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A WINTER SOLSTICE SITE IN INDIAN CREEK CANYON, UTAH

The practice of sun and moon-watching among the Pueblo Indians of historic times, in order to determine a ceremonial and agrarian calendar, has been well documented by the early ethnologists (Fewkes 1897; Parsons 1939:122-123; Stephen 1936:20,62,1075). The relatively new science of Archaeoastronomy has, in recent years, confirmed the antiquity of that practice. The prehistoric Anasazi, considered the ancestors of the Pueblo people, relied upon their observations of the solar cycle to tell them when to plant, when to harvest, and when to initiate ceremonies necessary to ensure a successful crop. In the ancient pueblos of Chaco, Zuni, and Hovenweep, architectural features aligned to the solstice and equinox positions of the sun accurately marked these solar events for the pueblo dwellers. Many of these features were windows or portholes through which the sun shone for only a few days of the year, often illuminating a marker in the opposite wall. Another method of observation, still employed in recent times on the Hopi mesas, used horizon points to mark the sunrise or sunset. This method required a viewing station used consistently by the observer, and well-defined horizon features to use as foresights to align with the rising or setting sun.

Associated with known sun-watching sites are certain petroglyphs or pictographs. These symbols have come to be diagnostic aids in identifying such stations and, in fact, led to our discovery of the winter solstice site that is the subject of this paper. The symbols are: concentric circles, the spiral, the serpent (sometimes plumed), the Pueblo

sun symbol (either two circles centered with a dot, or the rayed circle), the crescent moon and the star (variously depicted with a disc, cross or rayed circle). Except for the first two these symbols are known to be linked with Pueblo sky-mythology. The spiral, which has been traditionally connected with water, springs, and rain-making ceremonialism, as well as with the Hopi migration legend, seems to have no recorded reference to sky-watching, yet is present at a majority of sites. Concentric circles may be regarded as sun symbols. However, it is puzzling that the number of rings in a circle may vary from site to site and that sometimes several variations may be present at the same location. Current investigation (Benson 1980:5-9) seeks to prove that such variations may represent the different solar events that may be observed, but that theory is yet undisturbed.

One of the earliest references to sun-watching symbols was made by Frank Cushing (1970:105), who described a shrine at the ancient and abandoned Zuni pueblo of Matsaki as being, "sculptured with the face of the sun, the sacred hand, the morning star and the new moon." At that time, in 1880, observations were still being made there by the Sun-Priest at equinox and summer solstice. In 1972, this same complex of figurines was discovered in Chaco Canyon, painted upon a cliff below Penasco Blanco. Although there is speculation that this pictograph might represent the 1054 supernova (Brandt, et al. 1975:53-54), the anthropologist Florence Ellis, believes that these symbols mark a sun-watching site, and she presents supportive evidence based

upon her research among the pueblos (Ellis 1975). To briefly summarize her analysis of these figures: The sun symbol in its simplest Pueblo form consists of two concentric circles; the outer ring symbolizing Father Sun's rays, the inner body, centered with a dot for his umbilicus, from which all good things are supposed to come for mankind. The moon, capable of influencing Sun's behavior, is usually depicted in its crescent form, with tips pointing downward, as that is considered a "wet" or "lucky moon". The star represents the "Great Star" or "Morning Star". It follows the moon closely and is symbolic of the beloved Twin War gods, offsprings of the sun. The handprint is a common Pueblo signature mark signifying, "duty completed." Its presence at an open shrine might identify the people responsible for it.

It was the presence of this same group of figures that led us to believe that a rock art site in Indian Creek, Utah was a solstice station, although initially that possibility seemed unlikely because of its orientation. The canyon is well known for its wealth of rock art, and though never investigated archaeology, has only recently been surveyed by members of the Utah Rock Art Research Association. In the past, the University of Utah has conducted surveys and excavations within the limits of the park and in Beef Basin further south (Hunt 1952; Rudy 1955; Sharrock 1966; Gunnerson 1969). The area is generally regarded as the northwestern border of the San Juan Anasazi, Mesa Verde branch, overlapping the southeastern frontier of the Fremont culture. A continuing enigma has been the apparent mingling of Anasazi and Fremont traits. The identifiable habitation sites adjacent to the canyon are all Mesa Verdean, as are almost all the artifacts recovered. However, the rock art that is considered contemporary with the Pueblo occupation (thought to date roughly between 1050 and 1300 A.D.) is predominately Fremont in style.

The canyon is known to have been a route into the inhabited areas of Salt Creek and Beef Basin. A variety of rock art styles in the canyon ranges in time from the Barrier Canyon style, the early Glen Canyon linear, or style 5, as classified by Turner (1963), the San Juan Basketmaker, the Fremont, the Anasazi, to (probably) the Ute, and (possibly) the Navajo. The site we are discussing is located a considerable distance up a steep talus slope. It ranges along the foot of the cliff and is contained within an area of approximately 60 meters. It is composed of some 85 separate figures and elements, 32 of these are symbols often regarded as counting devices (sawteeth, rows of dots, etc.), or as astronomical in meaning (crescents, rayed half circles, concentric circles, spirals, etc.). Several figures are shamanistic in feeling. In attempting to identify the style of these petroglyphs and the approximate time-span they represent, we will single out the few that seem significant to us. We list them as follows:

1. The bow and arrow is depicted at other sites; none are present here, but there is a single atlatl, which might argue for an early dating.
2. Although in other parts of the canyon many petroglyphs depicting the horse are found, none are present at this site.
3. The only figure that might be said to date from the historic era is the head of a horned animal, depicted twice, one a petroglyph the other painted. These horned animals possibly represent cattle, but are closer in resemblance to the bison. As cattle depictions are not found in any place in the canyon, but the bison is well represented, it seems that this interpretation is more likely.
4. Lichen is present on the majority of the glyphs, an age-determining factor possibly valid in this area. Turner (1963:15) found

that lichen-bearing petroglyphs in Glen Canyon region rarely post-dated the Twelfth Century.

5. Six "sarcophagus" figures of the Fremont style are present. The majority of glyphs are difficult to classify as either wholly Fremont or Anasazi. The one instance of superimposition shows a sheep overlaying a Fremont anthropomorph, implying a difference in time periods. However, as evidence indicates that the two cultures were nearly contemporaneous here, the larger part of the site is probably in the late Pueblo II/III range.

The petroglyph panel containing the symbols significant to the solstice, which we will designate Panel 1, appears at the base of a high cliff facing southwest. It contains 3 of the 4 figures found in the Chaco and Zuni groups: the crescent moon, cusps down; the star, represented by a disc, and the handprint. The sun symbol, though present on an adjacent panel, is missing; but to the left of the group another sun related figure, the serpent, appears. As most of the eastern half of the sky is obscured by the cliff the panel is on, observations seemed limited to the western horizon. Although several prominent peaks appeared on the canyon wall across the valley, none seemed to align with the equinox or solstice settings of the sun. Although we were sure this was a solstice site, there seemed to be no evident way to observe the event. However, further exploration led to the discovery of a group of petroglyphs over a ledge some 11 meters above the other panels at the base of the cliff. This group included a closed spiral, a five-ringed concentric circle, and a row of sawteeth. Upon climbing to the ledge, we found that a natural "window" was visible above the ledge and far enough to the southeast that it seemed possible it could frame the rising sun at its winter solstice position. Lacking the proper instruments (and the astronomical knowledge) to

calculate this possibility, we decided to return to the site at the time of solstice. Meanwhile, continuing our examination, we determined the following: the ledge, about 12 meters long, is somewhat concave in shape, affording only two locations from which the window can be seen. Point A is nearest the window and about 6 meters below it. At Point B, at the northwest end of the ledge, one must be seated on a projecting rock in order to see the window. On the cliff face next to the rock art there is a serpent glyph similar in style and conformation to the serpent on Panel 1 below. This symbol, we feel, related directly to the sun at solstice and is significant in its placement. Perhaps equally significant is the location above Point A of the other symbols.

On December 20, 1980, we arrived at the site before dawn, and taking up our stations at Point A and Point B (Figure 1), had a long chilly vigil. Although true sunrise was around 7:30, it wasn't until 9:50 that, to our great excitement, the first rays of the sun struck the inner wall of the window's corridor. As the sun moved higher and its light slowly filled the window, a rectangular image of sunlight appeared in the cliff shadow cast on the canyon floor below. This image slowly moved onto the projecting rock art at Point B, descending gradually until the full image was contained within the confines of the rock. At 10:15 the observer seated on the rock at Point B could see the sun appear at the top of the window. From Point A the sun was visible at the bottom of the window. By 10:35 the image on the rock had begun to dwindle and disappear.

As it is certain that the sun can be seen through the window from the canyon floor below, why was it necessary to make the difficult climb to the ledge to observe it? We believe one reason was that the sun's path across the rock at point B, and the

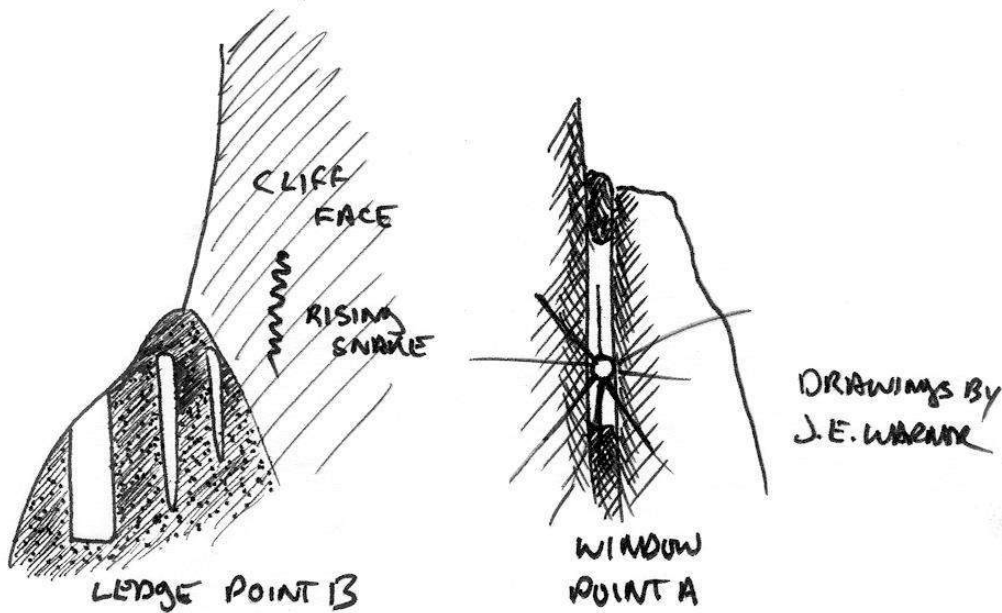
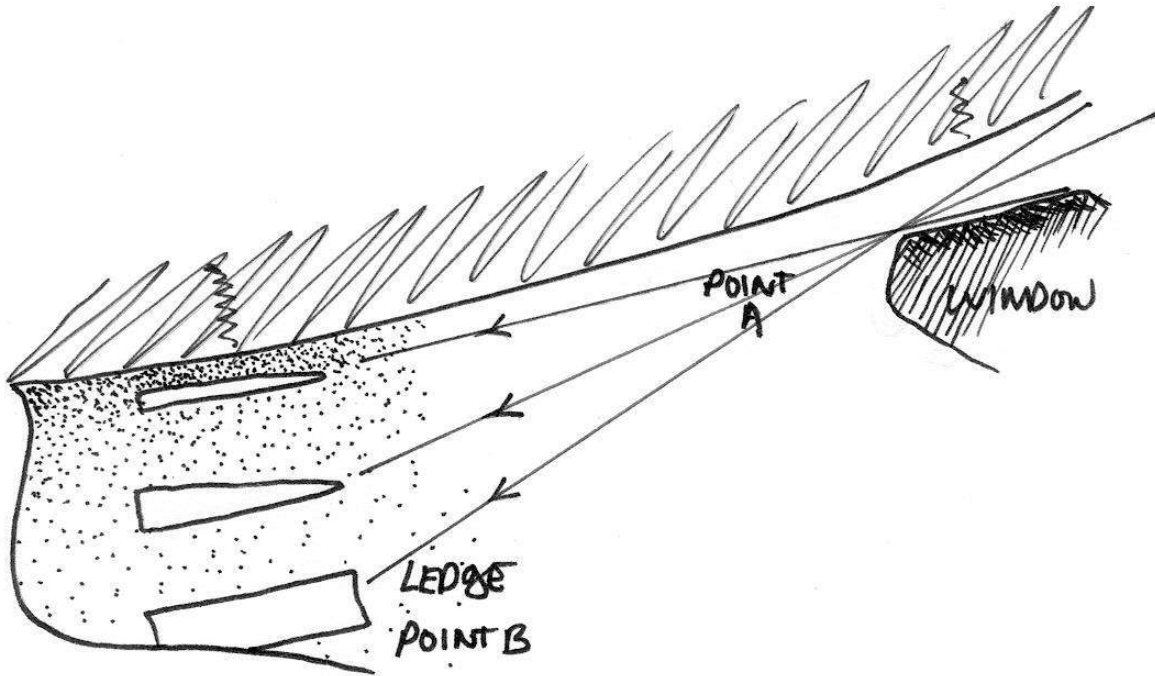


Figure 1

limited area of the viewing site, would more accurately gauge the time of solstice. At that time, before the sun's image begins to fade, it is at the highest position on the rock that it will be seen, and is just next to the serpent glyph. After solstice its path and the final image would daily be seen at a lower position. Unfortunately, because of

the long trip it entails for us, we have been unable to make a methodical series of observations to determine just when the sun's rays first penetrate the window and when it is no longer seen. The sun's rays would first be evident, of course, at Point A beneath the window, the sun appearing first at the top, and daily at a lower position,

until it reaches the bottom of the window at solstice. Thus, the location of the symbols above this spot may infer that this was the observer's station, either to observe the sun itself in the window or its image on the rock at Point B. What significance, therefore, do these symbols have? The sawtooth has sometimes been considered a possible counting device. It is interesting that here the left end is divided into 2 equal rows of teeth. Could this imply some sort of "before and after" solstice count? It is possible that a "count" might refer to the number of days or ceremony preceding or following solstice. The connected rectangles to the left of the group resemble a series of the rectangular light image. Unfortunately it is broken away and its original number could therefore, never be established. It is, of course, a symbol common in the Southwest, and this resemblance could be fortuitous. If the spiral and concentric circles represent other solar events observed here, we haven't as yet identified a method of viewing them, as the summer solstice and equinox sunset points, as seen from the site area somewhat indelible on the horizon. It is possible that lunar observations were made here. Lunar cycles have played an important role in determining the Pueblo calendar, and it may be significant that a total of 10 crescents have been found at this site. There may be a link between a crescent and dot figure found twice at the site and the Hopi Moon Clan symbol, also a crescent and a dot. There is evidence that many of the prehistoric people of Utah migrated south at the end of the 13th century and were the progenitors of the Hopi (Castleton 1978:17).

We hope to continue our observations at Indian Creek and to pursue the meaning of symbols associated with the site. It was our privilege to have been perhaps the first in many centuries to witness the winter solstice sunrise in the manner in which it was observed by those ancient people. It was an experience we will never forget.

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