twenty-two small stones are moved back into the first pouch. Sixty-nine days have passes and now the

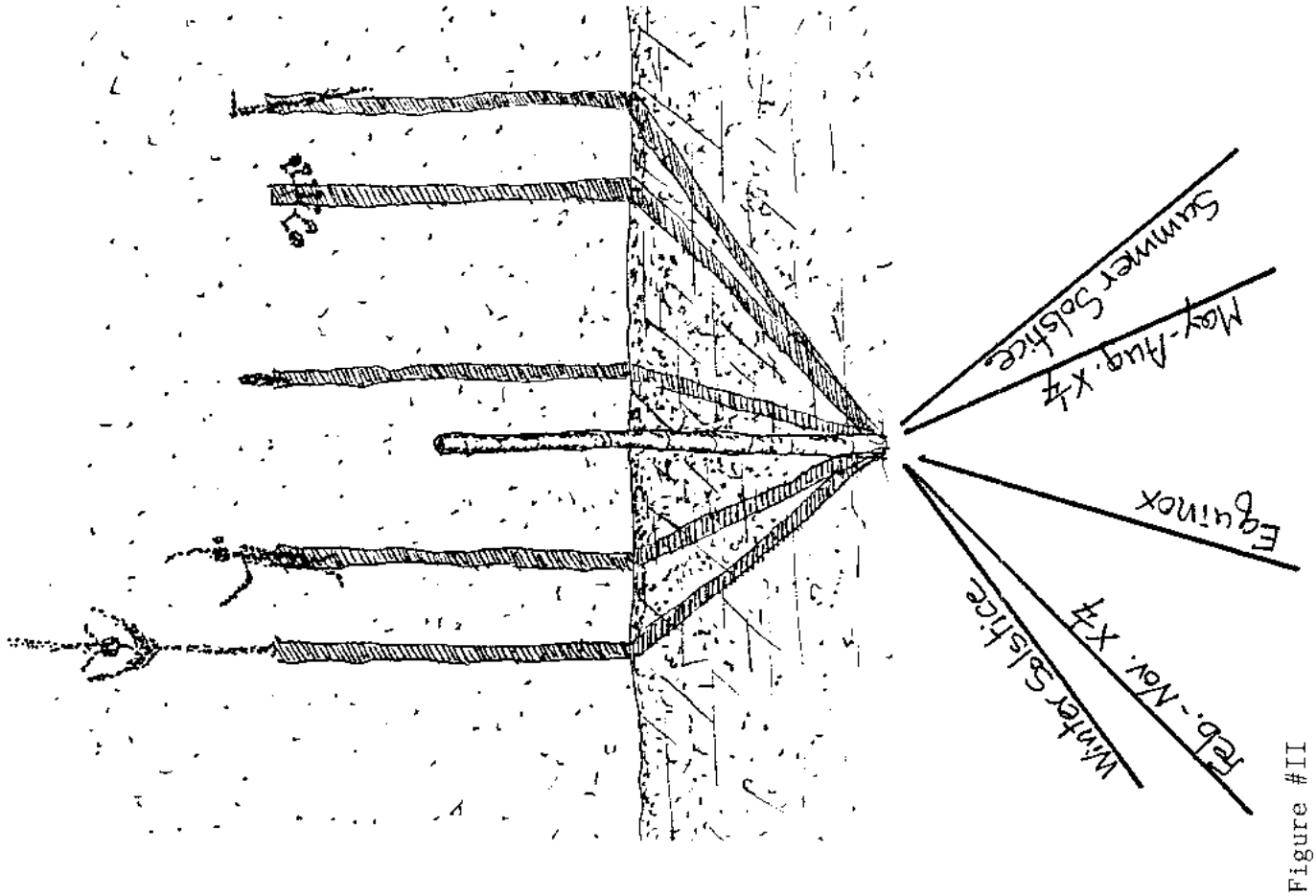


Figure #II

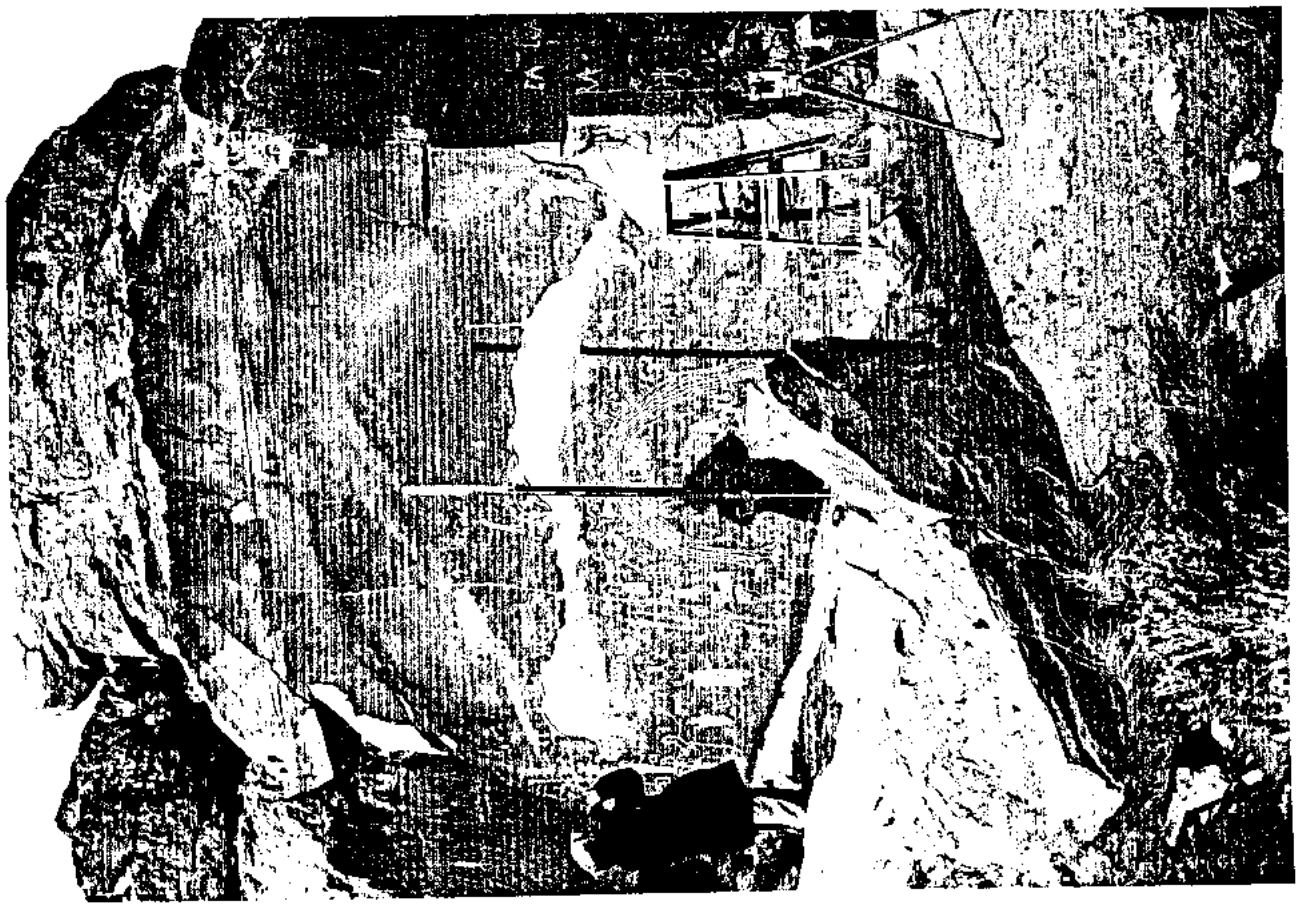


Figure #I

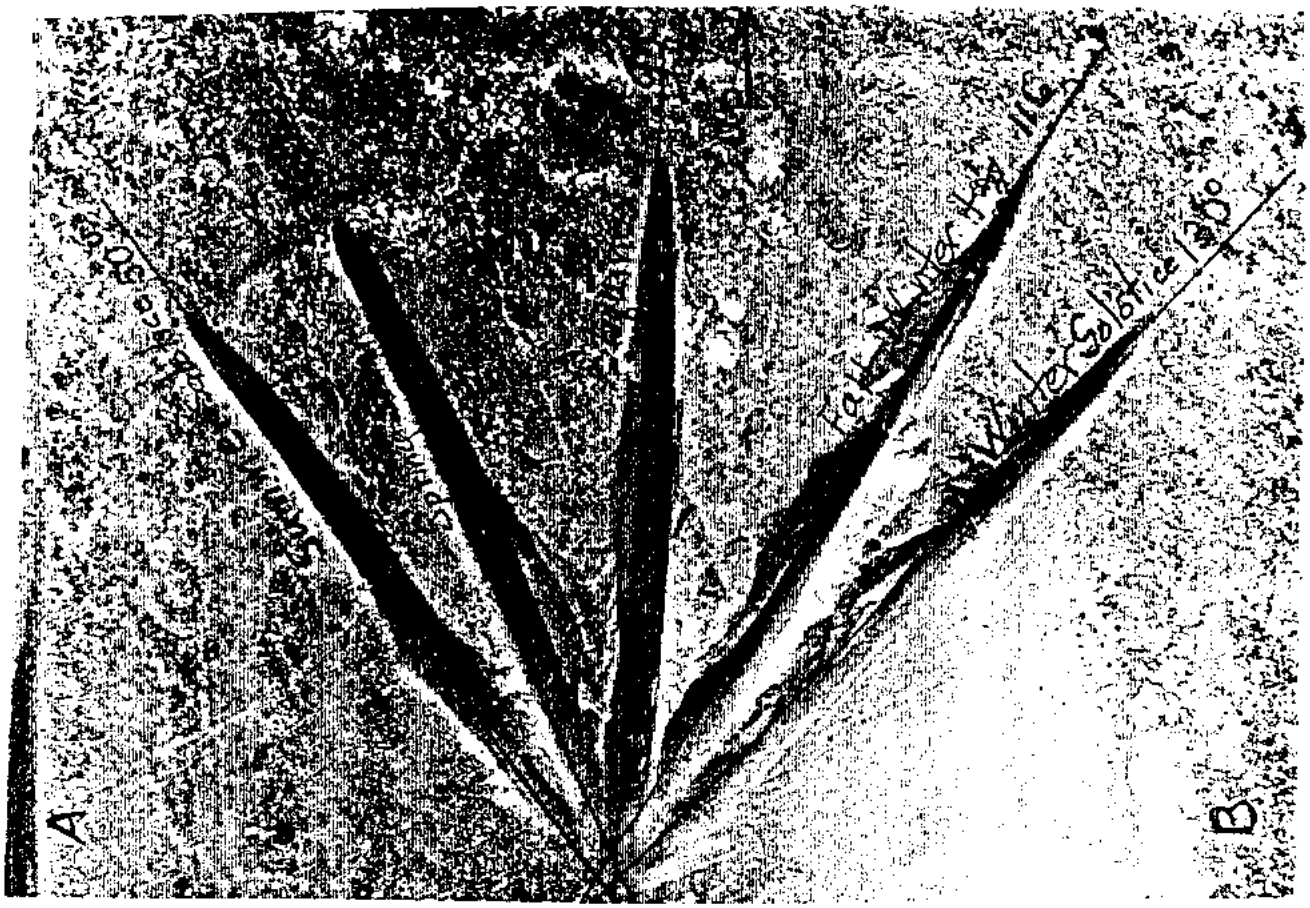


Figure #III

transfer of the twenty-two small stones starts over again for the last time until all twenty-two small stones are transferred into the second pouch. The first pouch is now empty and ninety-one days have past and one-quarter year or season has transpired. It is then time to observe another seasonal passage on the main panel as the shadow from the gnomon reaches another seasonal transition marker.

We have now discovered a working calendar at Rochester Creek. It works when depending on a fundamental scheme. This scheme is based on the natural division of the year into halves, then fourths, then eighths, and lastly sixteenths. Each division is an initial or successive division by two. This did not require some advanced arithmetic skill. Division by two could easily have been accomplished by a simple "one for you and one for me" method. The year was continuously divided by two until a calendar based on sixteen solar weeks of twenty-two or twenty-three days was derived.

In this analysis of Rochester Creek, a calendar has been proposed and observed (with the gnomon in place) that demonstrates a calendric system based on the solar horizon position or sunrise azimuth angle, key seasonal dates that include the cross quarters, and the number of days between key dates. In 1984 this was considered a quantum leap in understanding both rock art and modern archaeology's estimation of the technical skills of the Fremont People. While the calendar and numeric device worked perfectly, this alone was not considered proof enough to warrant such a leap forward. I personally felt that it was all too neat and systematically coherent to be just a misadventure of random probabilities. I felt that this same system should, therefore, be found at other sites.

We investigated two sites before the ultimate proof was discovered.. The first was the Venus panel in Nine Mile Canyon. I will not go into great detail on this site but it demonstrated an important principle. The sunrise or sunset in a canyon low points was used as a separator to divide the year into separate parts that were not necessarily equal. In other words, a calendar could be devised to conform to the particular topography of its location. The Venus panel also demonstrated a calendar that was almost purely numeric. At this site the Fremont's skill with numbers went way beyond the skill demonstrated at Rochester Creek.

The second site along the road of discovery was found on the Freestone Ranch near

Vernal, Utah (See Fig. 3). This was a very simple glyph and, like the Venus panel, shifted the focus of the research from symbol figures to numbers and geometric form. Where previous rock art study seemed to revolve around "zoomorphic" and "anthropomorphic" figures, now what had been considered meaningless doodling was taking on meaning through numbers and geometric form. The Freestone Glyph was a simple flower looking object. It had been called the lotus blossom. It had been deeply carved into the rock with great precision, in fact, with such precision that some doubted its authenticity. Even so, the repatination was complete and certified its ancient origin. It was the pattern of the glyph that gave away its meaning. When the five positions of seasonal transition were identified at Rochester Creek they defined angles of solar traverse. These created a pattern through an angle of about sixty (60) degrees that was divided by four included angles in the sequence of small, large, large, small. The ratio of these is close to 10,20,20,10. Actually, the azimuths involved for level horizon sunrises are Summer Solstice:58.7, August X1/4:68.6, Autumnal Equinox:90.0, November X1/4:111.7, and Winter Solstice:121.3. The angles reproduced in the Freestone glyph follow the same pattern of small, large, large, small where the actual angles are 14,26,26,14 degrees. While these are different from those above, they are not far off for eye-balled angular measurement. The author of the glyph recorded the most important part of his perception, the relationship of the sunrise angles and their sequence that was his perception of the flow of time. This flow of time was linked in every way with his perception of space. Space became the vessel of time and numbers became its vehicle of representation.

In the spring of 1990, I led a trip to the petroglyphic site at Parowan Gap. We also visited a site near Cedar City called the Lion's Mouth. When returning that evening, we drove along the west face of the Red Hills as the sun was setting and I raced back to the camp to see if the sunset would be visible through the Gap Narrows. The numbers carved on the Zipper Glyph were definitely divided into two parts. The question in my mind was, "Will the date of sunset in the Gap Narrows divide the year in the same way the numbers on the Zipper Glyph were divided?" The numbers on the Venus panel divided the days and the lunations of the year into those occurring while the sunrises were north and south of the low point as seen looking down the Nine Mile Canyon.

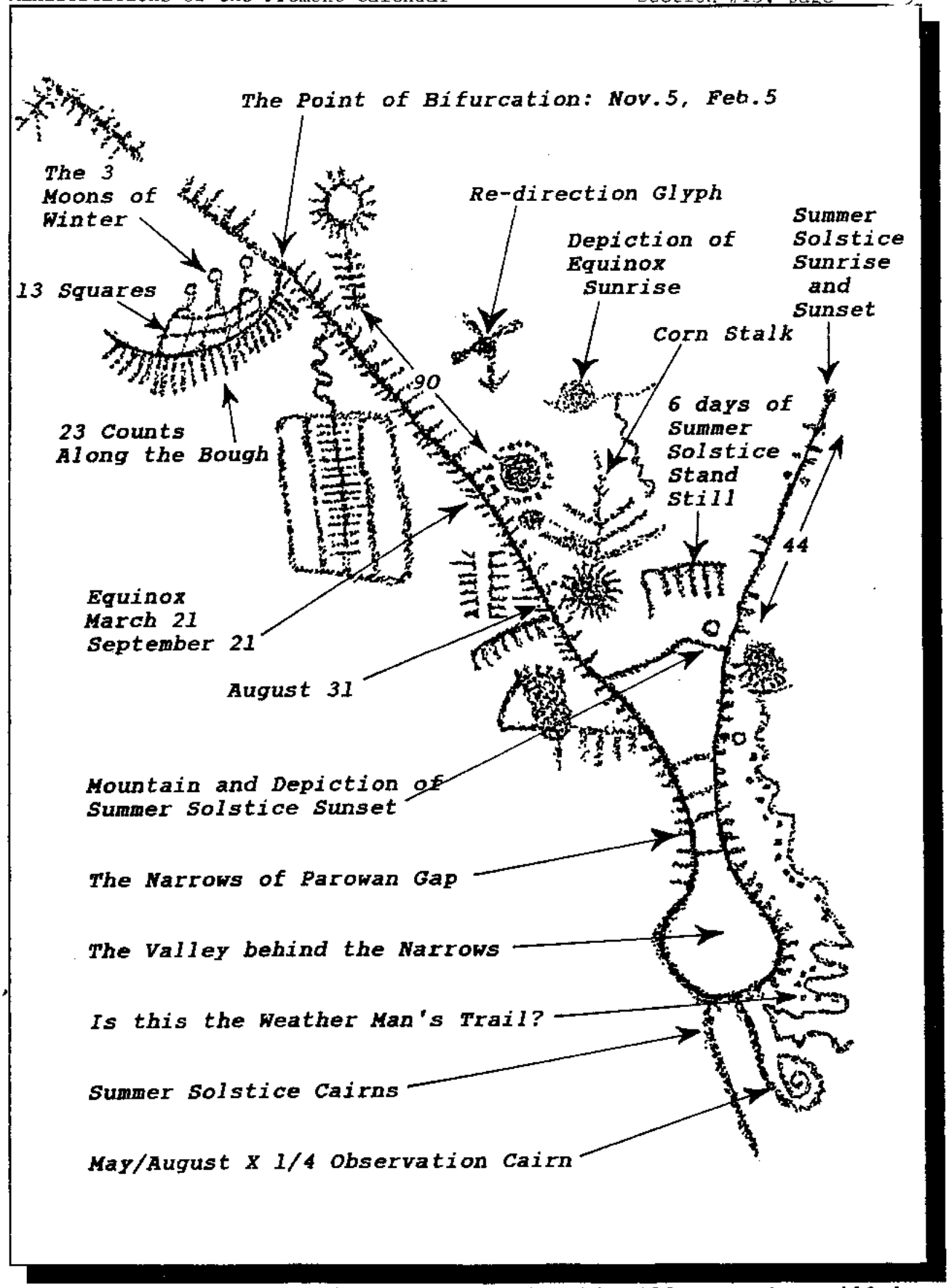


Figure IV *The Zipper Glyph Annotated: This illustration will be useful for Sections 5 through 12.*

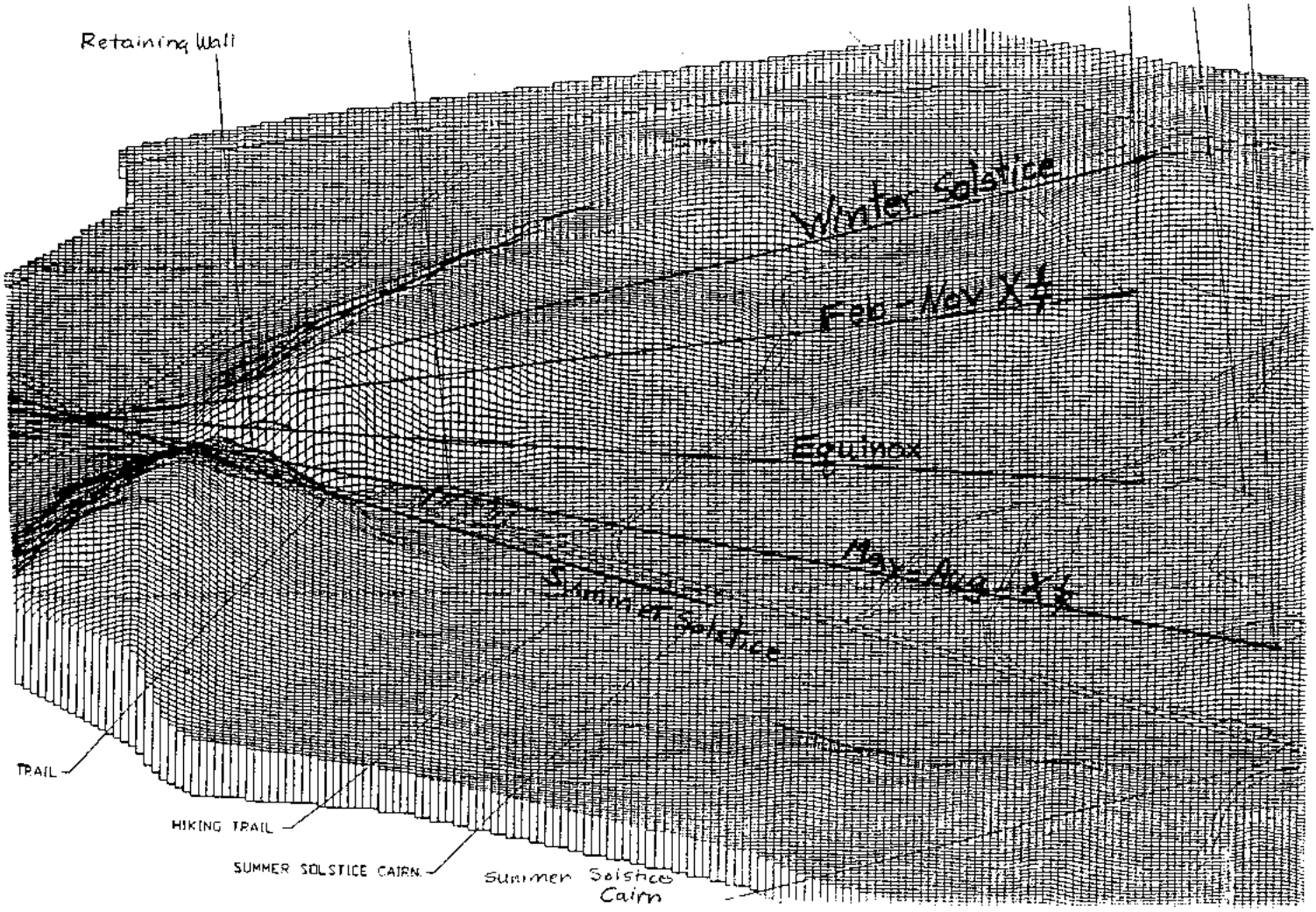

Retaining Wall
Winter Solstice
Feb - May X's
Equinox
May - Aug X's
Summer Solstice
TRAIL
HIKING TRAIL
SUMMER SOLSTICE CAIRN
Summer Solstice Cairn

Figure #V

The sunset that evening in March did not shine through the narrows but the question lingered. Consequently, I stopped there on my next visit to the area to take azimuth and elevation pairs to determine the first sunset that would be visible from the basin just east of the narrows. As I worked, it looked increasingly as the date would be sometime in the first week of May. This indicated that they were most likely designating the May-August cross quarter dates. The number of tick marks on the right-hand side of the Zipper Glyph are about forty-four (See Fig. 4). This strongly pointed at the X1/4, but more evidence was needed. We needed to find some ground feature that indicated a place of observation that correlated with the numbers on the panel and the date and the azimuth of observation. Concentrating on the X1/4, I determined the azimuth of X1/4 sunset in the narrows, and walked backward (east) in the basin. There, about 500 yards east of the narrows, was a small hill. On top of this hill is a cairn. The cairn consists of about eight head-size stones well settled into the earth. A survey of the western horizon from this cairn and the computer model indicated that sunset on the right-hand side of the narrows would be on May 6th. From this date to summer solstice is forty-four days.

Now we have a sunset azimuth, a cairn, and a day count that all indicate the cross quarter date in May and August. These dates are about forty-five days before and after the summer solstice. It would seem likely then that the summer solstice would also be designated by the Zipper Glyph. I then determined the azimuth of the summer solstice sunset as seen through the narrows from the basin. In like manner to the May-August X1/4 cairn, I searched along this azimuth for summer solstice cairns. One morning Garth Norman, Clifford Rayl, and I searched a considerable area without results. About two o'clock that afternoon I loaded up the trailer and was about to started home when something caught my eye. Because it was spring before the grass got tall, I noticed two large cairns just about 150 yards back from the narrows in the settlement basin just south of the road. I stopped and walked over to the cairns and sighted back to the west through the narrows. There, in the center of the gap, was the hill top in the Mud Spring Hills where I determined that the summer solstice sunset should occur.

With two cairns now located it was speculated there would be a whole family of cairns found in the basin to indicate the sunsets of the equinoxes, Feb.-Nov. X1/4, and winter solstice. These we found using the same techniques explained above. When all five date markers had

been located, Parowan Gap became fully linked to Roch ester Creek (See Fig. 5). While the glyphic representations looked very different and date observations used two different methods (i.e. gnomon and shadow vs. window and observation position), the dates identified by the two sites were precisely the same. At both sites there was a day counting scheme to divide the year into forty-day solar months.

When trying to make a new and fairly basic step forward, there can never be too much proof. So now that we had a good understanding of the Fremont calendar, we went looking for yet another site for confirmation. A sister site to Parowan Gap is Grapevine Canyon near Laughlin, NV. The Grapevine Canyon site is found at the mouth of an east facing narrow canyon. On both sides where the canyon narrows there are hundreds of petroglyphs. At this site we have located three calendars. The first and the third calendars have an ingenious way of being both lunar and solar calendar simultaneously. They start at a very fundamental level and proceed to the more complex. All three are based on the Fremont calendar as discovered at Rochester Creek and verified at Parowan Gap.

In April 1996, over spring break, the family wanted a short trip and I offered to take them to Laughlin, NV. There are water sports there, several casinos and Grapevine Canyon. But alas, Mom's and Dad's influence had prevailed, and there was little interest in the water sports or the casinos. Therefore, by splitting up into two teams, we were able to do several surveys up and down Grapevine Canyon. One afternoon while studying the glyphs at the mouth of the canyon, I met a small Indian boy playing over the rocks. He said that his grandfather had come up from southern Arizona to visit the site. He asked me if I had seen the cave. I said, "No, what cave?" He said that it was right here where we were standing. I looked and right there behind some thorn bushes was a crack in the rock. He scampered inside and disappeared. It took a little while longer to squeeze myself through the crack but sure enough it opened up and split into two small chambers. He was delighted to show it to me and proudly explained that this was where his people had come from. He continued with some sketchy pieces of the Southwest creation myth. I observed that the mouth of the cave opened to a low point on the eastern horizon. The field survey and computer model that had their rough beginnings at Rochester Creek would soon reveal with detailed accuracy that this was an equinox cave. We returned there to observe the

equinox in September and the first rays of the sun shown into the cave to flood light on a really great astral deity (See Fig. 6). Cassirer was right here like he was at Parowan Gap: "Light bursting forth into darkness" to mark a new birth or beginning (Cassirer 55). Grapevine Canyon is truly an equinox site.

The first of the three calendars is the most basic (See Fig. 7). It resembles a block letter "I" with the added feature of a horizontal bar through the center. Let each sideward and outward projecting bar represent a lunation so that there are three lunations indicated on both the right and left sides. Let the inward projecting bars created by the negative space of the outward projecting bars represent the forty-five days solar months. Now let us look at the whole symbol. It has been our experience that the half years from solstice to solstice and/or from equinox to equinox were separate entities of time. In fact, they may have been the twins. Remember the twins were sired by the sun. Let the calendar represent the semester between either equinox and the succeeding equinox. Then this little calendar device tells us that there are three moons up to the solstice and three moons back. It also tells us that there are two solar months of forty-five days up to the solstice and two solar months back. It also states that three lunar months equal two solar months, i.e., 3X30=2X45. Thus in this one very simple device, we find the Fremont's fundamental scheme of calendrics based on numbers and commensurateness.

Now let us move on to the second calendar taking a hint from the first (See Fig. 8). We said that the box-like projections represent time. In the second calendar there are eight of these boxes, four on the right and four on the left. This then becomes a full year solar calendar where the interior boxes represent the eight solar months of forty-five days in a whole year. The whole calendar is then enclosed in a double lined box, where the enclosing box represents completeness because the whole year is represented. (Space is the vessel of time.) In this calendar there are some interesting interior lines. These lines pull the interior boxes together from side to side. They function in a rather ingenious way. If one reads the calendar up one side and down the other, then we follow the flow of time through eight solar months as the sun passes through the five-key solar positions. These five positions may be indicated at the bottom of the box. Let us say that it is winter solstice and we start at the bottom moving up the left side and down the right. When we get to the top, it is summer solstice and four forty-five days solar

months have passed. Now we move from the left side of the box to the right and start counting down the four solar months back to the winter solstice and back to the place of beginning. But something else is happening that must be both explained and represented by the device. While time proceeds normally, the sun at summer solstice has really just reversed itself and is now starting to traverse the same sector of the horizon that it just covered in the previous forty-five days. This calendar device relates these two pieces of time with a horizontal line connecting the two topmost boxes which serves to say that while time has moved on, the space of these two solar months is now being traversed again in the opposite direction. In like manner the next two boxes (moving down) are connected as well as the next two. Now let us look at the head of the calendar because this device has been slightly anthropomorphized. (The anthropomorization of the calendar is a vast subject that is much too extensive for the scope of this report.)

The head of the calendar is again a box. Inside the box are four dots. Let each dot represent the four solar months of the semester between solstices. On top of the box (its head) are horns or antennae. This project from the head, top right and top left, to create a panorama of sight that represents the observer's view of the angle of solar traverse across the horizon. This angle is divided in the center which is quickly taken to represent the position of equinox. Here again, the numeric are interesting. There are three antennae, four dots, four sides to the box head and two interior angles. As the sun passes from left to right, it passes through four solar months and two seasons at three key positions. When the sun returns to the point of origin, the year is completed and four seasons have passed. Now let us proceed to the bottom of the main box or torso of the calendar.

At the bottom of the main box or torso, there is a small lobe like projection extending upward interiorly. Let this projection represent womb or phallus. At the end of the eight forty-five days solar months, there will be five or six days left over before the sun will be found in its correct solstitial position. This then becomes the womb of the year or the time of (or space for) rebirth and new beginning. The number of these days is indicated by the five lines underneath. The year is what the box is that this rectangle is attached to. This requires more research but let us go on to the third calendar.

The third calendar now brings us back to Rochester Creek to our point of beginning (See

Fig. 9). In order to understand this calendar we will need to consider two points. The first is the set of twelve wavy lines, and as verified at other sites, I take to represent twelve lunations, six lunar traverses of the horizon that transpire during one solar traverse between solstices. At Grapevine Canyon that technique is used again, and the twelve wavy lines in this calendar are incorporated here in four groups of three so there are three moons per season.

The second point to review is the two-pouch calendar from Rochester Creek. It turned out there that the three large and twenty-two small circles could function well as a numerical device to count the days between quarters and cross quarters. This calendar device implies that there was some kind of solar week of twenty-two or twenty-three days that divided the year into sixteenths. The solar week was arrived at by the fourth division of the year by two. Thus the year was divided into quarters and each quarter was divided into quarters again. This was four squared or doubles the magic of fourness. (The solar week is also found at Parowan Gap with good numerical representation and arithmetic correlation.) However, the solar week also fulfilled a more practical function. Calendaring the year is done for the very needful purpose of dividing the year into smaller portions that are more useful in daily existence. The month and the week do this for us. These are always changing in any given year so that the end of one year and the beginning of the next cannot conveniently be predicted using the lunations of the moon. Therefore, the author of this third calendar created a kind of reconciliation device. This third calendar divides the year into lunar months, solar months, and solar weeks. (Please remember that the terms solar month and solar week are used here for lack of better terms.)

Now, look at the calendar. Down the left side is a column of eight boxes. Let these represent the eight forty-five days solar months per year. But down this column every other horizontal line is extended on across the calendar and serves to divide the calendar into four seasons of ninety days each. Down the center of the calendar is consequently a column of four larger rectangles. Each of these is divided into four segments by three vertical wavy lines. Let each wavy line represent one traverse of the horizon by the moon as explained above and thereby indicating that during each season there are three lunations. The last column on the right becomes more complex. It is divided irregularly and split down the center in places. This additional vertical split divides the rectangles on the left so that the corresponding rectangles on

the right are only half that size. I, therefore, apply the principle that time is represented by space and thus a box of half the space equals half the time. Thus, we have divided the forty-day solar month in half and created the solar week of twenty-two or twenty-three days. However, the division in this column is not total and it looks as only some of the solar months were divided into this shorter period of time. Why does the calendar split some solar months and not others? I do not know. But the calendar has not yet taught us all that it has to say.

A diagonal line runs across this calendar. The line starts at the lower left and runs up the calendar and crosses the top of the calendar near center. Along this line is a large solidly pecked out bulge. This bulge is nearly circular and rests over the second horizontal line from the top. The line proceeds through the top of the calendar and up to a very wide "U" broadened to the width of the calendar. The "U" has two interior vertical lines to the left side. The diagonal line meets and stops about at the center of the "U." Let the "U" represent the traverse of the sun between its two extremes, the solstices. Let the point where the diagonal line meets the wide "U" represent the place of equinox sunrise. Let the tilt of the line represent the sun's angle of assent as it crosses the horizon, and let the near-circular bulge in this line represent the place of the sun in the calendar at the equinox. Still the question remains, which equinox? A site farther up the canyon leads me to believe that their year began at the winter solstice. Therefore, it is the winter solstice at the top and bottom of the calendar. Let time run down the calendar. Working down the center, then the second line from the top is the vernal equinox. The third line down is the summer solstice. The forth line down is the autumnal equinox, and it is the time between the autumnal equinox and the winter solstice that is calendared more closely and the solar weeks are observed and counted. This is consistent with the Parowan Gap panel where the day count becomes repeated utilization of the twenty-three leaves on the downward bowed bow. This calendar is different than the Zipper Glyph at Parowan Gap because it was not used in reverse. In other words, the time from summer solstice to winter solstice was calendared differently from the time of winter solstice to summer solstice because we started the calendar over again from the top rather than just working our way back up from the bottom.

Conclusion

In the monograph above, I have addressed the Fremont calendar as a single concept encoded in multiple ways. It should be apparent that the Fremont calendar is a simple concept of calendaring the year by repeated divisions by two. This technique was continued to the fourth division creating in places a solar week of twenty-two or twenty-three days. However, it is most often seen as a division of the semester into four parts of forty-five days each. Therefore, the semester between either solstice and the succeeding solstice became a basic calendar until that carried equal importance to the year itself. The Fremont calendar itself is not seen in one unique glyphic representation. It, therefore, has alluded many researches. After all, if the Zipper Glyph from Parowan Gap, the five petal glyph from Freestone Ranch, the panel at Rochester Creek, and any of the Grapevine Canyon calendars just explained were viewed side by side, a person would be reluctant to say that they are the same. thing let alone the same calendar. Each glyphic author took the concept of the calendar and encoded it in a way that was unique to that tribe or band which also utilized the unique topography of the particular site. This is very different from our culture and its way of recording technology. It really is the philosophy of Ernst Cassirer that turns the key. By analyzing the coming of light and the utilization of space and numbers to record time, each of the different manifestations of the Fremont calendar can be seen to represent the same conceptualization of time.

Reference

Cassirer, Ernst. "The Philosophy of Symbolic Forms." *Mythical Thought* Vol 2, New Haven, CT: Yale University Press, 1955.

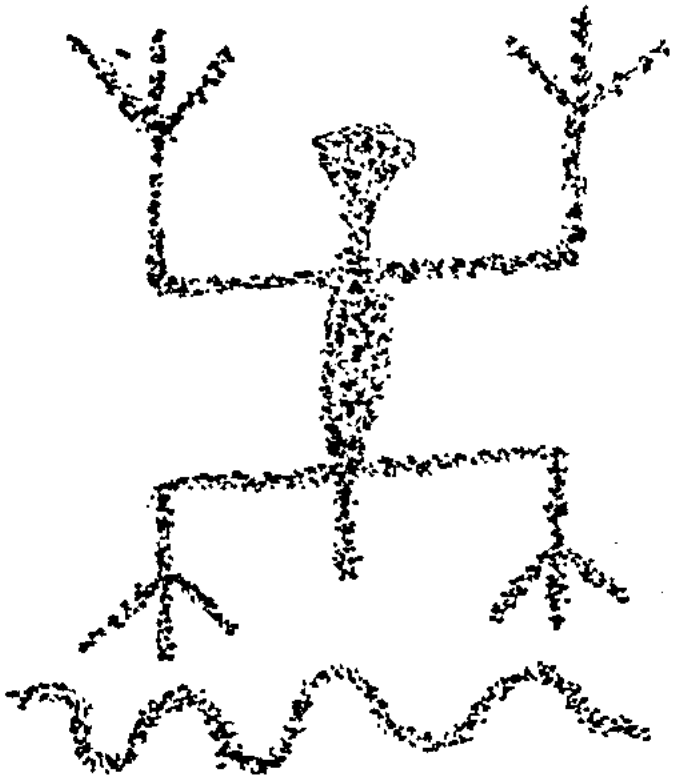


Figure #VI

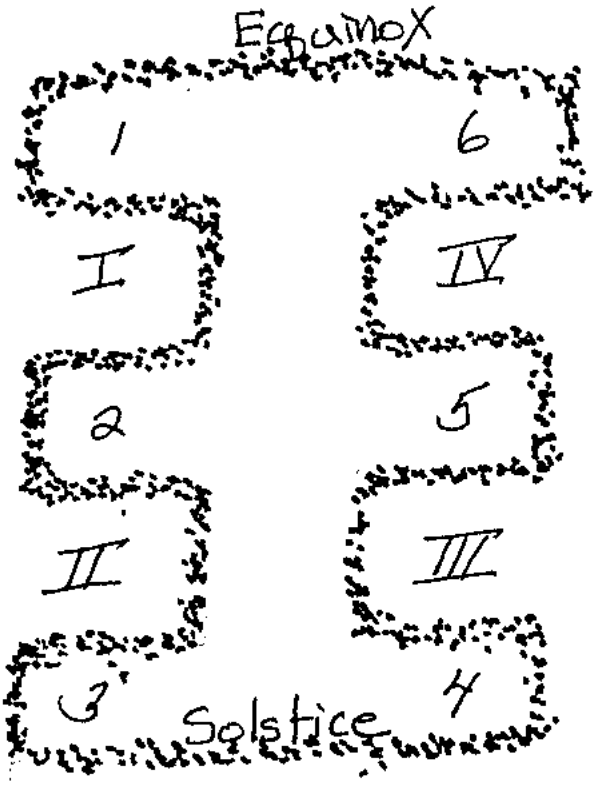


Figure #VII

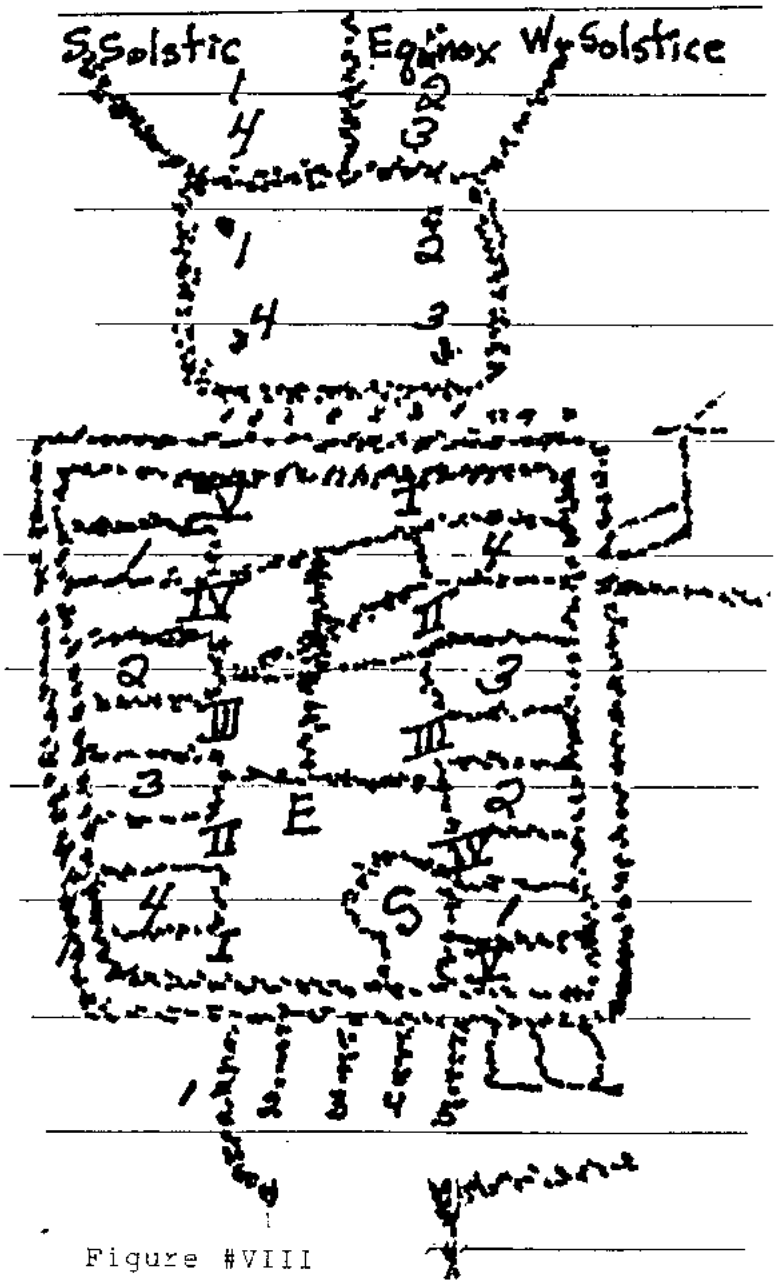


Figure #VIII

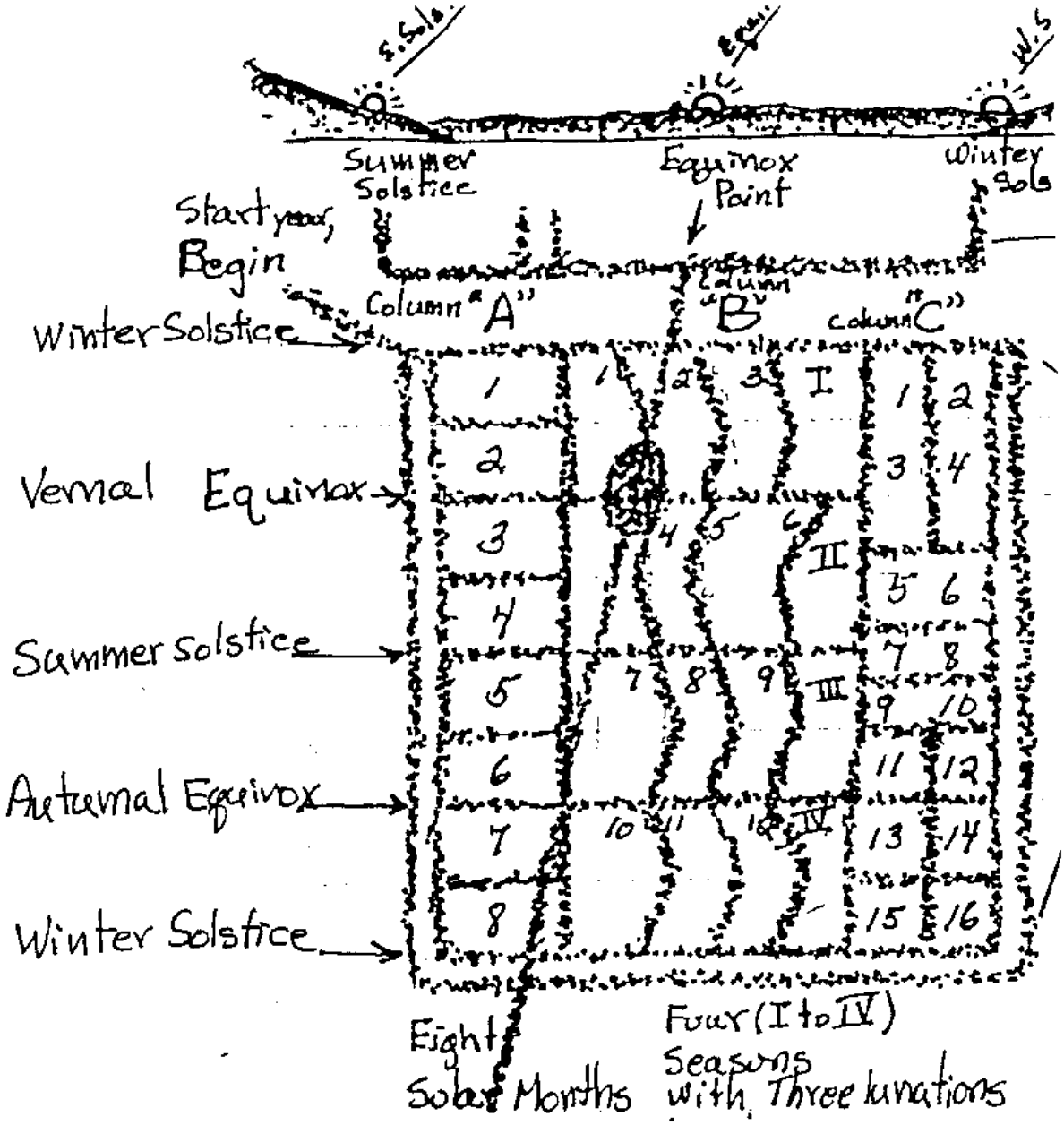

Summer Solstice
Equinox Point
Winter Sols
Start year, Begin
Column "A"
Column "B"
Column "C"
Winter Solstice
Vernal Equinox
Summer Solstice
Autumnal Equivox
Winter Solstice
I
II
III
IV
Eight Solar Months
Four (I to IV) Seasons with Three Lunations

Figure #IX

Rock Art Symbolism* Unique to the Virgin Anasazi Region: A Ritualistic Response to an Arid Environment

Steven J. Manning

Abstract

An explanation is proposed for a type or class of image that is located in the far south-western corner of Utah and in adjacent areas. The images consist, for the most part, of vertical rows of connected variously shaped, simple abstract features. These are commonly: oval, round, triangular, teardrop, lancoliate, amorphous, or combinations of these. The rows are generally connected at one or both ends to a horizontal line. Often these features are part of a more complex image. An interpretation for what these images symbolize is developed, and their possible significance to archaeology is discussed.

Introduction

This paper discusses a proposed meaning and purpose for what appears to be a unique class of rock art. The rock art is found in the low-lying, arid desert region of Washington County in the southwestern corner of Utah. This desert area is unique in Utah because it has a low elevation, an extremely arid climate, and types of vegetation found nowhere else in the State. The extreme aridity appears to have been the major causal factor in the creation of the rock art. It is appropriate, therefore, to closely examine this desert environment to better understand the rock art.

Environmental Setting

This desert area has a unique enough assemblage of features that it is differentiated into its own entity. It is generally referred to by naturalists as the Mojave Desert (also Mohave). The Mojave Desert in Utah is considered to be a northward extension of the ecosystem located largely in Arizona and Nevada. Therefore, the Mojave Desert of southwestern Utah, northwestern Arizona, and southern Nevada constitute the study area for this paper.

* Symbolism = A system** of symbols or representations.
**System = A group of interrelated elements forming a complex whole.

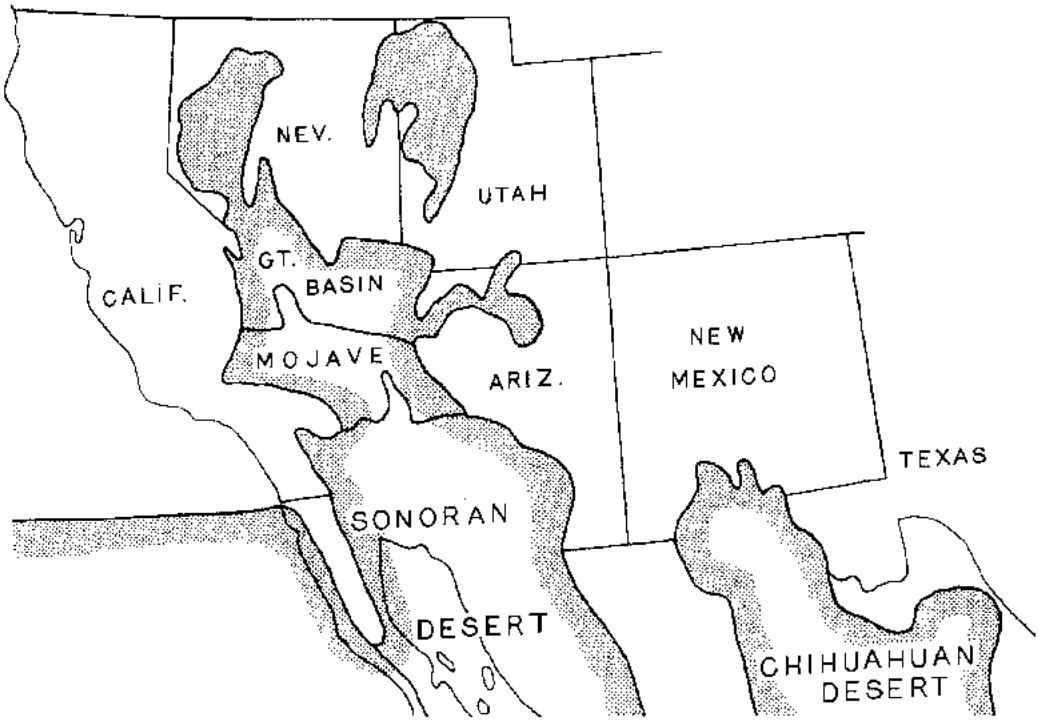


Figure 1. After Logan (1968). Logan placed the southwestern corner of Utah within the boundaries of the Great Basin Desert.

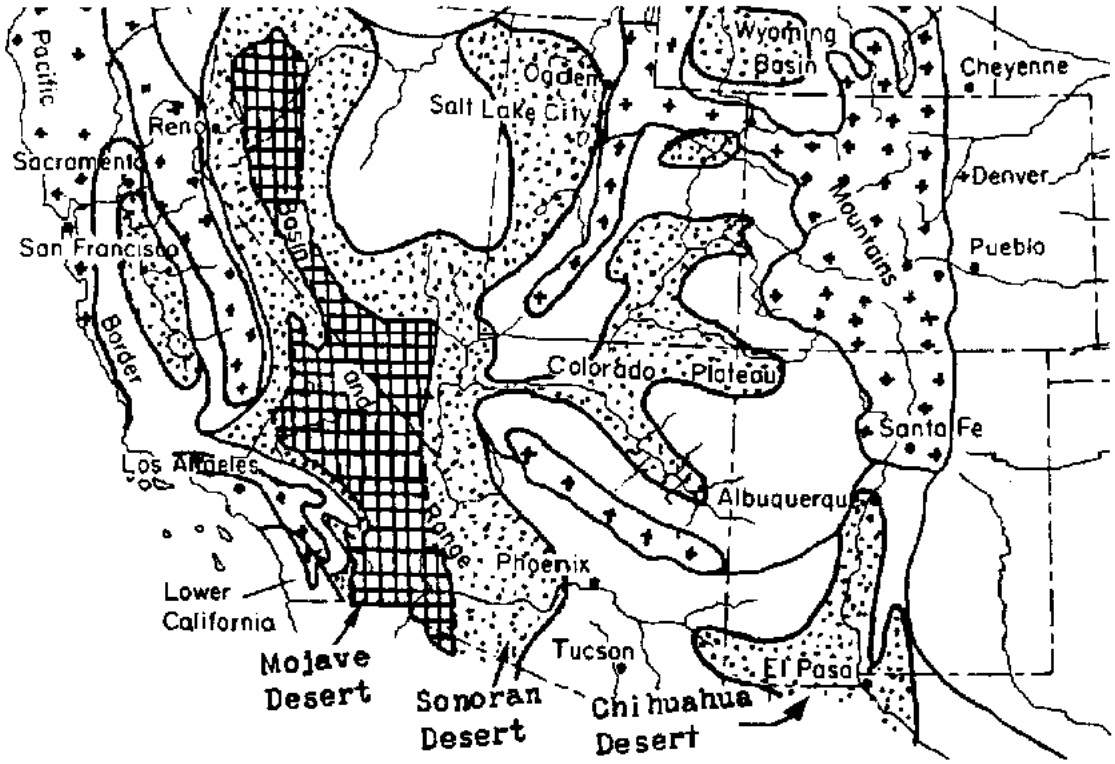


Figure 2. After Hunt (1983). Hunt placed the southwestern corner of Utah within the boundaries of the Sonoran Desert.

This arid region has been classified differently by different scientists. Some researchers have categorized it as part of the Great Basin Desert (Larson and Larson 1977:31; Logan 1968:32), see Figure 1. Others have included it within the Sonoran Desert boundaries (Hunt 1983:8), see Figure 2. Still others have defined it as being part of the Mojave (also Mohave) Desert (Jaeger 1957:124; Rowlands, et al. 1982), see Figure 3. (The Mojave Desert is considered by some biologists to be a transition zone between the Great Basin Desert to the north and the Sonoran Desert to the south.) Lastly, a few researchers have not included the area in any of the great North American deserts (Petrov 1976:100), see Figure 4.

These are but examples that illustrate the principal differences that exist in the categorization of this desert area. There are many variations of these, but they differ only in details (Bender 1982; MacMahon 1985). Certainly Richard F. Logan made an accurate observation when he wrote, "Considerable difference of opinion has developed concerning the demarcation of desert boundaries in the southwestern United States" (Logan 1968:33).

Probably the most accurate classification of this desert region is provided by David E. Brown (1994) in his recent work *Biotic Communities of the Southwest* and in the accompanying detailed map, see Figure 5. (See also Turner in the same volume for a detailed description of the characteristics of the Mojave Desert.) Brown identified the arid region in southwestern Utah as being part of the Mojave Desert environment. He categorized the Southwest into regions based on plant communities, and since vegetation is a principal determinate in the characterization of desert regions — it being determined principally by climate — his classification appears most accurate. I will, therefore, use Brown's determination as the current preeminent definition for the Mojave Desert.

The Mojave Desert of southwestern Utah, northwestern Arizona, and southern Nevada is characterized by an average elevation roughly between 1,000 and 3,000 feet above sea level. The point where the Virgin River crosses the Utah-Arizona boundary is the lowest point in Utah, an elevation of 2,350 feet.

The terrain of the Mojave dessert consists of broad, nearly level expanses of hot, arid lands separated by isolated steep, rocky mountains. Almost consistently the Mojave Desert section in Utah has the highest temperatures in the state. Annual temperature extremes may

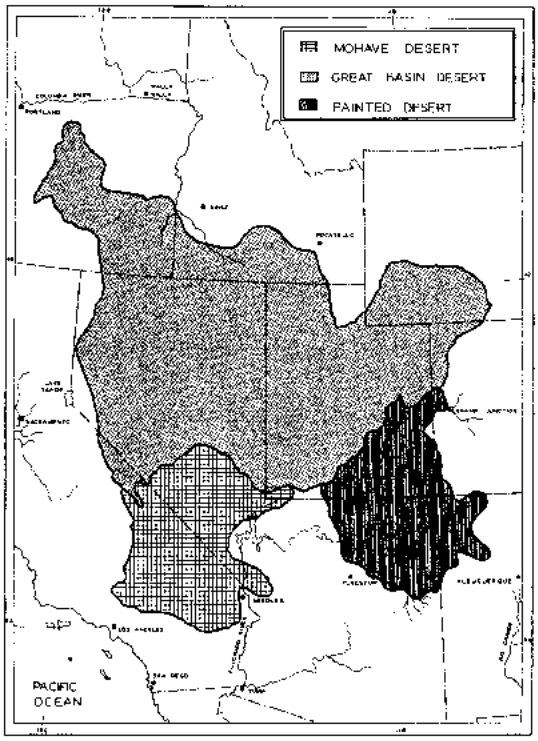


Figure 3. After Jaeger (1957). Jaeger placed the Southwestern corner of Utah within the boundaries of the Mojave Desert.

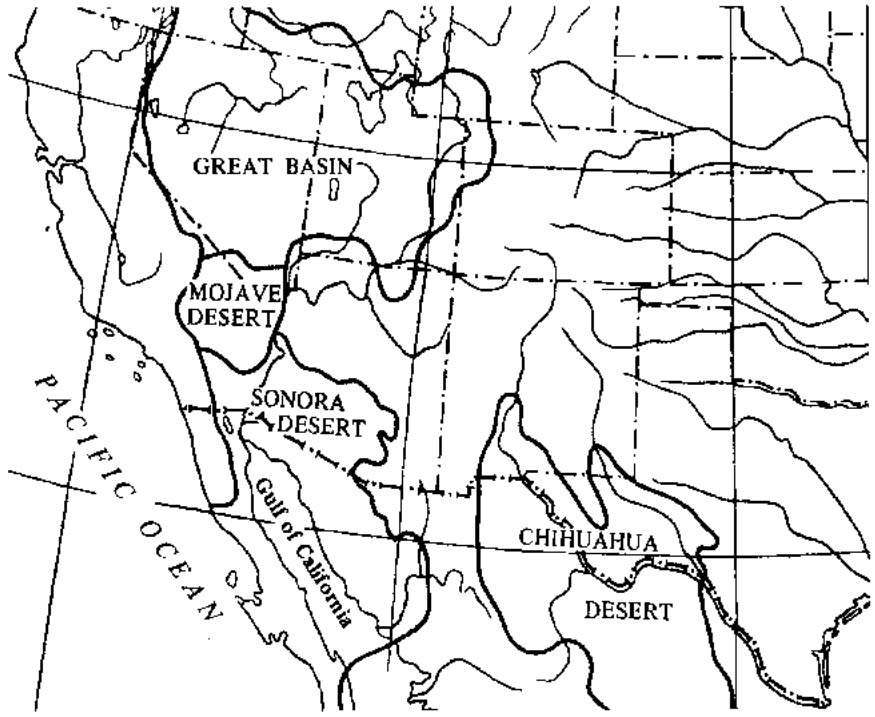


Figure 4. After Petrov (1976). Petrov did not place the Southwestern corner of Utah within any desert region.

range from 48° C (118° F) in the summer to -18°C (0° F) in the winter. The average annual precipitation is less than 6 inches per year. St. George, in the higher elevations, has a mean yearly rainfall of 8.2 inches; this drops to only 3.9 inches at Las Vegas. Even this small amount of precipitation is deceptive because there are years in which rainfall is only 75% of normal and there are often long periods with no rain whatsoever. Furthermore, only about one-third of this precipitation falls during the summer growing season.

The Mojave Desert of southwestern Utah has vegetation that is unique in Utah. The most dominant shrub is the creosote bush. Present also are the impressive Joshua Trees, the Cat's Claw bush and many unusual species of cactus, along with the more familiar saltbush, greasewood, sagebrush and blackbrush.

Archaeological Setting

The Mojave Desert area of southwestern Utah, northwestern Arizona, and southern Nevada is also unique archaeologically. It contains the western-most extent of the Anasazi Culture. Archaeologists have long recognized that the Anasazi who occupied this and nearby areas, were different from those farther east, and they attempted to characterize them in terms of their internal attributes and external relationships.

The cultural affiliations defined for this area are as plentiful and varied as those of the desert demarcations. Initially the area was considered part of a loosely defined "western and southern" division of the Anasazi (Kidder 1917). Kidder subsequently included it in the "Northern Periphery" of the Anasazi (Kidder 1924), see Figure 6. Gladwin and Gladwin (1934) included the area as part of their "Nevada Branch of the Anasazi," which they conceptualized as being a sub-branch of the Kayenta Branch of northeastern Arizona. This division was later modified and designated the "Virgin Branch of the Anasazi" by Colton (1952) and also by Shulter (1961) who revised and added to Colton's work. C. Melvin Aikens in 1966 published an extensive investigation of the "Virgin Branch" and defined the distribution as shown in Figure 7.

The "branch" designation is part of a "family tree" type system (root-stem-branch-phase) developed by Winifred and Harold Gladwin (1934) to classify southwestern cultures. Other archaeologists working in the southwest found problems with the Gladwins' system

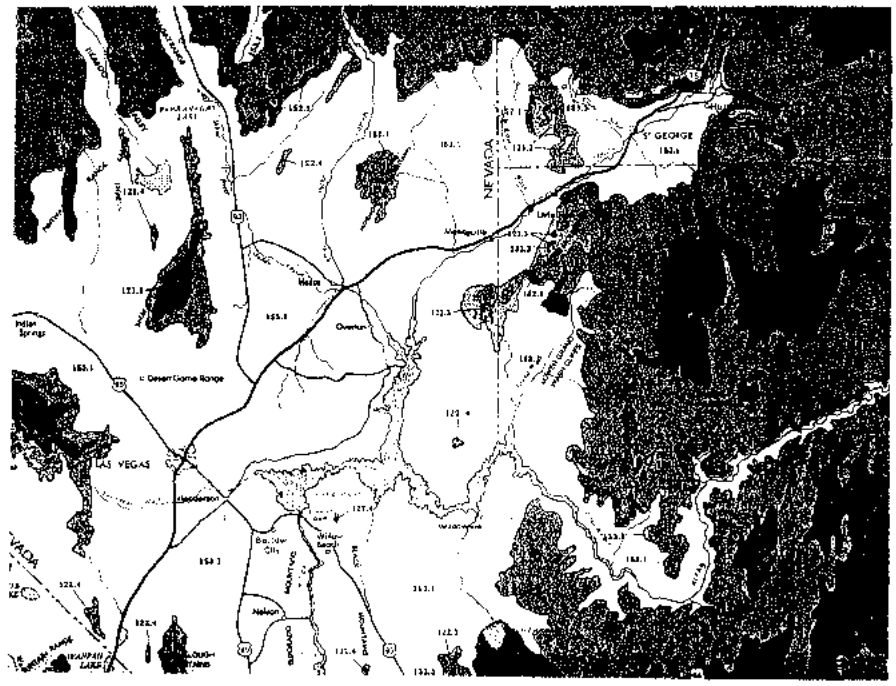


Figure 5. After Brown (1994). The Mojave Desert region is shown in white.

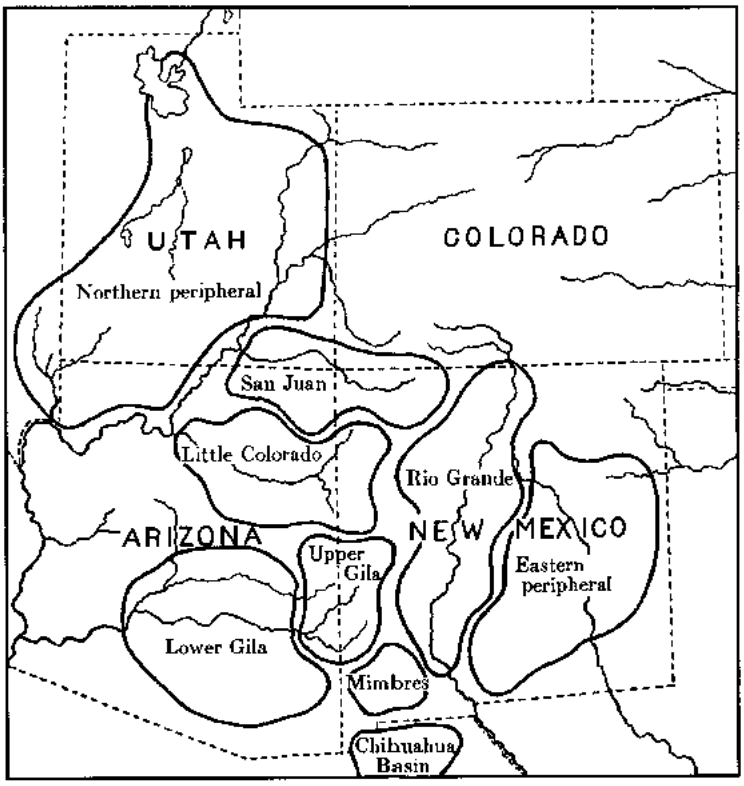


Figure 6. After Kidder (1917). Kidder's Culture Areas of the Southwest.

and developed modifications or other classification systems (Aikens 1965; Colton 1939; Daifuku 1961, 1966; Martin 1979; Martin and Plog 1973, and others). (For a discussion of the limitations and problems with this system see Cordell 1984.)

Following Aikens research and his criticism and discarding of the Gladwins' "branch" system, the term "Virgin Anasazi" became the most widely accepted designation (Ambler 1966a:6; Nickens and Kvamme 1981, and others). However, there are a number of researchers who refer to the Virgin Anasazi as the "Western Anasazi" (Thompson 1978; Walling, et al. 1986:18, and others). Their "Western Anasazi" is not to be confused with the "Western Anasazi" defined by Plog (1979:108-130) who classified all the Anasazi into one of two major groups — a Western and an Eastern. Plog's "Western Anasazi" covers roughly the Anasazi occupied areas of Arizona, Utah and Colorado. It should be noted that Plog does not include all the Virgin Anasazi area in his "Western Anasazi" boundary — his boundary does not extend into Nevada (Plog 1979:108). The large "Western Anasazi" division continues in use today — with some modifications (Cordell and Gumerman 1989), see Figure 8. Fowler and Madsen (1986) consider the Virgin Anasazi to be a term defining a sub-region within Plog's "Western Anasazi", as do others (Gumerman and Dean 1989), see Figure 9.

Some researchers (Ambler 1966b:174; Jennings 1989:305; Lister 1964:66; Schaafsma 1970:111-112, and others) have not recognized the Virgin Anasazi as an entity equivalent to, or significantly different from, the Kayenta Anasazi, which is found to the east, see Figure 9. Thus the term "Virgin Kayenta Anasazi" was created to refer to the Virgin Anasazi as a minor, if not inferior, variant of the Kayenta Anasazi. Lastly, there are those authors who have included very little of the Mojave Desert in the Anasazi area (Cordell 1984:15), see Figure 10.

It should be noted that all of these various classifications are based on variations in material culture, i.e., similarities and differences in ceramics, architecture, horticulture, mortuary practices, etc., (Aikens 1965; 1966; Day 1966; Johnson 1965; Reed 1948, 1950; Shutler 1984, and others) and ethnology (Eggan 1950). The differences also reflect changes in data and perception as archaeology and anthropology have developed over time.

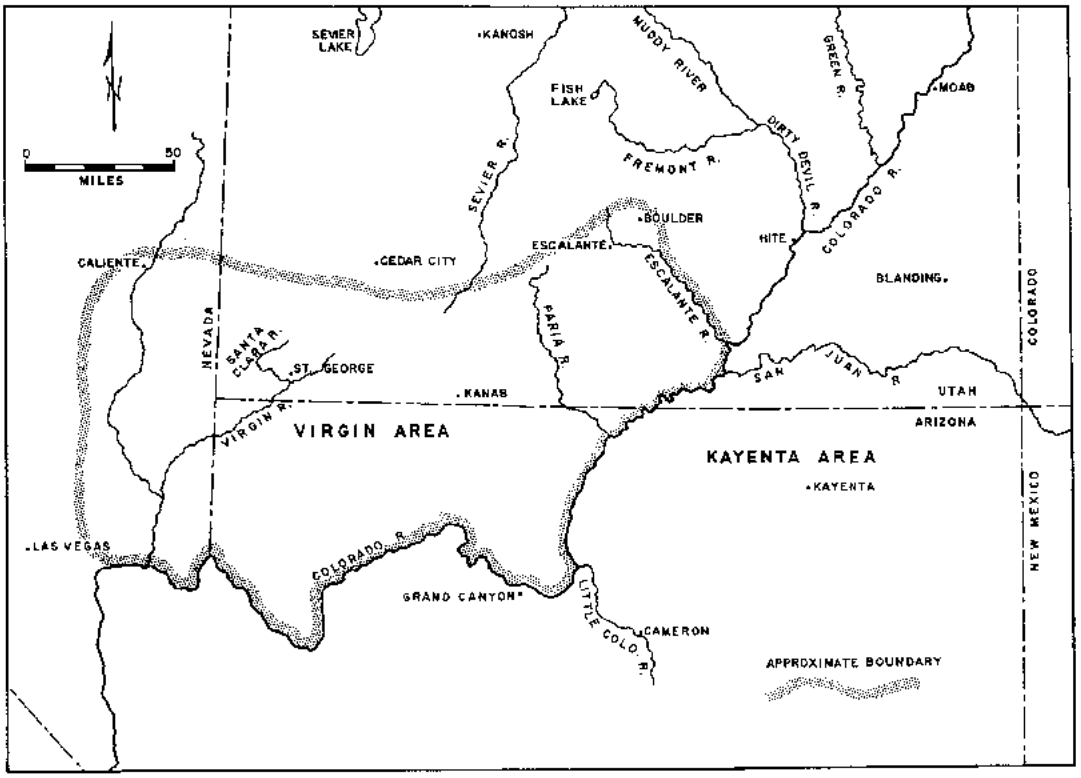


Figure 7. After Aikens (1966). Aikens' boundaries of the Virgin Anasazi.

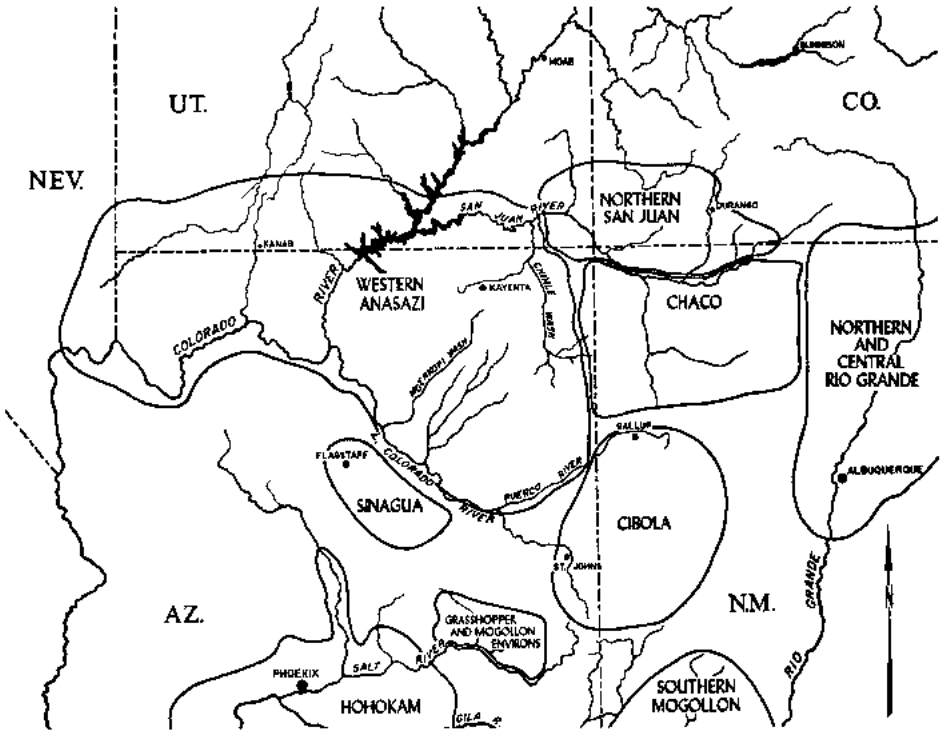


Figure 8. After Cordell and Gumerman (1989). The "Western Anasazi" as defined by Cordell and Gumerman.

Margaret M. Lyneis (1996) employed somewhat of an unconventional approach in subdividing the area for archaeological investigations. She ". . . subdivided the 'Far Western Region' of the Western Anasazi into districts based on geography, rather than on cultural units," see Figure 11. Lyneis created these divisions or regions because of: the paucity of detailed artifact analysis, the difficulty in determining sharp cultural boundaries from the material record, and because ". . . it is difficult to know how well our cultural concepts relate to any prehistoric sense of ethnicity or boundedness" (Lyneis 1996:12). Her geographically based divisions appear to have merit as will be shown below.

It is obvious that the boundaries of the Virgin Anasazi, and also its possible subdivisions, vary from one scholar to another and depend upon their experience, their viewpoint, and the time period emphasized. The boundaries are, therefore, the subject of much debate. In general, however, the boundaries for the Virgin Anasazi, as used by most scholars, are as follows: on the east it is considered to be roughly the Colorado River, and so it includes the Arizona Strip. The northern boundary includes: the St. George Basin or Virgin River drainage (Aikens 1965, 1966; Day 1966; Gunnerson 1962; Moffitt, et al. 1978; Pendergast 1962; and others), the Kanab Creek and Paria River drainages (Abbott 1979), the Muddy River drainage (Ambler 1981), the Pahranagat Valley (Crabtree and Ferraro 1980) and the Meadow Valley Wash drainage (Fowler, Madsen and Harrori 1973). The western boundaries are indistinct (Lyneis, et al. 1989). Walling, et al. (1986:18) reports that Anasazi remains have been found many miles west of Las Vegas. Madsen (1986:Fig. 1) places the existence of Anasazi ceramics well into southern California. South of Las Vegas the boundaries soon intersect those of the Patayan (Colton 1945) or Hakataya (Schroeder 1957, 1979). (See Cordell 1984:75-78 for a discussion of the conflicting terminology.)

The characterization of rock art in the area has also been varied. Polly Schaafsma (1970:111) defined both an Eastern Virgin Kayenta Anasazi Style and a Western Virgin Kayenta Anasazi Style. (Note Schaafsma's use of the term "Virgin Kayenta Anasazi") She later changed the name of the Western Virgin Kayenta Style to the Virgin Representational Style (Schaafsma 1980:153). It is not clear if Schaafsma's Virgin Representational Style also includes the Eastern Virgin Kayenta Style since she does not refer to it again.

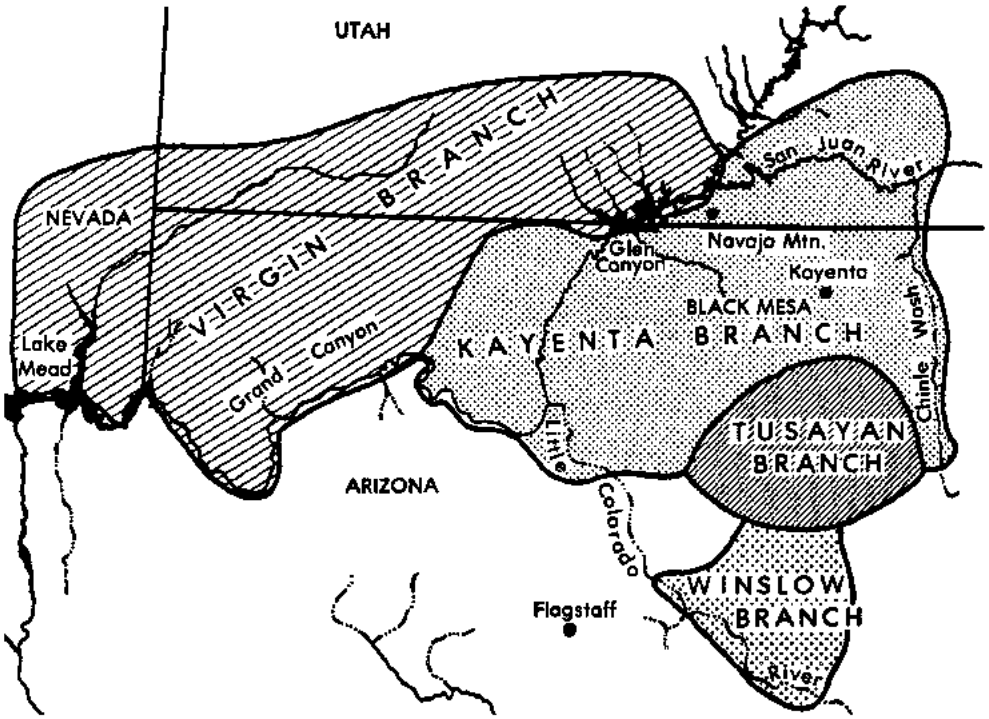


Figure 9. After Gumerman and Dean (1989). Gumerman and Dean's subdivisions of the Western Anasazi.

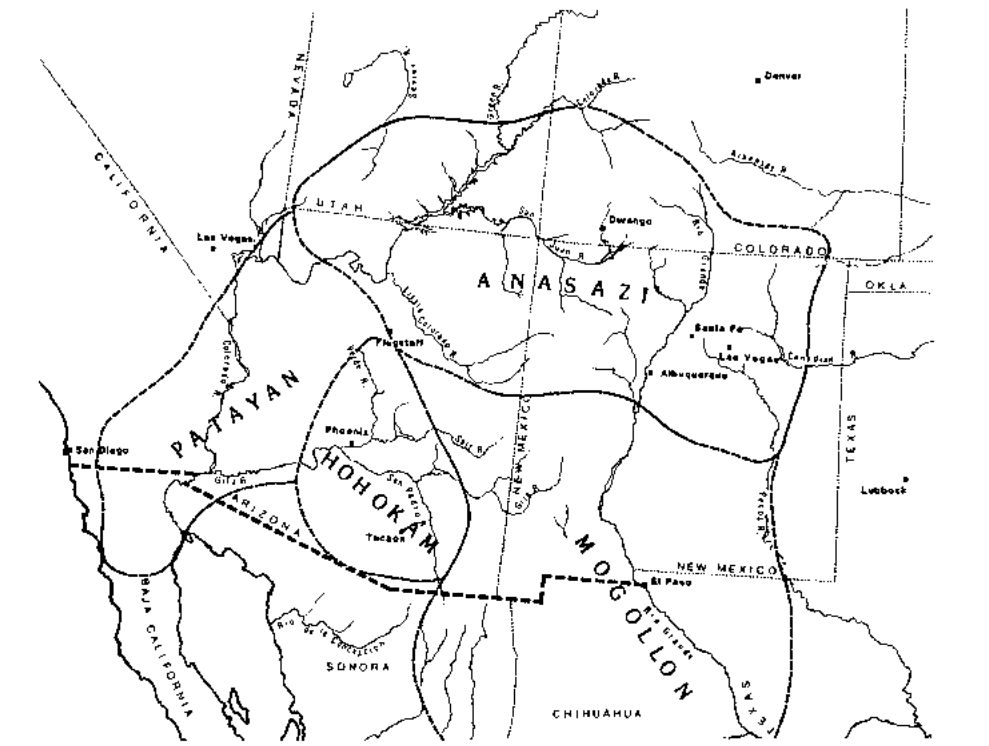


Figure 10. After Cordell (1984). Only part of the Mojave Desert is included in Cordell's Anasazi area.

References Cited

Abbott, David R. "An Introduction to the Cultural Resources of the Kaibab Plateau." *Western Anasazi Reports* 2(2) (1979) Cedar City, Utah: 126-140.

Aikens, C. Melvin. "Excavations in Southwest Utah." *University of Utah Anthropological Papers* No. 76. Glen Canyon Series No. 27 (1965): Salt Lake City.

"Virgin-Kayenta Cultural Relationships." *University of Utah Anthropological Papers*, No. 79 (1966): Salt Lake City.

Ambler, John R. "Caldwell Village." *University of Utah Anthropological Papers* No. 84 (1966a): Salt Lake City.

"Caldwell Village and Fremont Prehistory." Unpublished Ph.D. dissertation in anthropology, University of Colorado, Boulder, 1966b.

The Anasazi. Flagstaff: Museum of Northern Arizona Press, 1981.

Bender, Gordon L., ed. *Reference Handbook on the Deserts of North America.* Westport, Connecticut: Greened Press, 1982.

Brown, David E. *Biotic Communities of the Southwest.* Salt Lake City: University of Utah Press, 1994.

Colton, Harold S. "Prehistoric Culture Units and Their Relationship in Northern Arizona." Flagstaff: *Museum of Northern Arizona Bulletin* No. 17, 1939.

Colton, Harold S. cont.

"The Patayan Problem in the Colorado River Valley." *Southwestern Journal of Anthropology* 1(1) (1945):114-121.

"Pottery Types of the Arizona Strip and Adjacent Areas in Utah and Nevada." *Museum of Northern Arizona Ceramic Series* No. 1, Flagstaff, 1952.

Cordell, Linda S *Prehistory of the Southwest*. Orlando, Florida: Academic Press, 1984.

Crabtree, Robert H. and David D. Ferraro

"Artifact Assemblages from the Pahranagat Unintentional Trespass Act Land Sales Parcels: Lincoln County, Nevada." Complied for the Bureau of Land Management, Las Vegas District Office. University of Nevada, Museum of Natural History, Archaeological Research Center, 1980.

Daifuku, Hiroshi. "Jeddito 264: A Basketmaker III-Pueblo I Site in Northeastern Arizona." Papers of the Peabody Museum of American Archaeology and Ethnology, 33 (1) (1961): Harvard University, Cambridge.

Day, Kent C. "Excavations at Gunlock Flats, Southwestern Utah. Miscellaneous Collected Papers" No. 11. *University of Utah Anthropological Papers* No 83 (1961): Salt Lake City, pp. 1-48.

Fewkes, Jesse W. "Tusayan Totemic Signatures." The American Anthropologist 10(1) (1897):1-11.

"Designs of Prehistoric Hopi Pottery." Thirty-third Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution 1911-1912. (1919): U.S. Government Printing Office, Washington, D.C., pp. 207-284.

Fowler, Don D. and Madsen, David B. "Prehistory of the Southeastern Area In Great Basin." ed. Warren L. D'azevedo,. *Handbook of North American Indians* Volume 11. William C. Sturtevant, gen. ed. (1986): Smithsonian Institution, Washington, D.C., pp. 173-182.

Fowler, Don D., Madsen, David B. and Hattori, Eugene M. "Prehistory of Southern Nevada." University of Nevada, Desert Research Institute, Social Sciences and Humanities Publications, No. 6 (1973): Reno.

Gladwin, Winifred and Gladwin, Harold S. "A Method for Designation of Cultures and Their Variations." *Medallion Papers* No. 15. (1934): Gila Pueblo, Globe Arizona,.

Gumerman, George J., and Dean, Jeffery S. "Prehistoric Cooperation and Competition in the Western Anasazi Area." *In Dynamics of Southwest Prehistory,* ed. Linda S. Cordell and George J. Gumerman, (1989): Smithsonian Institution Press, Washington, D.C., pp. 99-148.

Gunnerson, James H. "Highway Salvage Archaeology: St. George, Utah. Miscellaneous Collected Papers, No. 3." *University of Utah Anthropological Papers* No. 60 (1962): Salt Lake City, pp. 45-65.

Heizer, Robert F. and Baumhoff, Martin A. *Prehistoric Rock Art of Nevada and Southern California.* University of California Press, Berkeley, 1962.

Hunt, Charles B. "Physiographic Overview of Our Arid Lands in the Western U.S."*Origin and Evolution of Deserts*. ed. Stephen G. Wells and Donald R. Haragan. Albuquerque: University of New Mexico Press, 1983.

Jaeger, Edmond C. *The North American Deserts*. Stanford, California: Stanford University Press, 1957.

Jennings, Jesse D. *Prehistory of North America*. Mountain View, California: Mayfield Publishing Co., 1989.

Kidder, Alfred V.

"Prehistoric Cultures of the San Juan Drainage." Proceedings 19th International Congress of Americanists (1917): Washington, D.C., pp. 108-113.

"An Introduction to the Study of Southwestern Archeology with a Preliminary Account of the Excavations at Pecos." (1924) Department of Archaeology, Phillips Academy. Yale University Press.

Larson, Peggy and Larson, Lane. *A Sierra Club Naturalist's Guide to the Deserts of the Southwest*. San Francisco: Sierra Club Books, 1977.

Lister, Florence C. "Kaiparowits Platcau and Glen Canyon Prehistory: An Interpretation Based on Ceramics." *University of Utah Anthropological Papers* No. 71, Glen Canyon Series No. 23 (1964): Salt Lake City.

Logan, Richard F. "Causes, Climates, and Distribution of Deserts." *Desert Biology*, ed. G. W. Brown, Jr., (1968): New York: Academic Press, pp. 21-50.

Lyneis, Margaret M. "Pueblo II-Pueblo III Change in Southwestern Utah, the Arizona Strip, and Southern Nevada." *The Prehistoric World, A.D. 1150-1350*, ed. Michael A. Adler. (1996): Tucson: The University of Arizona Press.

Lyneis, Margaret M., Rusco, Mary K. and Myhrer, Keith. "Investigations at Adam 2 (26Ck2059), A Mesa House Phase Site in the Mope Valley." *Nevada State Museum Anthropological Papers* No. 22 (1989) Carson City, Nevada.

MacMahon, James A. *Deserts*. New York: Chandler Press, 1985.

Madsen, David B. "Prehistoric Ceramics in Great Basin." ed. Warren L. D'azevedo, *Handbook of North American Indians* Volume 11. William C. Sturtevant, gen. ed. (1989): Smithsonian Institution, Washington, D.C., pp. 206-214.

Mallery, Garrick. "Picture Writing of the American Indians." Tenth Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution 1888-1889 (1893): U.S. Government Printing Office, Washington, D.C.

Manning, Steven J. "A Modal Based Classification System for Rock Art Research: Overcoming Stylistic Methodological Problems." *Utah Rock Art*, Vol. 11, Sec. 10. (1993): Salt Lake City.

Martin, Paul S. "Prehistory: Mogollon in Southwest." ed. Alfonso Ortez, Handbook of North American Indians, Volume 9. William C. Sturtevant, gen. ed. (1979): Smithsonian Institution, Washington, D.C., pp. 61-74.

Martin, Paul S. and Plog, Fred. *The Archaeology of Arizona*. Garden City, New York: Doubleday Natural History Press, 1973.

Moffitt, Kathleen, Rayl, Sandra and Metcalf, Michael. "Archaeological Investigations along the Navajo-McCullough Transmission Line, Southern Utah and Northern Nevada." *Museum of Northern Arizona Research Paper* No. 10. (1978): Flagstaff.

Nickens, Paul R and Kvamm, Kenneth L. "Archaeological Investigations at the Kanab Site, Cane County, Utah." *Utah Bureau of Land Management Cultural Resource Series* No. 9 (1981): Washington, D.C.

Pendergast, David M. "The Free Site, Santa Clara, Utah Miscellaneous Collected Papers." No. 7. *University of Utah Anthropological Papers* No. 60 (1962): Salt Lake City.

Petrov, M. P. *Deserts of the World.* New York: John Wily and Sons, 1976.

Plog, Fred "Prehistory: Western Anasazi in Southwest." ed. Alfonso Ortez,. *Handbook of North American Indians* Volume 9. William C. Sturtevant, gen. ed. (1979): Smithsonian Institution, Washington, D.C., pp. 108-130.

Rowlands, Peter, Johnson Hyrax, Rioter, Eric and End, Albert. "The Mojave Desert." *Reference Handbook on the Deserts of North America*, ed. Gordon L. Bender (1982): Westport, Connecticut: Greened Press, pp. 103-145.

Schaafsma, Polly "The Rock Art of Utah from the Donald Scott Collection." *Papers of the Peabody Museum of Archaeology and Ethnology* No. 65 (1970): Cambridge, Harvard University.

Indian Rock Art of the Southwest. Albuquerque: University of New Mexico Press, 1980.

Schroeder, Albert H. "The Hakataya Cultural Tradition." *American Antiquity* 23(2) (1957): 176-178.

"Prehistory: Hakataya, in Southwest." ed. Alfonso Ortez, *Handbook of North American Indians* Volume 9. William C. Sturtevant, gen. ed. (1979): Smithsonian Institution, Washington, D.C., pp. 100-107.

Shulter, Richard, Jr. "Lost City: Pueblo Grande de Nevada." *Nevada State Museum Anthropological Papers* No. 5 (1961): Carson City.

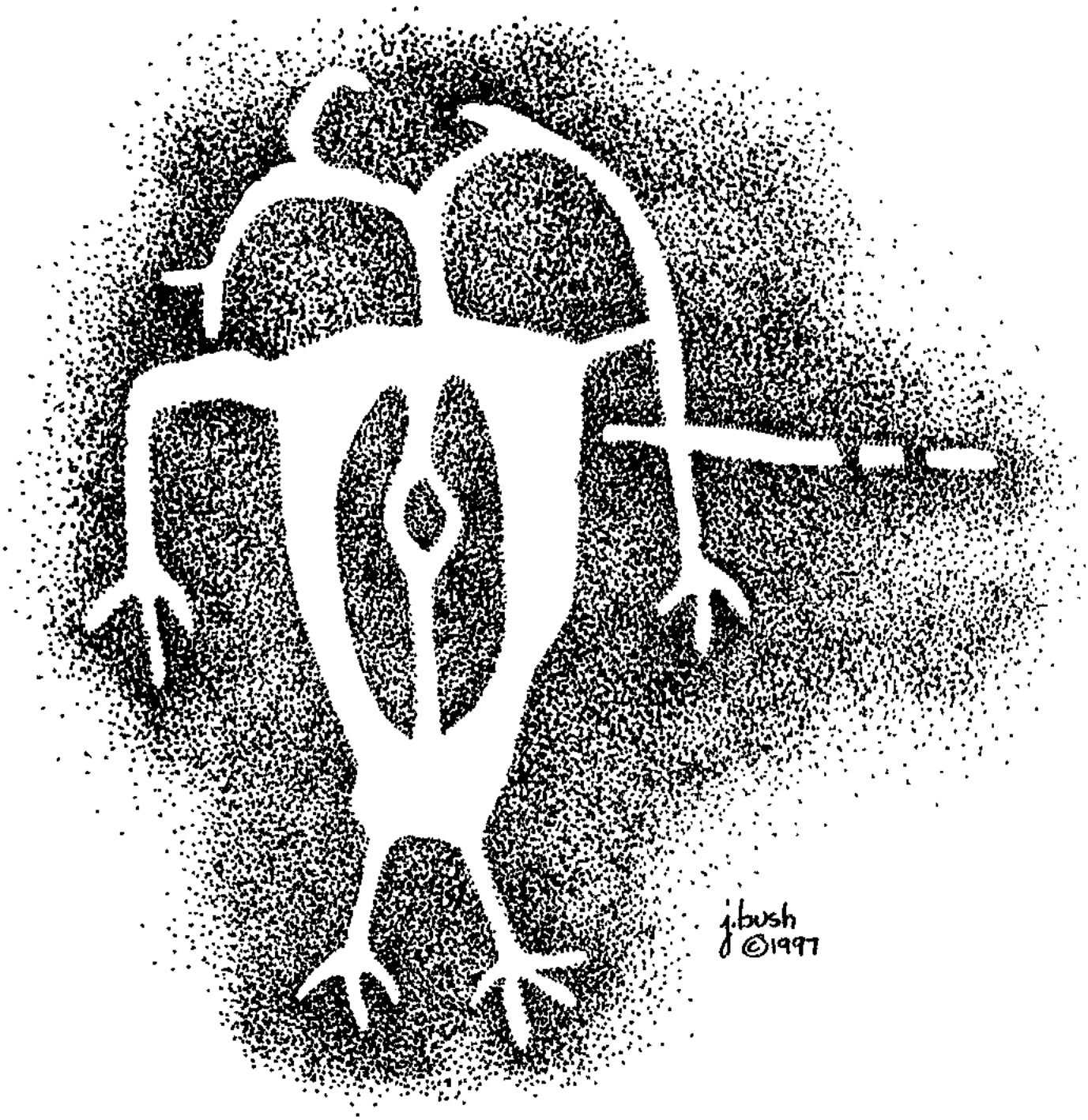
Thompson, Richard A. "The Western Anasazi Workshop, December 10, 1977." *WesternAnasazi Reports* 1(1) (1978): pp. 3-12.

Turner, Raymond M. "Mohave Desertscrub." *Biotic Communities of the Southwest.* ed. David E. Brown (1994): Salt Lake City, University of Utah Press.

Whitley, David S. *A Guide to Rock Art Sites. Southern California and Southern Nevada.* Missoula: Mountain Press Publishing Co., Montana. 1996

Walling, Barbara A., Thompson Richard A., Dalley, Gardiner F. and Weder, Dennis G. "Excavations at Quail Creek." *Utah Bureau of Land Management Cultural Resource Series* No. 20 (1986): Washington, D.C.

Notes



Rock Art from Coal Canyon, drawn by Jane Bush

Notes

Renegade Canyon, Photo by Ronald N. Spees