

“MYSTIC MAZE” OR “MYSTIC MAIZE”: THE AMAZING ARCHAEOLOGICAL EVIDENCE

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In 1978, Arda M. Haenszel of the San Bernardino County Museum Association provided the details of a "giant" prehistoric earthen archaeological feature known locally in the area of Needles, California, as the "Mystic Maze." After careful consideration of the evidence, Haenszel found that the windrows of gravel are likely prehistoric but certainly do not form a "maze." Though her foundational work is seminal, the function of this approximately 100-acre site has continued to mystify, with strong evidence of historic construction associated with the railroad. Not previously considered is the archaeological evidence supporting a functional association with prehistoric agricultural activity.

THE CONTROVERSY

CA-SBR-219 is better known as the “Topock” or “Mystic Maze,” a 100-acre site with a 100-year-old controversy. Is the site the result of a historic gravel surface mining operation by the railroad, or is it prehistoric and ceremonial, as Haenszel posited in 1978, thus perpetuating an earlier interpretation? SBR-219 (Figure 1) is an extensive series of uncounted, artificially formed, parallel, alternating rows of mounded gravel and clearings, located on a connected series of low, naturally formed terraces, formerly covered with desert pavement. An historic transportation corridor through the central portion of the acreage have isolated relict loci (A, B, and C), the largest (A) being approximately 17-18 acres of gravel row mounds, each roughly 10-30 cm high and 20-60 cm wide, and typically spaced about 120 cm apart. The cleared rows between the row mounds appear to have been scraped or raked. The site is located on the California side of the Colorado River, bordering Arizona, bounded by the Chemehuevi Mountains to the south and areas of relatively undisturbed desert pavement on similar terraces to the west and north, about 20 km south of Needles, California, in the Lower Colorado River valley transition zone of the Mojave, Colorado, and Sonoran deserts (Figure 2).

The parallel row mound feature is dissected by and located to the north and south of Interstate 40 and the historic grade of the Atlantic and Pacific (A&P) Railroad, later to become the Atchison, Topeka and Santa Fe (AT&SF) Railroad and now the Burlington Northern and Santa Fe (BNSF). Portions of the rows closest to the travel corridor are reported to have been destroyed during construction of these thoroughfares (Haenszel 1978). The southern 17-18-acre portion of the maze, to the southeast of Park Moabi, is located roughly within the large yellow circle illustrated in Figure 2. The feature, easily seen in satellite photographs (Figure 3), is adjacent to and west of the Pacific Gas and Electric (PG&E) gas compressor station and Bat Cave Wash, the recent dumping ground of PG&E’s chromium hydroxide sludge (Figure 1). The potential threat of lethal chromium-contaminated groundwater draining into the Colorado River is the subject of recent superfund-level cleanup efforts of a type made famous in Hinkley, California, by the 2000 film *Erin Brockovich*. The new ponds associated with the interim emergency measures were built on the opposite side of the maze (Figure 2), and the site was rerecorded (McDougall 2005) in conjunction with the ongoing California Department of Toxic Control’s Groundwater Remediation Project at the PG&E Topock Compressor Station (see Pacific Gas & Electric 2011 for more information), which followed the interim measures.

Resurfacing with the new dumping controversy is the old controversy over the origin and age of the maze and the much more politically wired related issue addressing cultural affiliation. Expounding upon and complicating the perpetuation of hearsay and conjecture are statements by rock art experts embedded in authoritative archaeological textbooks (see Whitley 2000:94-96; Gilreath 2007:289 also



Figure 1. Above, parallel gravel row alignments comprising a portion of the Mystic Maze, west of the PG&E compressor station. Below, a southeasterly approach to the compressor station, with Bat Cave wash in right center of image. Note intermittent cleared areas of disturbance and also undisturbed rocky areas in foreground. The Colorado River is left center.



Figure 2. General location of the Mystic Maze, CA-SBR-219 in eastern San Bernardino County, California, represented by area encompassed by dashed yellow line. Background imagery can currently be viewed at Google Earth.

fairly recognized the existence of “skeptics”) and now by others in a plethora of internet websites, books, and other formats. For example, a 2008 article in the *Las Vegas Review Journal* pronounced that the “600-year-old geoglyph consists of intricate patterns of many parallel paths,” but no reference was cited as to how the age was arrived at (Pesek 2008). Similar to the debate over the archaeological interpretation of other desert pavement clearings such as “Macahui” (Bendímez et al. 1986), key questions concern their age and the reason for their creation. In this investigation of SBR-219, evidence concerning the function and origin of the gravel rows was considered.

Several types of evidence were preliminarily evaluated, including the patterns of the clearings and rows, their associations, their morphology, the characteristics of the pavement immediately surrounding them, and the historic record, including photographic and ethnographic evidence. The evidence was used to evaluate three hypotheses: (1) that the gravel rows were made in conjunction with prehistoric agricultural activity, (2) that they were made as geoglyphs or earthen art and/or for prehistoric use in ceremony, and (3) that they were byproducts of a modern gravel procurement operation and erosion control in conjunction with the construction of the railroad bridge and bed grade.

Though it may be key to answering these questions, the importance of a reported prehistoric anthropomorphic earthen art figure, said to have been destroyed when the railroad grade was realigned in that area sometime prior to 1914, seems to have been disregarded or forgotten. The reported general location of the anthropomorph before its destruction is shown in Figure 2. Significant to this investigation is the location of four other known anthropomorphic earthen art figures (or the beloved “stick men,” as

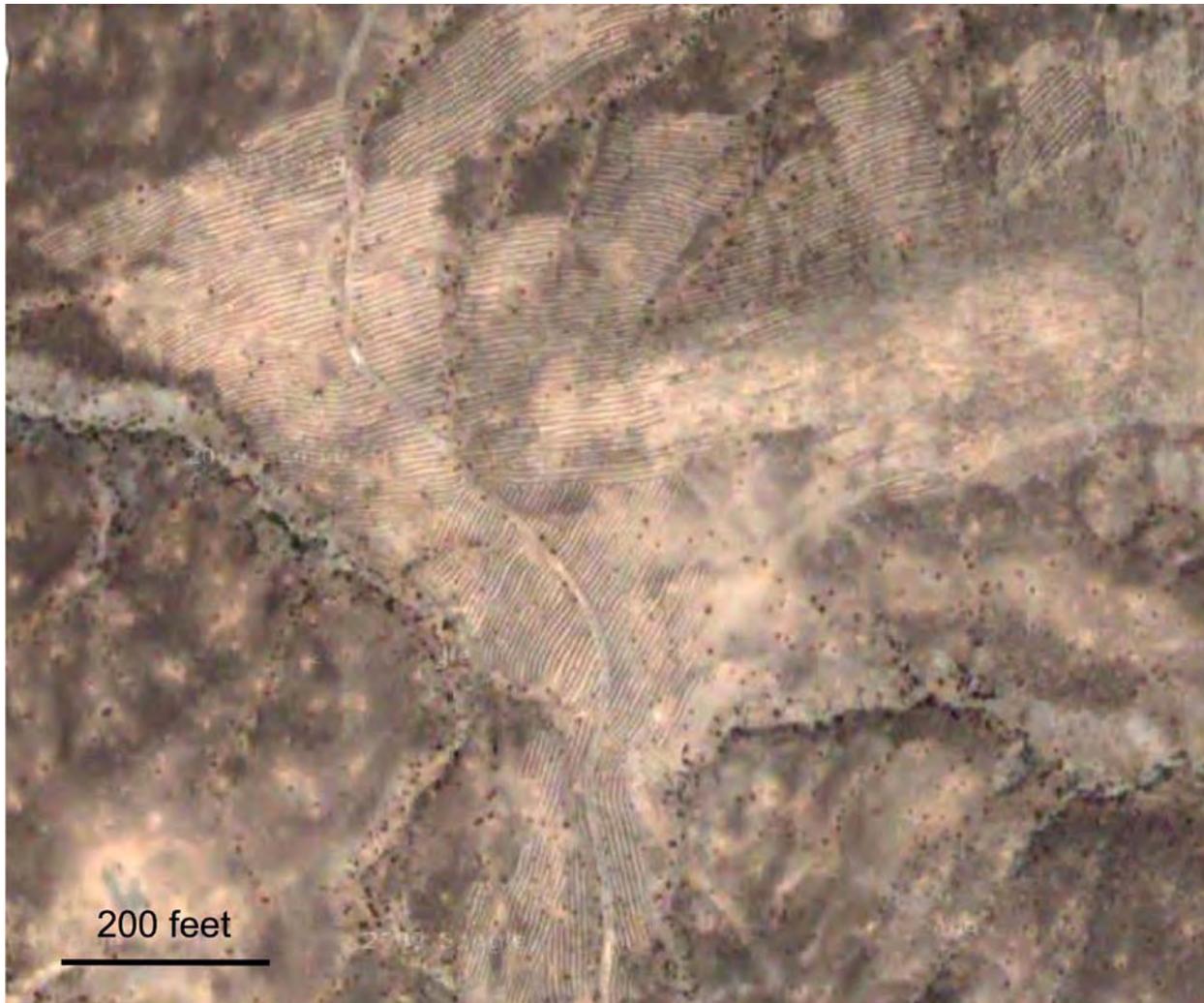


Figure 3. Satellite imagery of a portion of the “maze” gravel rows which can currently be viewed at Google Earth illustrates dissimilarity of the stone alignments encompassing the prehistoric grid gardens in New Mexico as seen in Baker (2011).

they are locally known) on three terrace-top sites nearby, but north of SBR-219, separate from the maze and not incorporated into the design of the maze. Ethnographically, around 1889, anthropomorphic “ground hieroglyphs” in the area of the California/Nevada border were shown to John G. Bourke (1889) by his Mojave friend “Merryman,” who related the belief that the figures (which appeared to Bourke to resemble a man, woman, and child or three grown persons tied together) were related to a ceremony celebrating Mojave creation. Other similar anthropomorphic ground figures along the Lower Colorado River include the famous Blythe Intaglios. Below, the style and technique of construction of the Moabi “stick men” earthen art figures, similar to others along the river corridor that are known to be prehistoric, are compared with the style and technique of construction of the different type of figure incorporated into the design of the gravel rows at SBR-219 (Figure 4).

The findings are considered to be preliminary, pending implementation of proposed plans described here for further investigative testing and analysis including the types of studies recommended by Bendímez and others (1986): detailed morphological examination and controlled study of the surrounding pavement as methods for distinguishing such features from the traces of modern commercial gravel collection.



Figure 4. Comparing earthen art construction techniques: the phallus image (left above and below) incorporated into the gravel rows as photographed by F. S. Rogers in 1922 (in Haenszel 1978:21; courtesy of San Diego Museum of Man) is a raised relief scraped on both sides, not of the same construction as the vicinity's "stick men" intaglio geoglyphs (right), with dark stones removed and tamped down gravels in the image area.

THE EVIDENCE

Not a Maze

Contrary to the creative characterization advanced by Edward S. Curtis in a footnote in his 1908 Volume 2 of *The North American Indian*, archaeologists agree that the rows do not form a maze or classic labyrinth. This fact alone rather discounts Curtis' ethnographically unsupported imagery of a prehistoric ceremony "to lure and escape evil spirits" (Curtis 1908:55), particularly since he cites no reference. As will be discussed, the interpretation he advanced implying a giant prehistoric stone maze was promoted, commercially exploited, and exaggerated, and consequently it was already deeply entrenched as a local prehistoric phenomenon 30 years later when archaeologist Malcolm Rogers cautiously recorded it as a prehistoric site, "M-78" (Rogers 1939). Subsequently, recent archaeological site record updates interpret the site as "Agricultural(?)" and "San Dieguito" (Urban 1976) or "ceremonial" (Haenszel 1978). Funded professional site recordation in conjunction with PG&E's chromium sludge dump cleanup effort completely ignored the possibility of a gravel mining operation in its interpretation, offering this: "There

is no standard interpretation for the Topock Maze. Apparently, the maze has religious/mythological/ceremonial significance to several Native American groups in the area. Most credible explanations associate the Maze with the Mojave afterlife” (McDougall 2005).

McDougall states that “according to the Mojave, the Maze has always been there, and [they] disclaim building the Maze,” but no reference is cited, and this statement is contrary to other previous testimony that Mojaves raked the rows as part of a gravel operation—testimony included in the pre-McDougall site records and by Haenszel (1978), as will be discussed below. McDougall then mentions the earlier interpretation of the Maze by an archaeologist as a possible prehistoric agricultural feature and describes his own observations of “annual grasses growing up through the windrows of desert pavement after a prolonged period of torrential rains.” Also revealed was the language of the onsite federal interpretive signage, now wind-blasted and barely legible, which he says “refers to the maze as a place where warriors ‘cleansed themselves’ after battle before returning to their home villages.” This is apparently a recent interpretive variation; since cleansing ritual has a foundation in oral history apart from the context of the maze (see Bourke 1889 and others), it is a meaningful way to make sense of the earlier Curtis interpretation by placing a known ritual into the context of the maze.

Not for Maize

As to the title of this presentation, our volunteer and unaffiliated research and preliminary field investigations resulted in no evidence that the site was ever used for the production of crops, despite its superficial resemblance to windrows and furrows, as will be briefly addressed here. The site is located on Pleistocene alluvial benches and pluvial outcrops (see AECOM 2011) above the Holocene river channel, precluding the possibility of seasonal flood farming during the Holocene. However, with the developing evidence of new forms of prehistoric dry farming in other areas using ditches, canals, dams, and other irrigation devices potentially as early as the late Archaic in the Southwest, and because (contrary to Haenszel 1978:14) the gravel rows are for the most part contoured along the slope (see Figure 5), the possibility was examined of irrigation with water out of Bat Cave Wash, a long, deep, intermittent drainage that dissects the terrace upon which SBR-219 sits. Ephemeral grasses in the wash support wildlife, though this is on a seasonal basis, and they dry up when temperatures reach an average high of 107 degrees in summer months.

Precluding the potential for obtaining evidence, if it ever existed, of prehistoric damming and water diversion in Bat Cave Wash, is the unfortunate destruction of the rock structure in the mouth of the wash, which was dynamited for use as riprap in dredging a new channel for the Colorado River in the 1940s and 1950s. In 1949 the U.S. Bureau of Reclamation began a massive project to dredge a new channel for the Colorado River that would straighten out a river bend that had been causing major silt problems since Hoover Dam was completed (Bell 1949). Also, a large earthen dam was installed at the mouth of the wash for 100-year flood control. Yet other evidence of horticulture at SBR-219 is also lacking. Surface water drains from Bat Cave Wash only on a very intermittent basis, unlike other arroyos in the Southwest where running water was diverted for prehistoric agriculture. No ditches, canals, or other signs of irrigation were found; what would be furrows are open-ended and do not appear to be designed to hold water (Figure 6). Rainfall in a wetter climate would resolve the dilemma; however, current annual rainfall averages 13 cm per year, fairly evenly distributed throughout the year, and would not support dry farming today.

Further, SBR-219 is different in appearance and other characteristics from prehistoric dry farming operations in the Southwest such as grid farming as illustrated by Baker (2011), when the latter is compared with the satellite image of the maze at Topock (Figure 3). Evidence exists that in grid farming, the Anasazi purposely warmed a winter crop by mulching with gravel over a bed of soil and clay; however, at SBR-219 the mounds are comprised almost entirely of gravel and cobbles with little soil in which to plant, and there appears to have been no attempt to try to move larger rock or otherwise prepare

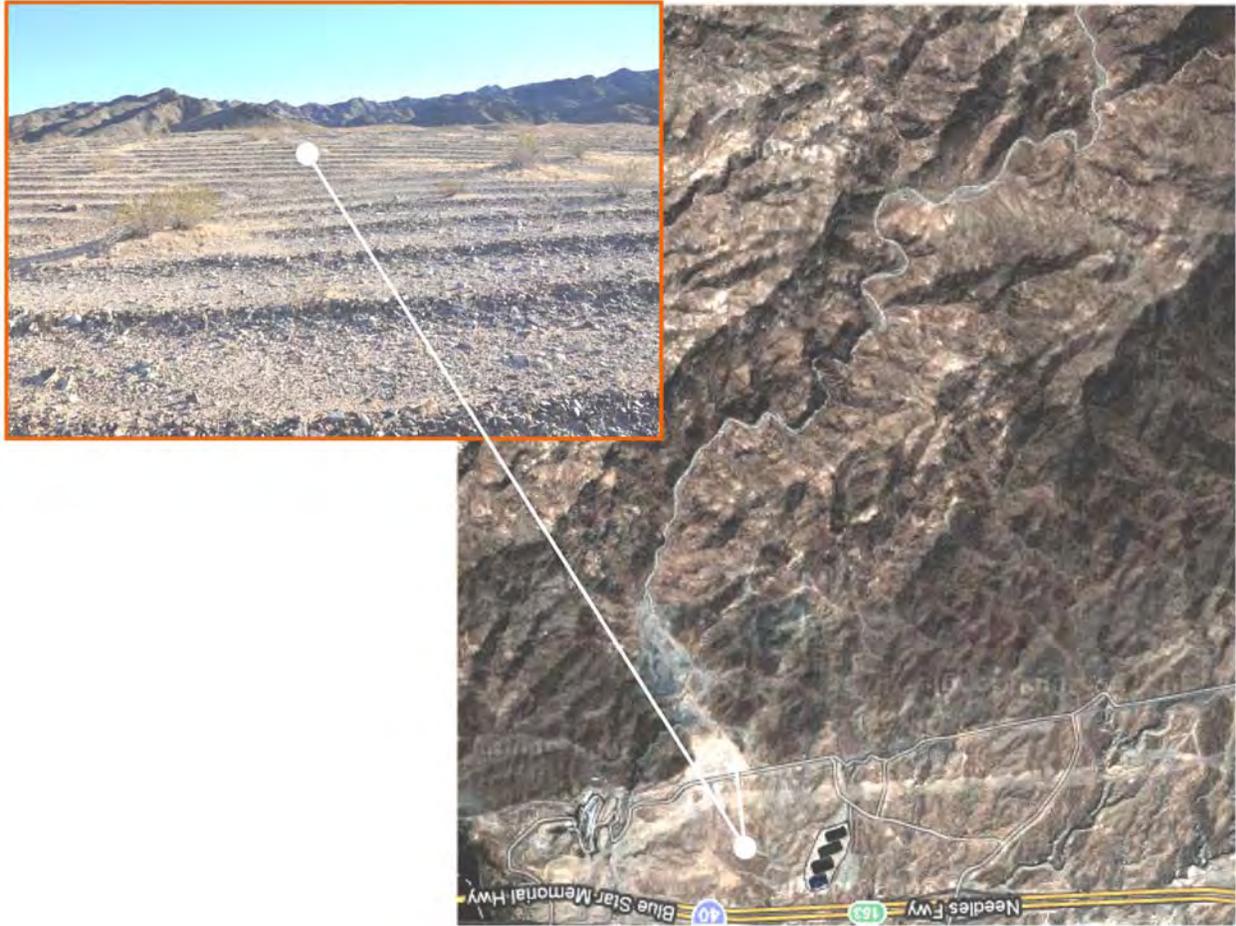


Figure 5. Left: Gravel rows are typically contoured along the slope. View is toward Bat Cave Wash from a position close to the white dot in the image on the right. Right: the wash drains northward (bottom of left image) through the Sacramento Mountains, then east on the south side of the Mystic Maze (top is south, background imagery currently viewed at Google Earth). An attempt was made to find evidence of a prehistoric dam at the mouth of the wash but instead a historic flood control dam structure was found.

what little underlying soil there is into a potential plant bed in between. Also, no evidence of land leveling or holes and depressions made with digging sticks has been observed or recorded.

Advocating for the site's prehistoric, possibly pre-Aha Macav (Mojave) age, the 1978 monograph *The Topock Maze: Commercial or Aboriginal?* by Haenszel was published by the San Bernardino County Museum and included maps, photographs, annotated bibliography, and an extensive (though incomplete) summary of the body of knowledge surrounding the history and controversy of the maze. Haenszel was a retired public school teacher with an academic degree in English literature, having completed graduate work at UC Berkeley in literature and California history, a summer course in California Indians with Dr. Robert F. Heizer in the 1940s, and a childhood of visiting archaeological sites with her father, and she was later an intensive researcher at the San Bernardino County Museum with a strong interest in rock art who referred to herself as an "informed amateur observer." Meanwhile, perhaps in response to the 1978 publication of Haenszel's monograph, Heizer, who had been keenly interested in the topic and who had been carrying on a long correspondence with Haenszel up to this point, and C. William Clewlow drove the 900 km (10 hours) to the site and extracted soil samples for analysis, to be taken to the UC Berkeley lab. Clewlow photo-documented the examination (Figure 7). The samples came back negative for



Figure 6. No ditches, canals, or other signs of irrigation were found; what would be furrows are open-ended and do not appear to be designed to hold water.

aboriginal pollen, discouraging these scientists from further investigation of the site as a prehistoric phenomenon (Clewlow, personal communication 2011):

While there, we collected a goodly number of soil samples from the windrows, between them, and anywhere else that might have held some pollen indicating a possible prehistoric agricultural use of the complex. We took them back to Berkeley and had them analyzed. They all proved to be negative for any potential aboriginal pollen. We concluded that the complex was of historical derivation. After that, Heizer lost interest in the issue.

Recent Vegetation Growth and Gravel Row Deflation

The lack of old perennial vegetation growth, such as large creosote, and new creosote growth in the last 100 years speak for recent disturbance. The recent growth is evident when comparing a 100-year-old image of the “Stone Maze” (Curtis 1908:2) with a 2011 photograph from the same approximate location (Figure 8).

Another clue of the rows’ recent past is the lack of gravel deflation even on steep inclines, although loose soils do appear to have leached out between the gravels. Evidence of gravel row deflation over a 100-year period may potentially be found by closely examining and comparing the height, width, and configuration of gravel rows illustrated in the 100-year-old Curtis image of the feature with the same gravel rows as they currently exist. Potentially, detectible deflation in a 100-year period could be projected evenly over time; however, given weather conditions in the desert, including thunder showers and sudden down pours, it seems logical to assume that any loose sands and soils scraped up with the



Figure 7. In 1979, Robert F. Heizer and C. William Clewlow took soil samples from the site for analysis to the UC Berkeley lab, which came back negative for aboriginal pollen. Photo courtesy of Clewlow (photographer).

gravel would likely leach out early on, perhaps in the first 15 years, leaving the heavier gravel behind in rows with perhaps slower detectable change thereafter.

In examining the 100-plus-year-old Curtis photograph, visual evidence of greater soil volume and compaction relative to what is present today in the same location was considered. While foreground row composition detail seems to have been concealed in the 1908 Curtis image (Figure 8, top), perhaps purposefully, by darkening and cropping the foreground, a cursory or preliminary visual comparison of the same location today (Figure 8, bottom) strongly suggests that the rows were noticeably more compact and uniform 100 years ago. Further, most of the sandy soil and loam deflation likely occurred during the initial period following the scraping, prior to the photograph—between 1883 and 1908, a period that could have been as long as 25 years.

Amazing Archaeological Evidence—Preexisting Prehistoric Site

The archaeological evidence suggests that the gravel rows were constructed upon a preexisting prehistoric site. Trails and artifacts exist as segments and isolated occurrences, respectively, at sites on top of natural desert pavements characteristic of the surrounding undisturbed Pleistocene bench terraces. Similarly, at SBR-219, trails also exist on otherwise undisturbed surfaces but do not crosscut or superimpose the disturbed surfaces of gravel row mounds. Instead trails are truncated by rows, indicating that the rows are more recent than the trails (Figure 9).

A few isolated prehistoric artifacts appear to have been raked up into the rows, and it is reported that potsherds and lithic flakes have been collected within the last 100 years—but these artifacts could



Figure 8. Above, the Curtis (1908) image, and below, one taken by the author in 2011 in close proximity and similar perspective to the original 100+-year-old photograph. The similar image was obtained by adding contrast to a black and white photograph and cropping the foreground (also possibly darkened by Curtis), thus concealing detail of row composition which was later portrayed by artist Harold Betts (ca. 1913) as rows of rock, not gravel (Figure 12, left). A preliminary visual comparison of the same location today (bottom) strongly suggests that the rows were noticeably more compact and uniform 100 years ago.



Figure 9. The compacted soils of a foot trail across a natural desert pavement (foreground) with Steve Miller, BLM Volunteer, standing near the location where the trail is truncated by gravel rows of the maze, indicating that the rows are more recent than the trail. Prehistoric site components appear to be supplanted by the more recent gravel rows.

predate the rows. Charcoal-bearing features at the site have not been reported, and time-sensitive artifacts either do not exist or those who have them simply have not tested or reported evidence. Collectors or those engaged in gravel collection operations (if the site was a gravel mine) may have tossed artifacts into a pile, accounting for the “mound” that no longer exists but was reported to be “near the maze” and said to contain “several pieces of glazed pottery, Indian arrowheads made of flint, and stone hammers” (Simpson 1978:49). Prehistoric site components appear to have been supplanted by the more recent gravel rows. There is no known evidence of whole Mojave pots, seed jars, or ceremonial vases being found at the site, as implied by the U.S. Fish and Wildlife Service (FWS) interpretive signage currently established at the gated visitor entrance to the maze.

The earthen art or geoglyphs in the vicinity, referred to as “stick men,” are closely associated with prehistoric trails, but none of these anthropomorphs are incorporated into the design of the maze. Further, the anthropomorph that would have been nearest the maze and that was said to have been destroyed between 1890 and 1914, was reported to be outlined by a ditch 45 cm deep and wide (Haenszel 1978), which may be evidence of a “recent” attempt to isolate it from the railroad’s gravel quarry operation—“recent” or historic-era being presumed, since ditches tend to fill in over time due to wind and water erosion.

Contrary to Haenszel’s findings, the phallus image incorporated into the gravel rows as photographed by F. S. Rogers in 1922 (Figure 4) and F. M. Kelley of Needles in 1897 (Haenszel 1978:30) is not of the same construction as the stick men (Figure 4, right). The phallus, or eye, as in hook-and-eye of a lady’s dress as Haenszel refers to it, is a raised relief scraped on both sides, while the stick men are



Figure 10. Visually observable are dark and light rows of the maze adjacent to an undisturbed portion of darkly patinated desert pavement, on the right of the photograph. Controlled studies are proposed to test for presence or absence of patina on disturbed surfaces or newly exposed surfaces.

intaglio geoglyphs with dark stones removed and remaining stones tamped down within the image area. That they are different does not in itself prove that the rows are not prehistoric or contemporary with the anthropomorphs. Alternatively, simply because this “eye” or “phallus” was played into the gravel row scrapings does not prove that the gravel rows are prehistoric, particularly since it is not of the same construction as other prehistoric earthen art forms in the area except that they are all enlarged images lying prone or horizontally upon the ground.

Potential Study: Test for Presence or Absence of Re-formed Patina

Haenszel (1978) also argued that the gravel rows must be prehistoric since they were observed as early as 1890 to have been already darkly patinated. Archaeologists have confirmed the presence of patinated surfaces within the site complex (McDougall 2005; Urban 1976). However, “natural indications such as the amount of patina redeveloped on hand placed cobbles and their embeddedness in the desert pavement” are said by archaeologists to be “grossly inexact” as indicators of antiquity (Gilreath 2007:289). In Figure 10, gravel rows are viewed adjacent to an undisturbed portion of darkly patinated desert pavement on the right. As is visually observable, the undisturbed surface is darkly patinated. What appears to be patinated in the “maze” area are the stones that were already patinated prior to being scraped into rows, since a certain percentage of stones would wind up with original patinated side turned up, and some of the schist is naturally dark or black in color without patination.

What archaeologists should be looking for is the presence or absence of “re-formed” patina or re-patination instead of patination. Some prehistoric trails and petroglyphs at sites in the nearby vicinity exhibit patina re-formed on surfaces exposed by humans prehistorically. Given a long prehistoric age, we

would expect to see some of the stones in the row mounds patinated on two opposite surfaces and some developing patina on the scraped area in between. Although the relative rate of visible accumulation of patina on surface stones in the Lower Colorado River valley is unknown and varies on different materials, a research design for controlled studies to test for the presence or absence of patina on disturbed surfaces or newly exposed surfaces at the maze has been proposed and awaits authorization from the FWS.

Potential Study: Dating via XRF Chemical Analysis

Being explored is the technique used by Lytle Farrel for dating petroglyphs through chemical analysis with XRF. According to Farrel (2011:202),

This technique determined the age of petroglyphs by XRF analysis of re-patinated desert varnish (DV) on glyph surfaces. High (5 μ m) resolution synchrotron-XRF microprobe surface and cross section DV images detected and eliminated macro-crystal interference from tests of underlying base rock. An age calibration curve $\pm 25\%$, was developed by correlation of pXRF DV analyses with cosmogenic-isotope dated fallen rock slabs. Results agree with known ages of DV on basalt, tuff and sandstone test surfaces and petroglyphs where approximate age can be inferred by glyph content and corresponding archaeological data in the Coso Range CA, Pahranaagat NV and St. George UT areas.

Calibration of patina development on the surface ballasts and concrete of the abandoned historic railroad grade and bridge would potentially provide a baseline for comparison. Preliminary visual observations, however, indicate that after taking into consideration variables in matrix stones, schist, granite, quartz, etc., patination on the scraped areas is lacking and re-patination on the overturned stones in the gravel rows is lacking.

Potential Study: Dating via Luminescence of Sediments.

Also being considered is the use of luminescence to date sediments under the row mounds and their last exposure to light, after the current work on prehistoric rock alignments in the northern Rockies and Plains by James Feathers of the University of Washington, who describes the method: "Luminescence dates last exposure to light. Grains in active soils become exposed by cycling to the surface via turbation. This process effectively ends with placement of a rock. Youngest grains in sediments directly below rocks should date the rock placement" (Feathers 2011).

Visually Observable Morphological Evidence and Potential Controlled Study: Rock Count

It is well-documented and there is no debate that gravel quarry operations were being conducted in the 1880s (see Haenszel 1978). Row construction is within and as close as possible to the railroad grade and bridge area (Figure 11). Further support for a surface gravel strip-mining operation is the obvious preference for gravelly areas while avoiding rocky outcrops. Erosion control and surface gravel mining are a logical explanation for the function of this feature. Figure 10 (top) illustrates an area within the site with a visual appearance leaving an impression that gravel had been harvested, with no rows remaining adjacent to rows along the steep slope next to the railroad grade left for erosion control (as shown in top and bottom). Controlled tests that could be applied are similar to the rock count and replicative test utilized by Bendímez et. al (1986) to determine if gravel had actually been removed at Macahui, an extensive cluster of hundreds of artificially cleared areas on similar low-desert terraces covered with desert pavement on the U.S.-Mexico border. The existence of possible wagon spills or aggregate stockpiles would be another indicator.

Potential Study: Clast Comparisons

Potential evidence may also be found in the composition of the historic railroad grade on the route (indicated by the yellow dashed line in Figure 11) to the now-scraped Red Rock cantilever bridge. Superficially, the ballast gravels appear to be native to the surrounding area and not of the same

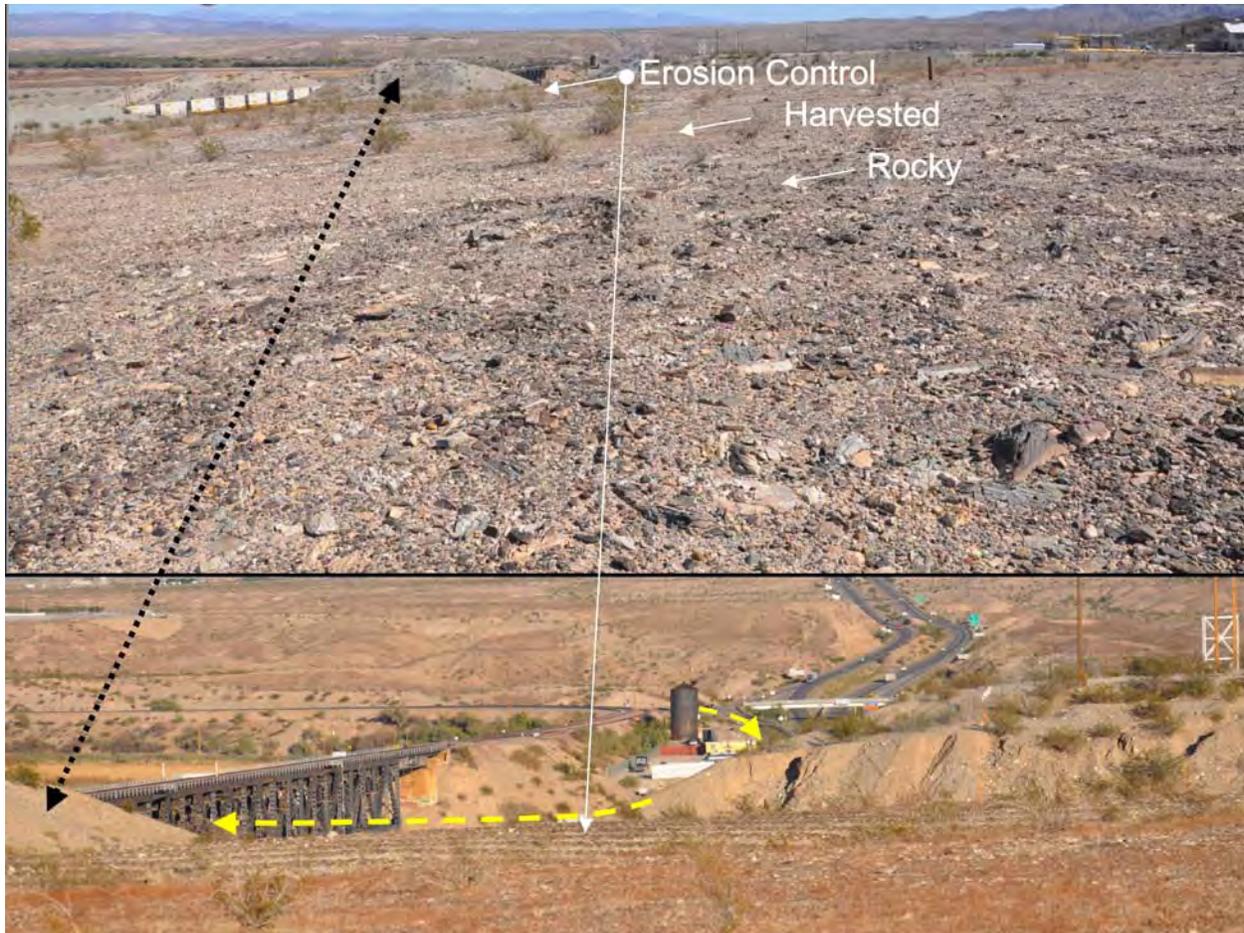


Figure 11. The area within the maze complex close to the route of the historic railroad grade to the now-scraped Red Rock cantilever bridge (indicated by the yellow dashed line) leaves an impression that gravel had been harvested, with no rows remaining adjacent to rows along the steep slope for erosion control. An intact rocky area appears to have been avoided, providing evidence of a preference for gravel. The black dotted arrow orients images with a knoll adjacent to the railroad tracks.

composition as the newer National Old Trails Highway grade. Potential future investigation, without doing really fancy petrology, would include a test of subsurface ballast composition and “an examination of a smallish sample of bridge concrete testing for some fairly unusual clasts in the Mystic Maze gravel” (Frank Grober, personal communication 2011).

Historic Evidence and Potential Replicative Experiments

Beyond the archaeology, the historic evidence suggests a historic age for the site. First, the team of scientists selected by the Smithsonian on the Whipple expedition of 1853-1854 did not report observation of the gravel rows when studying the area for the bridge crossing. Second, the strongest evidence supporting the historic construction is a report by S. M. Rowe (1891:692-693), entitled the “Red Rock Cantilever Bridge,” in the *American Society of Civil Engineers Transactions* that describes how the aggregate material used in the caisson work was procured:

The broken stone was at first supplied from the debris of the Chino Quarry and from the volcanic rock found in the vicinity of the bridge, but it was found that broken volcanic rock with which the “mesas” were strewn, could be collected at less cost, and being of the same character, was substituted in the caisson work at a saving of nearly \$1 per cubic

yard. The process of gathering was to rake these fragments of stone into windrows and haul them by wagon to a pile where convenient to load into a car when needed. An inclined screen was erected to separate the dust from the stone while conveying it to the car. Indian labor was used very successfully for this as well as for labor about the caisson.

This important historic evidence reveals that Mojaves (Aha Macav) were hired by the railroad to rake gravel into windrows for loading onto wagons to take to the railroad cars to be delivered when and where needed and were also used in the construction of the piers for the Red Rock Cantilever Bridge (see Plate CXVII in Rowe 1891). The work was reportedly underway in 1888, but potentially the raking could have commenced several years earlier, to be used for railroad bed ballast under the tracks that supplied the materials, including steel beams, for bridge construction, with 1886 being the earliest reported observation of the rows (see details below). The California Department of Public Works also supplied documentation of interviews with two Mojave witnesses, including Mr. Hiram McCord, attesting that eight Mojaves were hired to rake gravel near the bridge (Asbill 1978). Further, the document reported that a Mojave elder, Charlie Hamilton, stated that he actually saw the rocks which form this “maze” being raked by eight Indians and that he rode on the wagons that hauled the rocks to the bridge site (Haenszel 1978; details below).

Third, the employment of the Buck Scraper, with a characteristic of pushing soil or gravel to the side, should be considered as a possible way in which the gravel rows were roughed out and then perhaps more finely raked by Mojave laborers. The Buck Scraper’s historic successor, the Fresno Scraper, with its controllable scraper bucket, was used extensively by the railroad as the first “bulldozer” for construction, along with teams of draft horses. The distance between the rows seems to be designed for the 3.5-ft.-wide blade, a perfect fit for collection of gravel. The use of horse-drawn scrapers in the area between 1883 and 1910, when thousands of them were being produced, is supported by both local testimony and archival documentation. In 1941, Charles Puck (1941:2), in a letter to the *Desert Magazine* editor, cited an article on page 32 of the January 1933 *Touring Topics Magazine* (predecessor of *Westways*): “an article stating that the ridges of rock is [sic] the work of the contractor who built the Santa Fe bridge at that point. He used a scraper to line up the rocks so they could be shoveled into wagons. He claims to have saved \$1 per cubic yard by getting his material in this manner.”

Desert Magazine editor Randall Henderson (1956) further expounded upon the article, saying that H. W. Dennis, a Los Angeles engineer who answered the question of origin, wrote it. Henderson recounted the Dennis article:

Actually, the mysterious maze was a by-product in the construction of the Topock bridge across the Colorado by the Santa Fe railroad in the early 1880s. The construction men needed great quantities of broken rock for the concrete caissons. They found it was cheaper to scrape up and screen the coarse gravel on the nearby mesa than to operate a rock-crusher. They used a Fresno scraper for the operation, and this explains the tiny parallel windrows of gravel which extend across many acres of the mesa’s surface [Henderson 1956:46].

Henderson cited the 1891 American Society of Civil Engineers report and stated that at one time a California Highway Department sign identified the area as “Prehistoric Indian Maze,” but when the facts became known the sign was changed to “The Rock Maze.” It should be noted that Haenszel (1978) included Puck but not Henderson in her bibliography and completely ignored the possibility of Fresno and/or Buck scrapers being used. Telling will be our proposed replicative experiment to produce surface alterations on currently undisturbed nearby off-site desert pavement using draft horses and antique scrapers to determine if patterns similar to those at SBR-219 can be replicated. At a minimum, further descriptive analysis would include at least a count of the number of parallel rows at SBR-219, a detail which reflects significance and which could prove to be important evidence in replicative experiments, yet a count is omitted, perhaps an oversight, in recently funded professional archaeological site recordings.

While replicative studies, further detailed morphological examination, and controlled studies, such as the strategic and random sampling to test for presence or absence of patina re-formation, and other studies recommended above are desirable, the preliminary evidence indicates that SBR-219 is of historic construction. Rogers (1939:9) found the origin and age of M-78 to be problematic, predicating his description with this warning:

In the vicinity of roads, railroads and modern settlements, the mesa surfaces have often been dragged with scrapers to procure gravel for road ballast or concrete work. That work has produced wholly fortuitous figures of a geometric nature which are difficult to distinguish from the prehistoric figures; they have to be carefully studied before a decision regarding their origin can be made.

HOW THE CONTROVERSY BEGAN

Edward S. Curtis: “An Immense Labyrinth”

In 1906, J. P. Morgan, financier and railroad magnate, offered Edward S. Curtis \$75,000 to produce a photo-history series on the North American Indian. After he was commissioned, Curtis’ gifted work, though stunning, was fraught with controversy. Referring to its author as an “ethnographic adventurer” (Vizenor 2000), Curtis’ work has been criticized by professional ethnologists for manipulating his images and misrepresenting Native American people. (A summary of the controversy and numerous references can be currently found at Wikipedia [2011]). Beck elucidates: “Railroad barons also used imagery of Indians as a vanishing race to sell tourist vacations to the west. Both the Santa Fe and Burlington Northern railway companies created tourism campaigns around these types of images” (Beck 2001).

In connection with the production of the series, around 1907, an archaeologist (“Phillips”) working for Edward S. Curtis began to inquire about the origin and function of the light and dark rows of gravel (Haenszel 1978) which at that time were visible from the rough auto road when passing by (Battye 1941, in Haenszel 1978). If the rows’ origin was in 1886 as an aggregate procurement operation, the remains would have been over 20 years old when Curtis photographed the site. Curtis then published, in 1908, Volume 2 of his *The North American Indian*, describing the feature as an immense labyrinth, involving hundreds of acres, and including a photograph of it.

Recently, an attempt was made to find the location from which his image, now more than 100 years old, was taken. Comparison shots were taken (Figure 8), and it was determined that a similar image could be obtained by adding contrast to a black and white image and cropping the foreground (also possibly darkened by Curtis) thus concealing details of row composition that was later fantastically portrayed by artist Harold Betts (ca. 1913) as rows of rock, not gravel (Figure 12, left).

Curtis, through Phillips, must have learned about the role the Mojaves had played in raking up the rows, for in a 1908 published note included with a photograph of the site, Curtis did not state that it was prehistoric, but rather a prehistoric people had gathered it. “Gathered by a prehistoric people.... The Mohave Indians near by have utilized the area so marked, in recent years, as a maze into which to lure and escape evil spirits, for it is believed that by running in and out through one of these immense labyrinths one haunted with a dread may bewilder the spirits occasioning it, and thus elude them” (Curtis 1908:55).

As in the telephone game, the phrase “gathered by a prehistoric people” was apparently interpreted as meaning of “pre-historic” construction. Curtis was the first to call the rows a maze, saying that in recent years the Mojave had used it to lure and escape from evil spirits by running in and out to bewilder and elude the haunting spirits, and he said this without any supporting ethnographic evidence or documented testimony.

Haenszel (1978) asserted that the maze was relatively forgotten after Curtis until Rogers arrived at the site in the 1920s, but historic evidence reveals that the controversy began and did not end with the

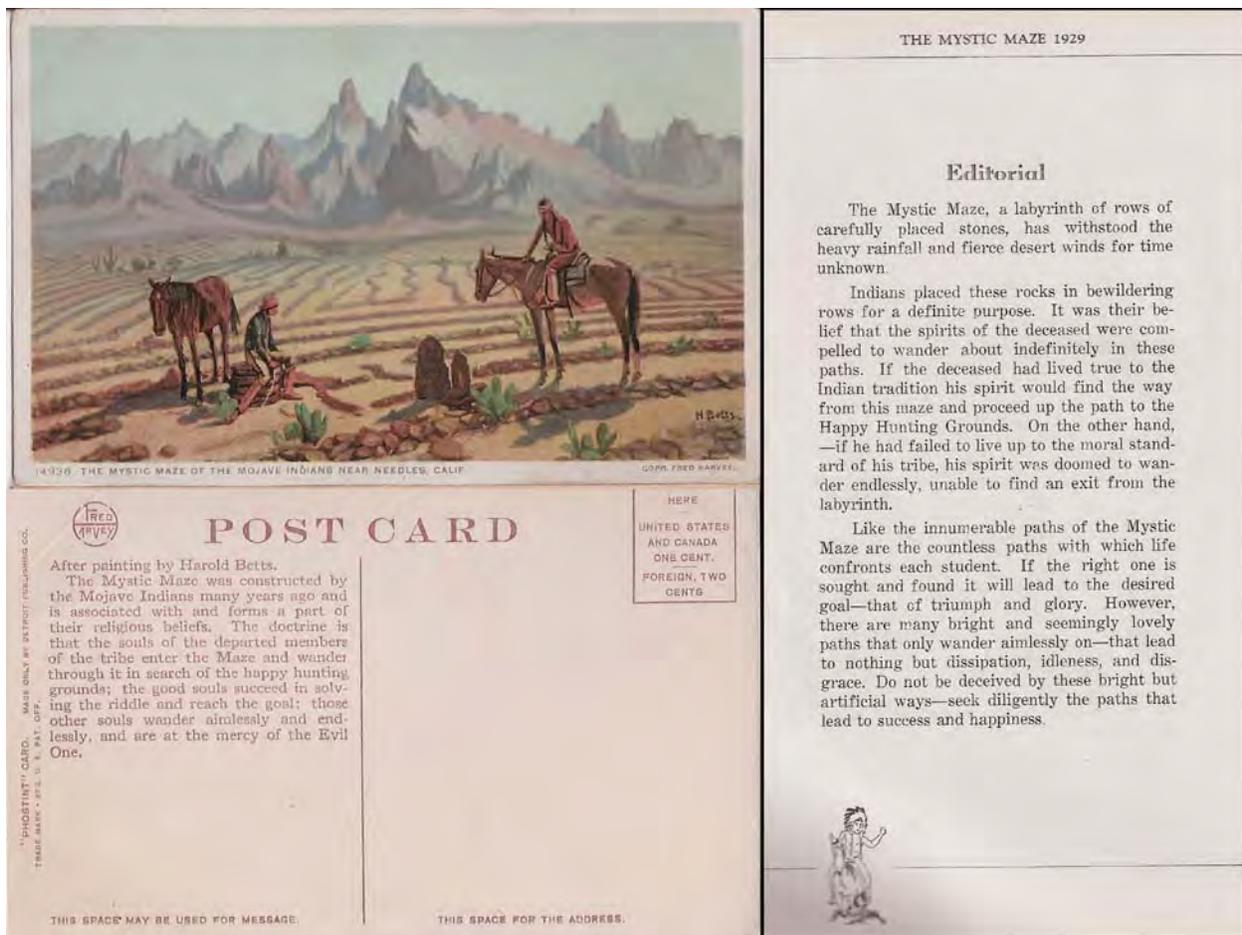


Figure 12. Left: *The Mystic Maze* fantastically portrayed by artist Harold Betts (ca. 1913). Note the addition of tombstones and the carefully placed rows of rock, not gravel. By the time Rogers got to Needles to photograph the site, the legend of the Mystic Maze in the postcard was already well-rooted in the local culture, as confirmed by the spinoff editorial (right) in Volume 6 (1929) of its namesake *Mystic Maze*, the *Needles High School* annual.

Curtis publication. The idea that Curtis’s description of a huge maze used for mystical purposes fell on deaf ears is a very significant deception. The important role that Curtis’ pronouncement played in subsequent interpretations can be traced.

Fred Harvey’s “Mystic Maze” Postcard

Roughly six years after the Curtis publication, Fred Harvey, also a contractor with the railroad, profited from the perpetuation of the Curtis story with the legend of the “Mystic Maze” described on the back of a fantastically sketched picture postcard based on the ca. 1913 painting by Harold Betts (Figure 12, left). Note the addition of tombstones and the carefully placed rows of rock. The focus on the maze also had the indirect effect of taking attention off the destroyed anthropomorphs and trail. We may never know how many giant prehistoric earthen art representational figures may have actually been impacted by railroad gravel procurement operations in the Topock area; the railroad company seems to have remained silent on the issue, likely seeing it as a liability. Yet these postcards were sold at railroad side attractions, like the Harvey House in Needles, and the legend spread. The fanciful spiraling Needles peaks in the background likely brought attention, visitation, and economic benefits to the Needles community.

Fred Harvey was apparently the first to call it the “Mystic Maze.” The legend on the back of the card (Figure 12, lower left) reads:

The Mystic Maze was constructed by the Mojave Indians many years ago and is associated with and forms a part of their religious beliefs. The doctrine is that the souls of the departed members of the tribe enter the Maze and wander through it in search of the happy hunting grounds; the good souls succeed in solving the riddle and reach the goal; those other souls wander aimlessly and endlessly, and are at the mercy of the Evil One.

No author or source is provided for the legend, constituting a classic example of how a legend begins: a slim element of truth and a large dose of romantic imaginings. That individual Mojave laborers had a hand in its origin is undoubtedly true, but added to this is “many years ago,” and the purported “doctrine” doesn’t square with documented traditional beliefs of Mojave or other Yuman speakers. In fact, it is a twisted version of the original story Curtis promoted. Nevertheless, the name “Mystic Maze” took root in Needles.

National Old Trails Road to the 1915-1916 Panama-California Exposition

While Haenszel (1978:8) is unclear as to when concerned citizens of Needles made an effort to stop the destruction of the maze by the railroad, subtly implying that this happened in the 1890s, instead the evidence she relies on (Simpson’s 1933 correspondence to Mr. Howard O. Welty) indicates that any campaign to save the maze had to do with the auto road construction and did not occur until well after the Curtis publication and circulation of the Fred Harvey postcard. This is evident because Haenszel said that Congressman William “Brother Bill” Kettner was involved in the effort while in office, and that was between 1913 and 1921. In 1912, Kettner, a Democrat, was elected to the House by a margin of about 3,500 votes (Amero 1990). Kettner was from San Diego, but his district included Needles. Significantly contemporaneous with the “maze” postcard were the numerous 1915-1916 Panama-California Exposition postcards in circulation. The exposition was held in San Diego to celebrate the opening of the Panama Canal and to tout San Diego as the first U.S. port of call for ships traveling north after passing westward through the canal (San Diego History Center 2011). On May 23, 1913, an accommodating new Democratic President, Woodrow Wilson, signed Kettner’s bill authorizing government departments to permit the free admission of exhibits for the San Diego exposition (Amero 1990).

Clearly, Kettner was keenly interested in visitor attractions; visually accessible from the auto road, the “maze” definitely constituted a free roadside attraction. Plans were already being laid for the exposition by 1909 (Henderson 1976), and promoters hoped to encourage people to come to California on the National Old Trails Road (Bischoff 2005:14). The National Old Trails Road (later replaced by Route 66) passing directly through the area of the maze was found to be the most “passable” and advantageous route to the exposition from the east (Bischoff 2005:16). By 1912, maps of the road had been published and the road was being readied, along with new signage installed by the Automobile Club of Southern California (Bischoff 2005:16), in anticipation of the blitz of visitors using the route to San Diego for the 1915-1916 Exposition, among a multitude of other attractions on the west coast. In 1914, the cantilever bridge with planks laid beside the rails became a part of the National Old Trails Road; telegraph and telephone lines were also installed (Haenszel 1978). The new construction, in connection with road improvements and in addition to the realignment of the railroad, was the likely threat to what was becoming the famous “Mystic Maze.” Kettner’s connections and support for the maze while roadwork was being completed prior to the opening of the exposition likely stopped any further destruction of the relic gravel mining operation, which answers the question of why more gravel was raked beyond what was used. This also addresses Haenszel’s question: if the Railroad went to the expense to rake the gravel, why did they not use it? The answer to that question is that the “Mystic Maze” became more important economically and politically as an “attraction” than as a gravel operation.

The Needles High School Annual “Mystic Maze”

By the time Rogers got to Needles in the 1920s to record the site as “M-78,” the legend of the Maze was already well-rooted in the local culture, as confirmed by the editorial in Volume 6 of the *Mystic Maze*, the Needles High School annual (Anonymous 1929). This volume is dated 1929, so a 1924 issue was likely the first issue of the yearbook; local descendants, however, revealed that several years had passed before the annual was so named. Needles is a “railroad town,” and the children of railroad employees, many of whom were from the Midwest region, attended Needles High School. Volume 6 is replete with graphic sketches of Plains Indians, including those in headdress, and contains an editorial (Figure 12, right) expanding upon the legend on the back of Fred Harvey’s postcard. It describes the countless paths that the student must choose from in life as similar to what is found at the Mystic Maze. Clearly, the author had seen the postcard, but not the site, describing it as carefully placed stones in bewildering rows for a definite purpose.

The Mystic Maze, a labyrinth of rows of carefully placed stones, has withstood the heavy rainfall and fierce desert winds for time unknown.

Indians placed these rocks in bewildering rows for a definite purpose. It was their belief that spirits of the deceased were compelled to wander about indefinitely in these paths. If the deceased had lived true to the Indian tradition his spirit would find the way from this maze and proceed up the path to the Happy Hunting Grounds. On the other hand,—if he failed to live up to the moral standard of his tribe, his spirit was doomed to wander endlessly, unable to find an exit from the labyrinth.

Like the innumerable paths of the Mystic Maze are the countless paths with which life confronts each student. If the right one is sought and found it will lead to the desired goal—that of triumph and glory. However, there are many bright and seemingly lovely paths that only wander aimlessly on—that lead to nothing but dissipation, idleness, and disgrace. Do not be deceived by these bright but artificial ways. Seek diligently the paths that lead to success and happiness [Anonymous 1929].

The clear evolution of the unfounded 1908 Curtis legend was already in process by the 1920s and continues to morph today with a wide range of New Age interpretations and a recent lawsuit against the State of California over its significance (Schwartz 2011). The topic of the evolution of creative interpretations regarding the significance and origin of SBR-219 is addressed elsewhere by the author in “Monster Maze” (Musser-Lopez 2011).

OTHER CONSIDERATIONS, INCLUDING TESTIMONY AND ETHNOGRAPHIC EVIDENCE

Ethnographic support for traditional use of mazes, gravel rows, etc. in ritual or ceremony by any tribes in the Yuman language group is either problematic or nonexistent. This site is an anomaly, in that no evidence has been forthcoming of a pattern of ritual mazes within the lower Colorado River corridor. Michael J. Harner (1953:10) recalled a personal communication to him on October 22, 1952: “A. L. Kroeber recalls that in the early 1900’s he was told by a Mohave informant that although the Mohaves were aware of the existence of the ‘maze,’ they did not have any cultural traditions associated with it. Kroeber says that he does not believe that his informant was attempting to conceal information.”

In an unpublished 1952 report to the National Park Service, Albert H. Schroeder recalled a conversation with a “Mrs. B. B. Brown” of “Parker” who related information he says she claimed to have obtained in 1910 (after the Curtis publication) from “the Mohave Indian, Chuck Wood, who was over 100 years old when he died in 1931 or 1932” (thus 80 years old when he spoke with her; whether she spoke with him through an interpreter was not stated). Schroeder wrote that “he did not know who scraped the gravels into alignments,” but the third-hand recounting of the Chuck Wood interpretation of the function reflected the earlier published Curtis story: “that the Mohave used to put some of their men in the center

of the area of alignments and then left them to find their way out of the maze without crossing the gravel alignments. By doing this they would leave the devil behind them” (Schroeder 1952:44).

Schroeder's (1952:44) footnote on the same page reveals that *Arizona Highways* had made public the name of this Mohave, Chuck Wood, in a March 1934 article about him (not about the maze). Wood was deceased at the time of this publication; anyone could have claimed later to have known Wood and then attribute a statement to him, since there is no way to verify who Wood talked to or what was actually said. At present, follow-up interviews with the families of Chuck Wood and B. B. Brown could potentially inform the record, but unfortunately Schroeder's third-hand information, without sworn declarations or support from others who witnessed or who bear record to such aboriginal use, is not conclusive.

Other evidence of contradicting Mojave testimony exists. In 1957, the California Department of Public Works conducted its own investigation. J. M. Asbill of the Division of Highways interviewed Mr. Hiram McCord who was eight at the time of the bridge construction:

Mr. McCord's uncle, Jorando Gates relates the story that the so-called “maze” was made by Indians employed by the railroad company to rake rocks which were to be used in the construction of the Red Rock River Bridge by the Atlantic and Pacific Railroad.... Mr. McCord was informed that many reports on the origin of the “maze” was [sic] to the effect that the maze was constructed by the Indians for the purpose of walking through it and in some unknown manner being able to elude pursuing evil spirits. Mr. McCord states that to his knowledge there is nothing in the folklore of his tribe that would place any credence at all upon such reports [Asbill 1978:52].

Asbill also reported that Mr. McCord acted as interpreter during an interview conducted with Mr. Charlie Hamilton, then an elder of the tribe. Asbill writes: “Mr. Charlie Hamilton, age 75, states that he personally saw the rocks which forms this ‘maze’ being raked by eight Indians, and that he actually rode on the wagons which hauled the rocks to the bridge site during the construction of the railroad bridge” (Asbill 1978:52).

Mojaves living in the railroad corridor and town of Needles appear to have an entirely different perspective on the issue (and they spell their name differently; see Musser-Lopez and Miller 2010) than Mohaves living 110 km south in Parker, Arizona. Further, Schroeder states that Mrs. Brown thought that Mr. Wood “became very angry” when she brought up the possibility of “railroad labor raking the desert gravels into long rows to simplify gathering for use as aggregate in the construction of the railroad bridge piers” (Schroeder 1952). This display of emotion was apparently intended by Mrs. Brown to support the truth of the Wood interpretation; however, perhaps (given that it indeed did happen) it was out of frustration in making sense of something that was not understood by those who were unfamiliar with railroad activities in the late 1800s and who had been influenced by the Curtis publication. It is an interesting coincidence that the row feature is located in an area that traditional ethnographic evidence supports is the exit area to the land of those of the Aha Macav (Mojave/Mohave) who have passed on: “the land of the dead,” the land in the area of the dunes in the lower gorge region below Topock. Prior to the various New Age Curtis renditions that were relied upon in the PG&E Topock FEIR (AECOM 2011), there was no substantiated ethnographic evidence that the gravel rows were a part of any funerary or cleansing ritual.

Asbill's 1957 report is included in appendices to the Haenszel (1978) monograph, along with the 1933 Simpson letter, the 1933 Switzer memorandum, and the 1941 Battye letter that will be discussed below. Haenszel (1978:29) cites Schroeder and also represents that the following individuals “affirmed that they had seen the Topock Maze before the coming of the railroad or the building of the bridge and railroad construction”: Fred M. Kelley (postmaster), Judge L. V. Root, R. J. Halsey (miner near Topock), Jerome Booth (son of Needles first doctor and newspaper publisher who worked on the bridge), and Charles Battye and William Hutt (worked on the bridge and railroad construction). Tracking these “affirmations” reveals that the earliest alleged sighting was 1886. In reviewing one 1941 citation for Battye, printed in *Desert Magazine*, it was learned that many years had passed after the bridge was built

and “after the maze had been formally ‘discovered’” that Battye’s associate, Halsey recalled (to Battye) having seen the feature in 1886 but “forgot about it” (Battye 1941:2).

In the same letter to the editor of *Desert Magazine*, Battye also states that Pete McGuire saw the maze in 1886 but “thought nothing of it, for, in truth, it is not at all impressive” (Battye 1941:2). Again, this is second-hand information. It is of interest that Battye photographed bridge construction in 1889 but apparently not the maze. By the time he wrote the letter to the editor of *Desert Magazine* in 1941, there may have been some rivalry as to who saw it first, and when. Another of Haenszel’s references was a 1933 memorandum by B. A. Switzer citing Curtis and also reporting that a Mr. Jerome Booth observed the maze in 1888. Another account was correspondence from G. W. Simpson representing that Willie Halsey crossed through the maze in 1890 and that F. M. Kelly reported a portion of the maze to be destroyed during the change of tracks but provided no date. Simpson also reported that Judge Root visited the site in 1891 to photograph it and the anthropomorph.

The issue seems to boil down to the question of when the railroad operation commenced rerouting the tracks from the unreliable crossing of the river in the area of Needles to their location at Topock, then called “Mellen.” Bridge construction is said to have begun in 1888, but actual track construction likely commenced much earlier; thus it is possible and likely that gravel procurement operations for ballast would have been in place by 1886, the date of the earliest reported observation. The 1889 photograph taken by Battye (Haenszel 1978:9) during bridge construction illustrates steel beam construction starting on the west side; thus the western tracks with ballast had likely been laid for the purpose of bringing in construction materials long before the photograph was taken. Those driving on the first rough auto road servicing the railroad and new bridge crossing after ca. 1890 began to notice the contrasting dark and light rows through which they crossed (see Battye 1941).

CONCLUSIONS AND STRATEGY FOR FUTURE STUDIES AND ANALYSIS

In conclusion, whether commercial or mystical, the maze has been a valuable roadside attraction for over 100 years, and the controversy over its age, origin, and function is now irrelevant to its significance, whether historic or prehistoric. Its size and striking visual presentation, the legend and mystery, real or imagined, and the debate itself, all add to the importance of this site not only in the local culture but as a national monument to American ingenuity and entrepreneurial creativity. In the words of Randall Henderson (1956:46), “It is an interesting relic of the trail-blazing days on the desert frontier, and as such deserves to be preserved.” All in all, it represents another of the great legends of American Folk and Native American history.

Given its unique stature as an American Legend, it is important that all of the currently available tools for exhaustive, rigorous, empirical archaeological analysis be utilized to form an objective foundation for management and interpretive recommendations.

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