A Desert Cahuilla Equinox Site

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In his article "The Archaeology of Communicative Technologies," Dr. Stephen Houston (2004) clarifies the process for understanding aboriginal art. His work aims at untangling the mysteries of this art by first assuming it has communicative meaning. That issue, itself, had prevented many early researchers from taking such art seriously. This question stops no one today from the tedious process of attempting to decipher these works on rock and earth. Dr. Houston categorizes the effort into two sequential steps: evaluating the situation, and applying extraction.

"Situation," as he uses it, is the natural and cultural setting of art that enables an intended viewer to understand the message. The second part is the hermeneutic phase that is couched in such symbols or icons as to block the message from cultural intruders, including archaeologists. Thus, the art of interpretation does enjoin cultural members or informed researchers to the product in view. Here Dr. Houston sees the hermeneutic process as an "extractive" process rather than an infusive one, requiring the viewer to be alert to the cultural strain that the art was intended to reveal. In this regard, it is clear that site selection was of careful concern, integrating place with art.

The 30-km stretch of mesa between Wonderstone Wash and Tarantula Ridge along the west shoreline of Lake Cahuilla is such a situational area. This northwest corner of Imperial County was home to a remarkable subculture of Desert Cahuilla. The lore of these people tells how after they had migrated from the Great Basin to Coachella Valley the rise of the lake forced a group of them onto the mesa from Wonderstone Wash southward (Bean 1972). From Wonderstone Wash to Grave Wash the mesa rises 15 m above sea level and slopes eastward on a mean 3 percent grade covered with granite cobbles and boulders. This afforded the Natives the opportunity to experiment and develop a fishtrap industry along the shoreline of the lake that arose to 13 m above sea level. (Laylander 1997; Schaefer 2005).

The region is geographically divided into three areas by two major southwest-northeast trending washes. The first area is from Wonderstone Wash southward to Highway S22, containing Gravel Wash, Coral Wash, Palm Wash, and North Fork Wash. The second area crosses the highway southward and includes Arroyo Salada and Surprise Wash. From south across Arroyo Salada the terrain is fairly flat. Here scattered sites are mostly of a lithic industry. Currently, California Department of Parks and Recreation's Division of Off-Highway Motor Vehicle Recreation under the direction of Phil Hines assisted by Carmen Lucas, Arnie Muroz, and Jay von Werlhof, is undertaking a renewed survey of this area.

The second area includes the extensive Tule Wash, Campbell Wash, Tarantula Wash, and Jim Jachlik Creek, south to Tarantula Ridge near Highway 78. While the second area held little economic value to the Cahuilla and has yielded but few sites, the first and third areas were vital to Native culture, through very different from each other.

The third area is divided at several places with east-west trending tabular sandstone outcrops and washes. The northerly outcrop gives a prominent border to a 400-m wide level zone that reaches south to Tule Wash. Here, the southern Cahuilla developed a sacred ground that regulated much of their activity. Along the north line of this southerly area, the Natives had formed a 100-m boundary of sandstone and crystalline cobbles. The feature is oriented within 1 degree of true east/west. The cobbles were placed about 2 m apart. Hardly noticeable amidst pebbles and reddish sand, the feature nonetheless probably served notice that the area immediately southward was a spiritual area, as at Indian Pass, at Black Mountain, the four Blythe giants and the Ripley geoglyph (Figure 1).

It is within the third area that one of the most remarkable cultural facets of Desert Cahuilla life was emplaced. Here, two sets of four boulder alignments 6 km apart that signal the presence of the spring and fall equinoxes have been identified. The boulders are crystalline and measure between 15 and 30 cm across. The most easterly is found at 9 m below sea level and the westerly is at 15 m above sea level. The significance ties to the rise and fall of Lake Cahuilla upon which these southern fisheries depended, as revealed in housepit middens (Figure 2).

Astronomer Zaneta Matskowska and Captain of Celestial Navigation Dave Pashall volunteered to check the easterly alignment on March 21, 2005. Since both sites are near UTM northing 3675943, Matskowska and Pashall sighted along the most accessible alignment, the one nearest Highway 86. Their report is appended to this article. Their sightings demonstrated that the two sets of boulders are oriented along the axis of the sun's rising and setting during the equinox. Since this is the southerly sector of the west shore and was likely only seasonally useful, the observer perhaps related the news to the clans whose permanent sites were in the high country to the west. The

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Figure 1: Pin flags mark cobble locations along the 100 m alignment.

Figure 2: The four pin flags mark the crystalline boulder locations of the alignment at 9 m below sea level.

sightings area itself could be inundated with the lake's spring infilling, leaving the westerly and higher alignment to alert the clans that the summer season was closing. Then, acorn and pine nut harvesting would soon be under way in the Laguna Mountains, and it was time to prepare for the fall harvest.

The occupation of this southern area was directly related to seasonal shifts. The house pits were outlined with tabular sandstone stacked two and three slabs high. Thousands of fish bones have been recovered from the nine major occupation sites, each with a minimum of several house rings. One of the occupation sites contained 17 such rings. One mano was observed in the occupation area. No metates or mortars were found at these sites. Several projectiles points were recorded within the hearths of fish bone, indicating one method of acquiring this food. Only two rabbit bones were identified, emphasizing the occupants' reliance on the fish industry. The presence of a whitish marl indicates there had been considerable vegetal growth along the lake's ponded areas. Identification of species within the marl has yet to be accomplished.

Conclusion

The singular purpose of this paper was to validate for the first time a possible means for marking the seasonal rise and fall of Lake Cahuilla upon which the livelihood of a Native group depended. Dr. Houston recognized that the communication of rock art (as alignments) could be extracted when the situational circumstance was understood. The three rock alignments discussed above could have helped the local Indians monitor the rise and fall of Lake Cahuilla based on the solar equinox and thus predict the availability of important food sources such as fish and acorns.

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Appendix

- Dale L. Parshall, BS in Business & Economics from Illinois Institute of Technology, Licensed Captain, Educator for Celestial Navigation.

- Zaneta B Matkowska, BA in Leadership, minor in Astronomy and Philosophy of Science, pending completion of 3 courses from University of Texas at Austin. Archeoastronomy field trips to solstice/equinox observational sites in United States, Mexico, Egypt, Great Britain, South America and India.

Field Method

- Our objective was to confirm the set point of the sun along the specified UTM of the rock alignments found by Jay von Werhlof one day after spring equinox.

Instrumentation

- We used both the GPS instrument (Garmin 40) used by Jay von Werhlof and the GPS instrument (Garmin 48) used by Dale Parshall. The difference in reading between the two instruments was 200 m north/south. The east/west difference was not noted.

- We used both the 1943 Brunton compass used by Jay von Werhlof and Dale Parshall's Morin 2000 for our field observations.

- We used the US Naval Observatory Data for relevant astronomical data.

- Official Equinox for 2005 was March 20 at 7:33 am EST. Equal day and equal night in Kane Springs, eastern California, was March 16, with sunrise at 5:51 pm.

Observations

- We located UTM 3675943 N at the specified location using von Werhlof's Garmin. The read on Parshall's Garmin was UTM 3676144 N. We positioned ourselves and our instruments for sunset. We did a series of preliminary readings to confirm the workings of the instruments.

- Official sunset was at 5:55 pm on March 21, the day of our observations, one day after the vernal equinox.

- It appears that the easterly mountains may have been used as the horizon system for charting the sun's movement. Interestingly, there is a tiny pyramid-shaped outcrop in the mountains that is very closely aligned with the equinox sunset point.

- Parshall's reading of sunset was 258 degrees magnetic plus a correction of 13 degrees, giving a reading of 271 degrees – very close to the east-west line. Matkowska's reading of sunset was 271 degrees using von Werhlof compass. Given that the sun travels roughly 1 degree per day, we felt that this was a successful equinox reading.

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