

Confirming the Solar, Lunar, and Celestial Alignments and Potential Map at the “Table Rock” Petroglyph

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In 2006 URARA’s Nina Bowen and other field researchers observed that the summer solstice sunrise aligns with specific lines on the “Table Rock,” petroglyph (42UT1454, Panel 1) located near the western shore of Utah Lake, about a mile from the Smith Family Archaeological Preserve (Figure 1).



Figure 1: Table Rock. Note that the white spall at the top of the Concentric Circle is the result of bullet impact. (J. McHugh)

However, the slightly askew angle of the proffered photograph leaves the claim equivocal. During the past summer URARA members John McHugh, Franz Villate, and ARARA member Jonathan Barnes (professor of astronomy at Salt Lake Community College) set out to falsify Nina’s hypothesis.

On 16 June 2025—four days before the summer solstice—author J. McHugh photographed the sunrise, confirming what Bowen had witnessed two decades earlier, i.e., that the “Line and Dot” motif on the western side of the Table Rock petroglyph does indeed align with the rising sun on at the June solstice (Figure 2). Importantly, author J. Barnes stresses that although the

photograph was taken four days before the solstice, the sun moves less than $\frac{1}{5}$ of its width ($< 0.1^\circ$) along the horizon between 16 June and the 20 June sunrise date, a distance imperceptible to the naked eye (Zeilik 1985a:S17-S18, Fig. 3). Thus the Figure 2 photograph functionally marks the summer solstice date.

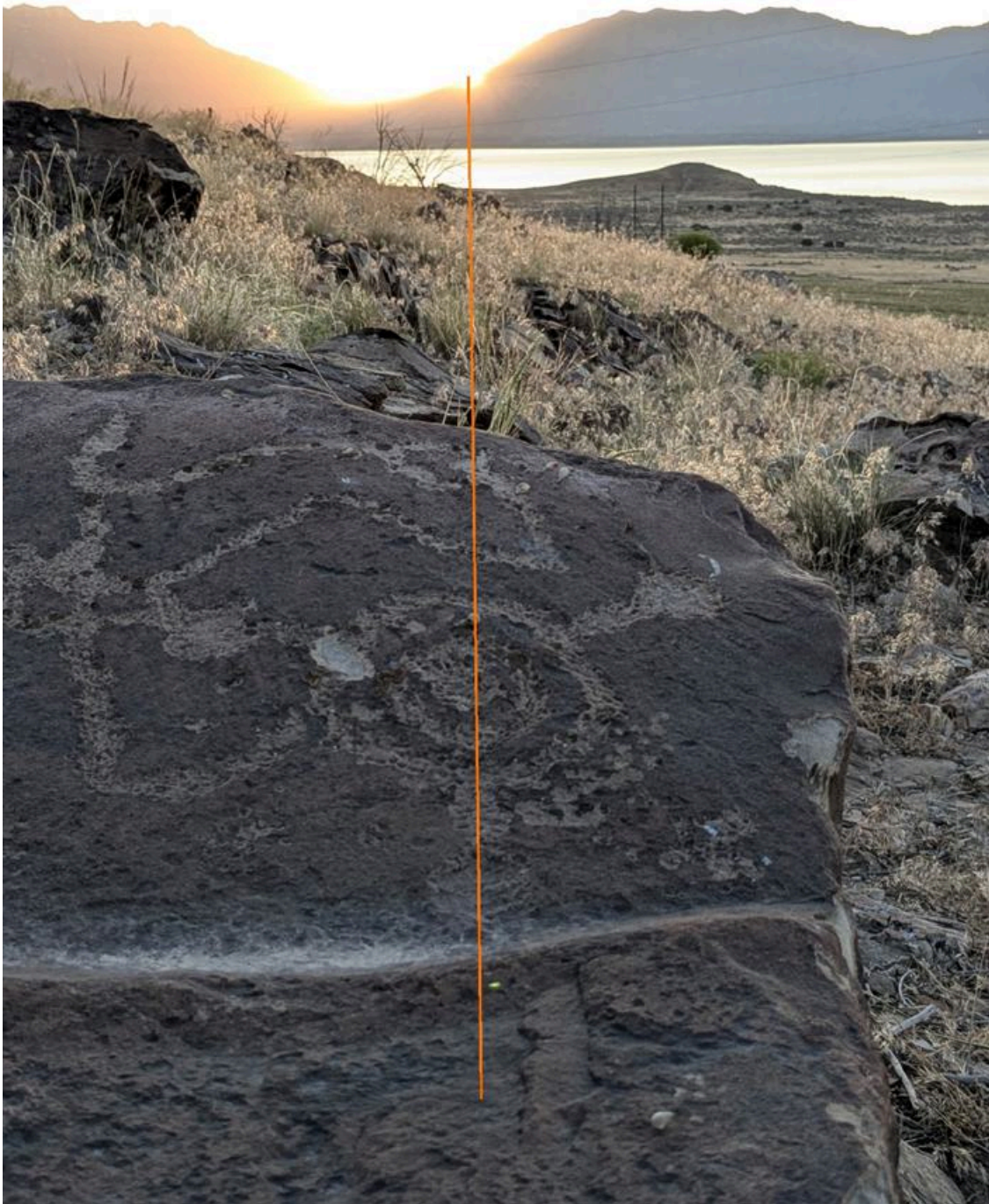


Figure 2: Sunrise at the Table Rock petroglyph, Utah Lake, 16 June 2025. The “Line-and-Dot” motif emanating from the western side of the Concentric Circle aligns with the summer solstice sunrise. (J. McHugh)

On the second day of the four-day solar standstill (21 June 2025) author F. Villate assessed whether there was a sunset alignment with the Table Rock petroglyph. He found that the “Line and Dot” motif on the east side of the Concentric Circle pointed directly towards the summer solstice sunset (Figure 3).

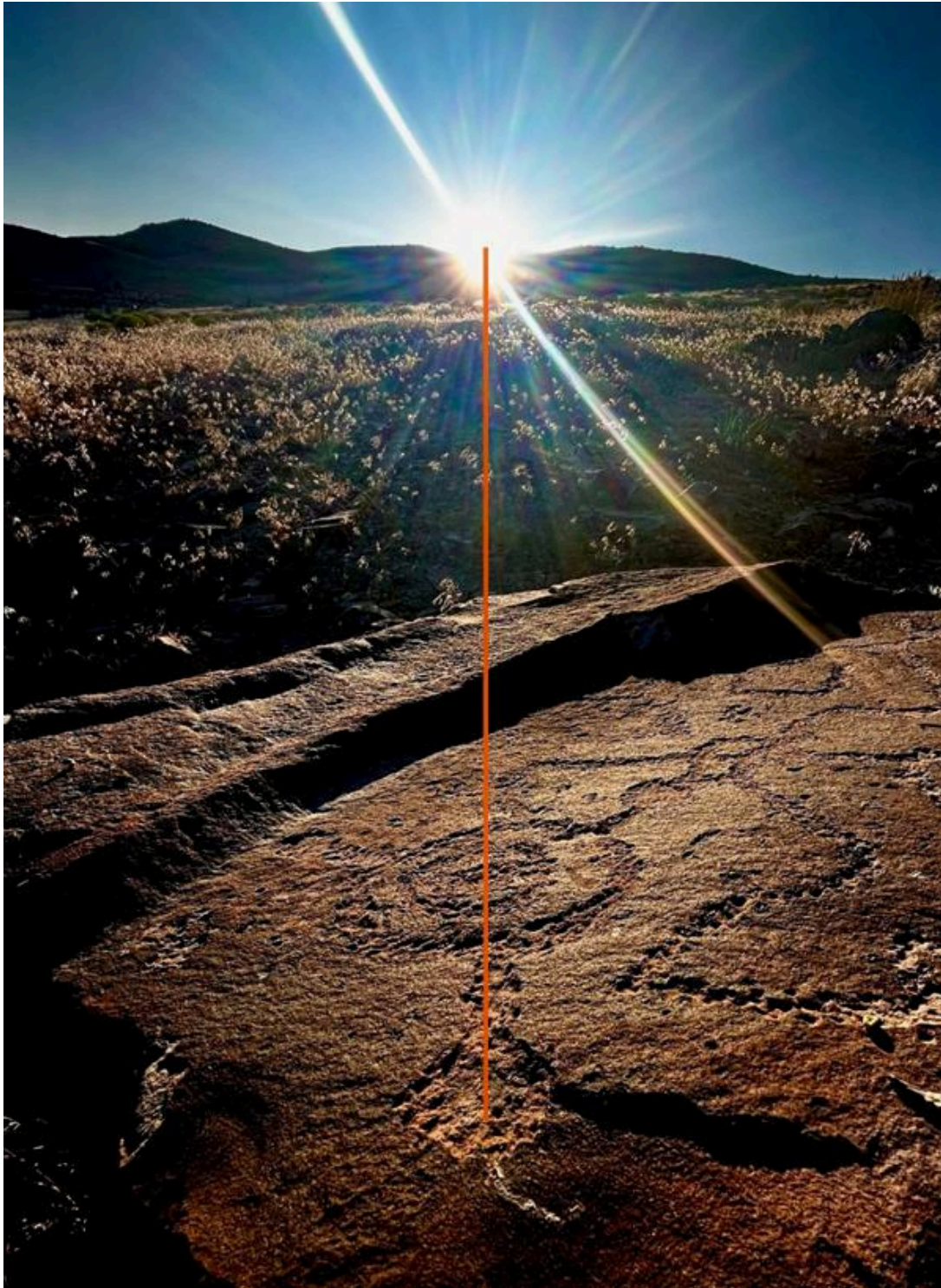


Figure 3: Photograph of the summer solstice sunset at Table Rock, 21 June 2025. The “Line and Dot” glyph on the eastern side of the panel aligns with the solstice sunset. (F. Villate)

The alignment of adjacent “Line and Dot” motifs with the summer solstice sunrise and sunset seems far more than coincidental. Indeed, the ancient artist appears to have intentionally pecked

the “Line and Dot” petroglyphs into the rock to mark the summer solstice sunrise and its complementary sunset (Figures 2, 3). The latter claim is bolstered by the extensive Ancestral Puebloan (i.e., Fremont) presence along Utah Lake from 500–1300 AD (Janetski 1990:16-23; Mooney 2014). Moreover, Ancestral Puebloan ethnography indicates that the “Three Concentric Circles” motif is said to be the prehistoric depiction of the Sun-god.

Anthropologists-archaeologists F. Hawley Ellis and L. Hammock write:

In Pueblo explanations of this old symbol, so standardized as possibly to warrant designation as a glyph, the outer circle represents the ring of light around the Sun, the second represents Sun himself, and the inner circle or dot his umbilicus, which opens to provide mankind with game and other food.

(Ellis & Hammock 1968:35; see also Zeilik 1985b:S95; Williamson 1987:93)

Thus the “Three Concentric Circle” motif at Table Rock was probably etched by an Ancestral Puebloan Fremont artist who was depicting the Sun-god. And the lower Line-and-Dot motifs were pecked in to mark the Sun-gods extreme motion at the June solstice; a time that was considered crucial in Puebloan calendrics (Zeilik 1985a:S12-S15).¹

The summer solstice sunrise and sunset alignments are shown in Figure 4.

¹ For a similar summer solstice alignment among the Uintah Fremont see: McHugh, Lundwall, Howells 2021.

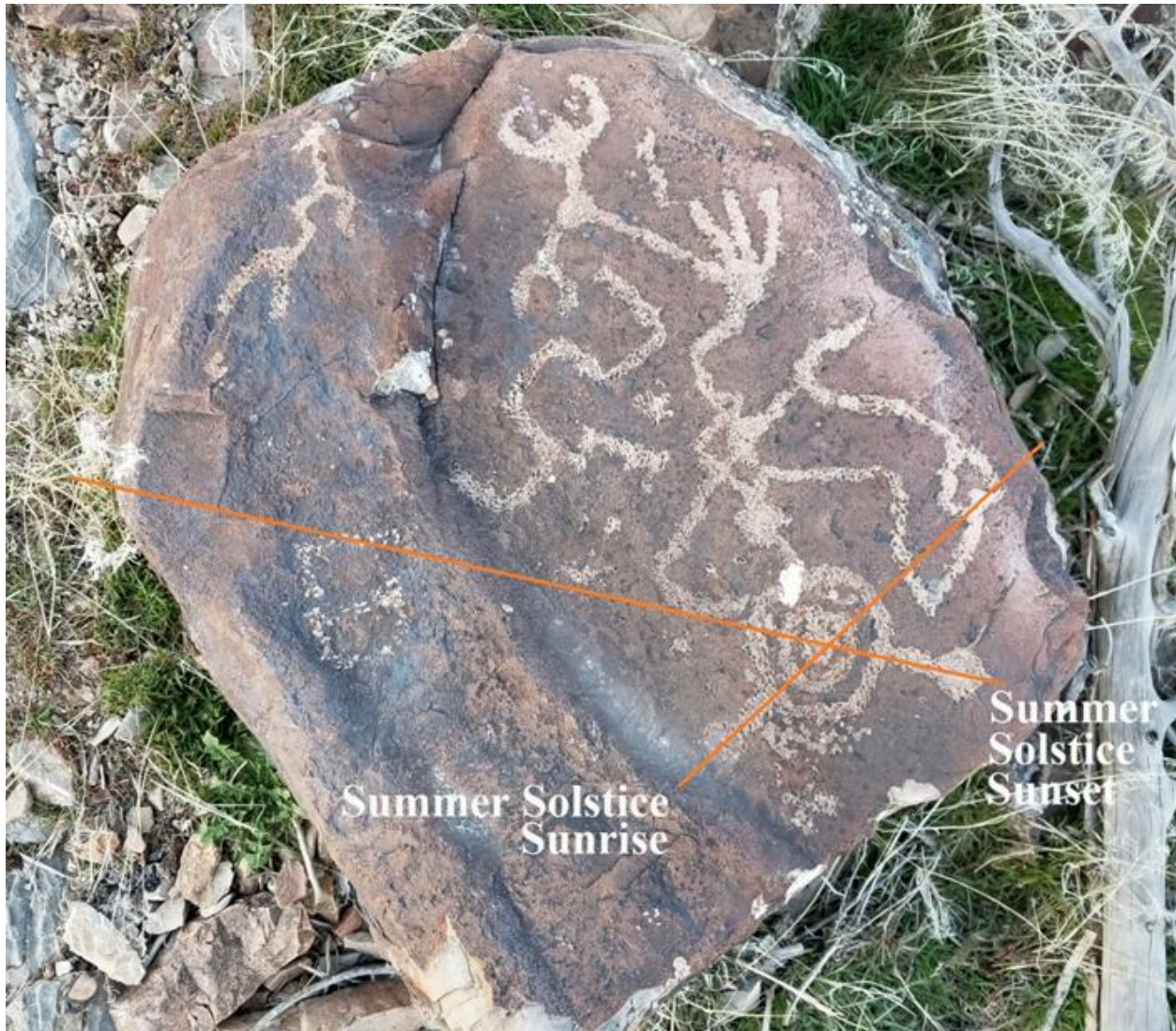


Figure 4: The summer solstice sunrise and sunset alignments at Table Rock. Note that the “Line and Dot” motifs pass through a “Three Concentric Circles” glyph, which is said to be the prehistoric depiction of the Sun-god in Puebloan ethnography. (J. McHugh)

Moreover, an alignment with the equinoxes was also discerned. The “Dots” on the ends of the lower “Line and Dot” glyph point directly towards the equinox sunset (Figure 5).² Worth noting is that the Figure 5 photo was taken 21 September 2025, i.e., one day *before* the equinox sunset. Thus the orange equinox line touches the left side of the sun. Remarkably, the sun will move about half a sun-width to the south (i.e., left) by the equinox date (22 Sept.), meaning that it will be precisely bisected by the inserted, orange equinox line at the equinox sunset.

² Note that the equinox sunrise did not align with the two “Dots” as they did during the sunset.

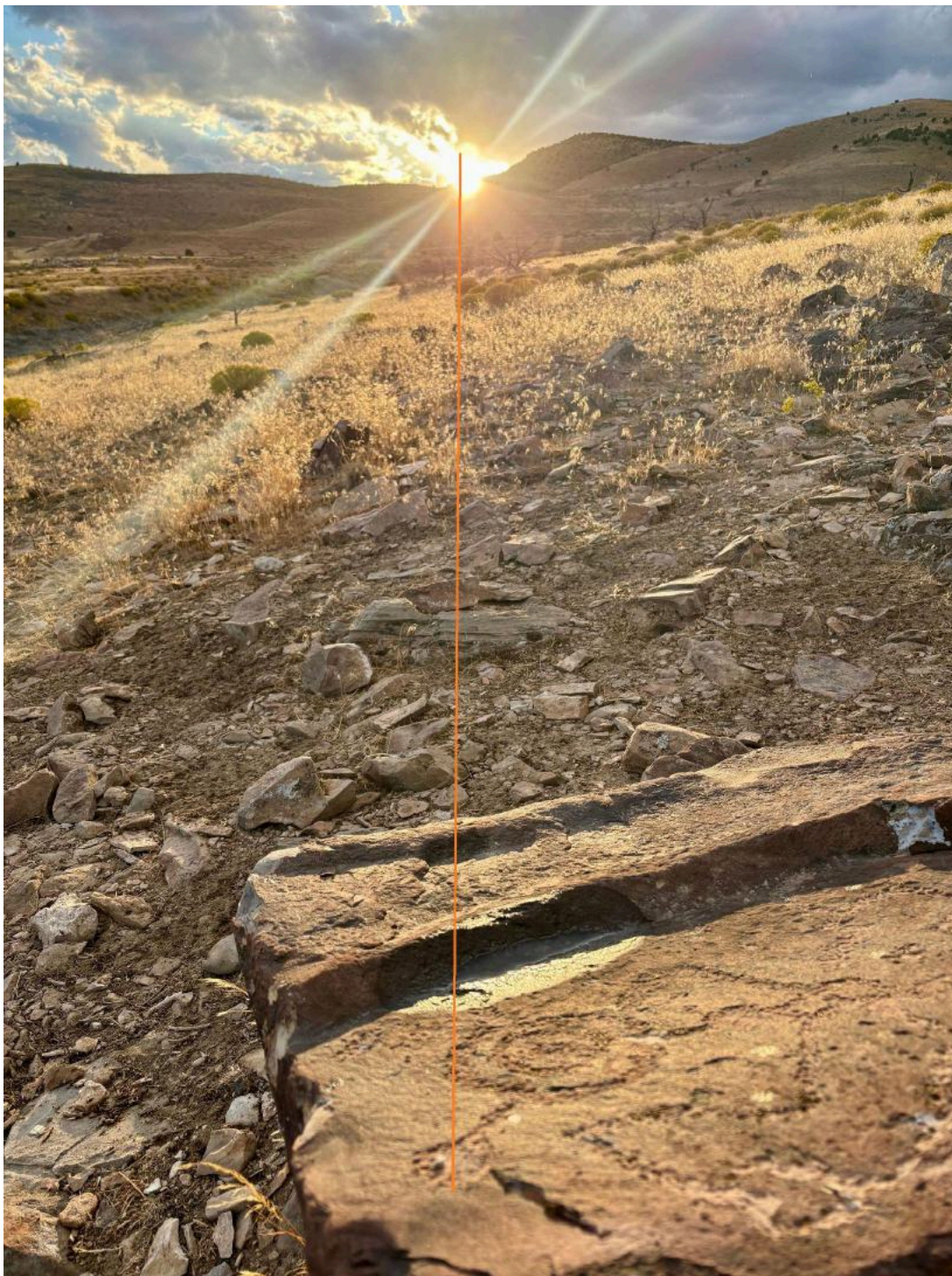


Figure 5: The “Dots” on the lower “Line and Dot” motif align with the equinox sunset. Note that this photo was taken the day *before* the equinox; thus the inserted, orange “equinox sunset” line touches the left portion of the sun, but will perfectly bisect the sun as it sets on on the actual equinox on 22 September 2025 (F. Villate).

An additional, potential alignment is found with Table Rock's central "Line" motif, which points towards the horizon at approximately 120°-125° azimuth (Figure 6). This is extremely close to the 121° winter solstice sunrise azimuth (flat horizon)—the authors estimating the rise at the December solstice to be 123° due to the slope of the mountains on the horizon line.³ This hypothesis will be tested at the winter solstice 2025.



Figure 6: The central "Line" motif possibly aligns with the spot where the winter solstice sunrise will occur. (J. McHugh)

³ Worth noting is that the 121° winter solstice sunrise references a flat horizon, which is not the case when it is viewed from Table Rock. The slope of the mountains along the eastern horizon suggest that the sun will rise at approximately 123° or 124° at December solstice sunrise.

Another intriguing aspect of the panel is the upper “Line” motif, which points approximately 3° or 4° west of Polaris, the Pole Star (Figure 7). This is where Polaris would have been between 1394 and 1575 AD.⁴ The fact that two other glyphs on the same panel match up with the summer solstice sunrise and sunset and two “Dots” point to the equinox sunset bolsters the possibility that this “Line” motif’s alignment with Polaris’ position 4 to 6 centuries earlier was a deliberate act; one that betrays a prehistoric Native American’s intent to orient himself with the ever-important and sacred Celestial North Pole and the star (Polaris) that spun in a minute, 3° or 4° circle around that axis. If accurate, the alignment provides a “time stamp” for the Table Rock petroglyph, i.e., that it dates between 1394–1574 AD.



⁴ E.g., in 1547 Polaris spun in a 3.13° circle around the Northern Celestial Pole (Frisius 1556:20). The astronomical Shareware program *Stellarium* indicates that Polaris stood 3° to 4° from the Celestial North Pole between AD 1394–1574.

Figure 7: Table Rock’s upper “Line” glyph points 3 or 4 degrees west of Polaris, which is where the Pole Star would have been from A.D. 1394–1574. This celestial alignment may divulge the panel’s date. (J. McHugh)

A Potential Map of Utah Lake

Another intriguing aspect of Table Rock is found with the “Indented Oval” glyph positioned northeast of the Concentric Circle/“Sun”-motif (Figure 8). The Indented Oval somewhat resembles the shape of the state of New Jersey when viewed on a map of the United States. Note too the somewhat circular “Bulge” seen on the Indented Oval image, positioned just beneath the orange arrow in Figure 8.



Figure 8: Just northeast of the Concentric Circle is etched an “Indented Oval” motif with circular “Bulge.” (J. McHugh)

Pertinent here is that Table Rock is located along the western shore of Utah Lake about 1 mile west of the Smith Archeological Preserve. Prehistoric cultural material (e.g., rock art, chipped stone, flaked stone, etc.) has been found along the saddles, ridges, and lower peaks of Lake Mountain, proving that prehistoric Native Americans had been present there. These elevated geographic points offer a commanding panoramic view of Utah Lake, including its length, width, and the curves of its perimeter; a vantage that prehistoric Amerindians surely noticed and utilized.

All this becomes relevant to Table Rock when we consider that Utah Lake traces out an “indented oval” shape similar to the outline of the state of New Jersey on a map, its western shoreline indented towards the east, and the eastern shoreline composed of a conspicuous, somewhat circular “bulge” which corresponds on maps to Provo Bay (Figure 9). Archaeology along the eastern region of Utah Lake demonstrates an extensive Native American presence from the Archaic through the Historic Period, i.e., when Spanish priests Dominguez and Escalante encountered the Ute there in 1776 (Mooney 2014; Janetski 1990). The most extensive occupation, however, occurred during the Ancestral Puebloan Fremont Period (A.D. 500–1300).

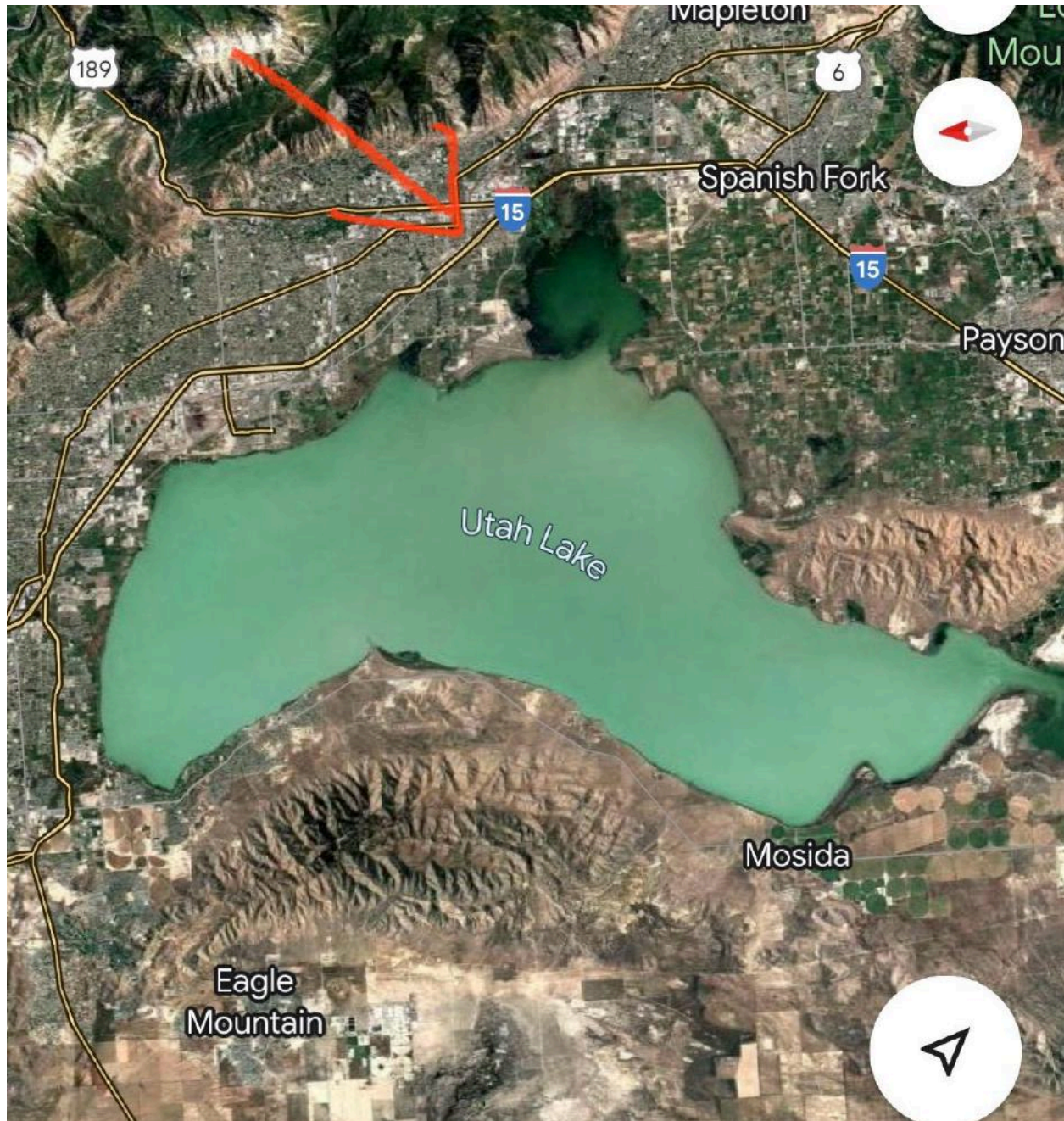


Figure 9: Utah Lake, with east at the top of the photo. Note that Provo Bay bulges along the eastern shore of Utah Lake.

When standing before Table Rock and facing East one sees Utah Lake in the background. The similarities between the outline of Utah Lake on a map in Figure 9 and the Indented Oval motif at Table Rock in Figure 10 are striking. Especially conspicuous is the panel's circular "Bulge" glyph, which mirrors the appearance of Provo Bay on a map (Figures 8, 9, 10).



Figure 10: The "Bulge" glyph at Table Rock appears to mark Provo Bay. (F. Villate)

The authors contend that the Curved Oval and accompanying Bulge glyph at Table Rock depicts Utah Lake and Provo Bay.

A Potential Alignment with Mount Nebo and the Major Lunar Standstill

We have just shown that the lower (i.e., southern) Line-and-Dot motifs at Table Rock unequivocally align with the summer solstice sunrise and sunset (Figures 2, 3, 4), and that the southern "Dots" point towards the equinox sunset. Intriguingly, an identical, somewhat shorter Line-and-Dot pokes out of the upper/northern side of the Concentric Circle/Sun glyph. Because of the solar significance of the southern Line-and-Dot motifs we presume that the northern

Line-and-Dot also aligns with some significant celestial event.



Figure 11: The upper (i.e., northern) Line-and-Dot glyph points to approximately 135° azimuth. (J. McHugh)

Because the lower/southerly Line-and-Dot glyphs mark the summer solstice sunrise, sunset, and the equinox sunset, and they stem from the Puebloan “Sun” motif (Concentric Circle), the authors presume the upper/northern Line-and-Dot motif will also align with some kind of solar, lunar, or celestial event (Figure 11).

The authors have noticed that the northern Line-and-Dot points towards the prominent peak of Mount Nebo situated 27 miles southeast of Table Rock. One wonders if the Sun-god’s close approach to Mount Nebo’s summit during its winter solstice transit across the heavens was seen as a significant moment in the religious calendar, similar to the “drawing down the sun” ritual at Isleta Pueblo (Parsons 1932:288-300; Zeilik 1985a:S6-S7).

Another intriguing plausibility involves the Major Lunar Standstill (MLS). During the moon's extreme northerly and southerly swing every 18.61 years the lunar orb rises and sets about 5° south of where the winter solstice sunrise and sunset occurs; meaning it is 5° closer to Mount Nebo's peak than the winter solstice sun. Computer reconstructions of the event on The Sky Live for the dates of 21 June 2024 at 11:30 PM local time indicate that the full moon appeared just above the peak of Mount Nebo as shown in Figure 12. One has to wonder if this was the intended celestial alignment of the Native American artist at Table Rock.



Figure 12: Computerized Reconstructions of the ancient night sky indicate that the upper/northern Line-and-Dot motif will align with Mount Nebo's peak during the Major Lunar Standstill. (F. Villate)

While the claim that Table Rock displays an alignment with the MLS might seem farfetched, Ancestral Puebloan people unequivocally tracked this lunar event at places such as the Fajada Butte “Sun Dagger” petroglyph in Chaco Canyon, New Mexico (Sofaer, Sinclair, Doggett, 1982), the circa A.D. 1175-1450 Ancestral Puebloan site of Casa Grande in Arizona (Evans, Hillman 1981:133-135), Zodiac Ridge in Arizona (Autrey, Autrey 1981:81-99), and at Chimney Rock in Colorado where an 11th century A.D. observation pueblo was constructed in anticipation of the MLS event (Malville, Putnam 1993:45-55; Malville, Eddy, Ambruster 1991:43-50). The MLS was also tracked and observed at the nearby, late-13th century A.D. Sun Temple at Mesa

Verde, Colorado (Munson 2014:123-137; Munson, Bates, Nordby 2008:131-140).⁵ Moreover, a half-dollar-sized, whitish-pink pendant with lunar iconography and 19 distinct notches (which equal the number of solar years needed to witness a cycle of the MLS) imply the Fremont were tracking the 18.61 year Major Lunar Standstill cycle at the Fremont site of Five Finger Ridge, in Clear Creek Canyon, Sevier Utah (Figure 13) (Lundwall, McHugh, Nagengast-Stevens 2022).

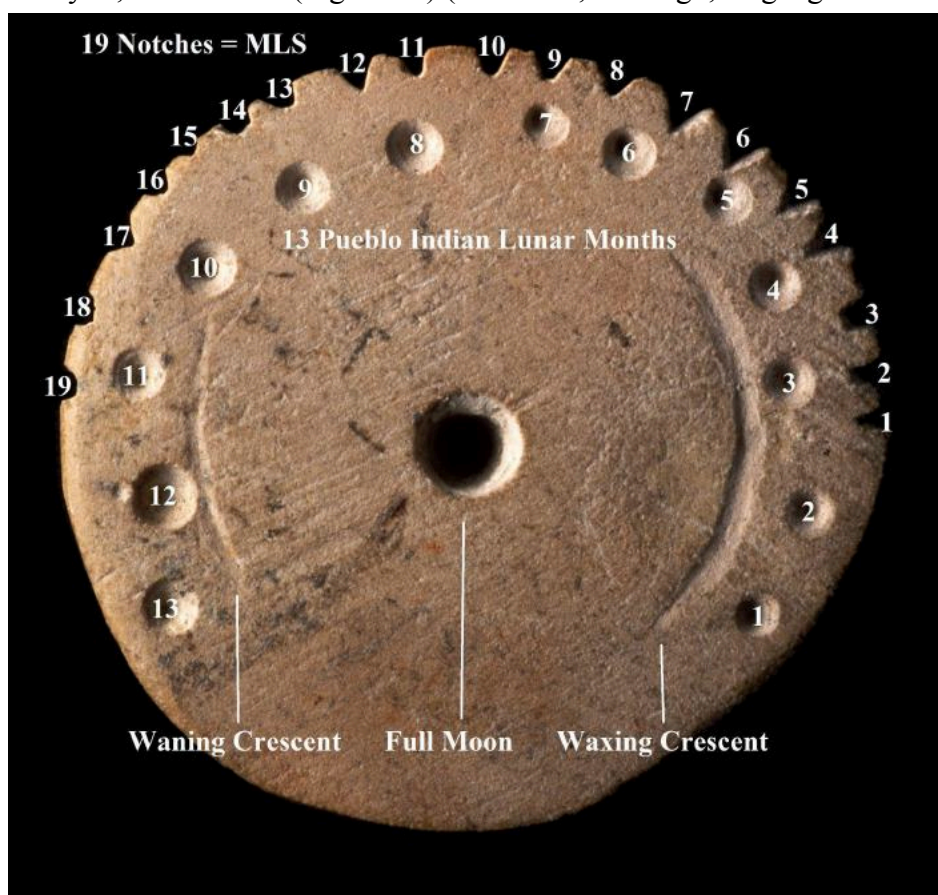


Figure 13: Lunar iconography on a 13th century whitish-pink, rhyolite pendant found at Five Finger Ridge includes the main lunar phases, the thirteen lunations in a solar year, and 19 notches which correspond to the number of solar years needed to track the 18.61 year-long MLS. (Francois Gohier)

Moreover, around 10% of the ceramics from Fremont sites along the eastern shore of Utah Lake are Sevier Gray, the type made by the Five Finger Ridge Fremont (Mooney 2014:153, Table 6.1). This indicates that the Utah Lake Fremont were in a trading relationship with the Five Finger Ridge Fremont communities 142 miles to the south—the same population that created the “Lunar Pendant” that marked the MLS. Thus, it seems plausible that calendrical wisdom of the MLS cycle may have been shared between these two Fremont communities during face-to-face trading encounters.

⁵ A brief but substantive overview of data pointing to Ancestral Puebloan knowledge of the MLS appears in Lundwall, McHugh, Nagengast-Stevens 2022:44-48.

Firm and Tentative Conclusions, and Future Research Directions

Table Rock (42UT1454, Panel 1) is an enigmatic petroglyph panel and archaeological site for several reasons. First, there have been no archaeological excavations on the western shore of Utah Lake proper, only its extreme northern, southern, and southwestern edges.

An additional challenge relates to past (and presumably present) looting. Despite hours of ground survey, the authors have never found a diagnostic artifact anywhere along the western edges of the lake. Smith Family Archaeological Preserve manager, Em Cebrowski, confided a little bit of the backstory regarding this circumstance. To paraphrase, she noted that, before the Smith Family donated their 200-acres to the Archeological Conservancy, they frequently encountered trespassers searching for prehistoric Native American “souvenirs” (i.e., looting) on their property. Hence, Smith Family members began collecting the artifacts for safe-keeping; all of which remain in the Smith Family’s possession. However, there is no official or definitive way for the authors to gain access to the artifacts for analysis. Although all of the Smith Family Preserve’s artifacts have lost provenance due to collection that was done devoid of archaeological controls, the diagnostic artifacts (e.g., Fremont grayware, Utah metates, Shoshone knives, Promontory ware, etc.) would at least help establish *who* was inhabiting the Smith Family Preserve and when, and thus *what culture may have made* the Table Rock petroglyph panel.

Despite the lack of archaeological excavation and access to diagnostic artifacts needed to more definitively date and interpret Table Rock, the aforementioned evidence allows us to make the following statements:

1. The lower/southern Line-and-Dot motifs at Table Rock were intentionally etched into the Sun-god glyph (i.e., Concentric Circle) to mark the summer solstice sunrise and sunset (Figures 2, 3, 4).
2. Nina Bowen’s 2006 assertion that Table Rock aligns with the summer solstice sunrise is not falsifiable, thus her hypothesis is 100% accurate.
3. The “Dots” at the end of the lower/southerly Line-and-Dots motif were intentionally pecked to align with the equinox sunset (Figure 5).
4. The Concentric Circle glyph represents the Sun-god and is derived from Ancestral Puebloan–Fremont religious ideology.
5. The central “Line” glyph pointing to approximately 123° azimuth is potentially aligned with the winter solstice sunrise, a hypothesis that will be tested at the December solar standstill (Figure 6).
6. The upper Line motif pointing 3° to 4° west of Polaris’ appears to have been a conscious attempt to encode knowledge of the Pole Star’s position into Table Rock (Figure 7). Since this is where Polaris was positioned from A.D. 1394 through 1575, the proposed

alignment may serve as a kind of “timestamp” that divulges the date of the panel. Future research is needed to verify this hypothesis.

7. The “Indented Oval” motif with the slight “Bulge” glyph etched into Table Rock probably represents Utah Lake; the “Bulge” depicting Provo Bay (Figures 8, 9, 10). This point needs more substantiation especially from ethnography and known landscape iconography depicted in prehistoric Amerindian rock imagery studies.
8. The $\sim 135^\circ$ azimuth of the upper/northern Line-and-Dot motif emanating from the Sun/Concentric Circle glyph points to the peak of Mount Nebo. This may encode the significance of the sun’s close approach of this peak during the winter solstice or the moon’s extremely close approach of this peak during the most southerly phase of the MLS (Figures 11, 12). These hypotheses will be tested at the 2025 winter solstice and on computerized reconstructions of the ancient night sky.

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