

## **SYNESTHETIC PETROGLYPHS: A VISION QUEST PERSPECTIVE ON THE SIGNIFICANCE OF A MOJAVE DESERT SLOT CANYON ROCK ART SITE**

CHESTER R. LIWOSZ  
UNIVERSITY OF CALIFORNIA, SANTA CRUZ

*A 2010 archaeological team documented a petroglyph site in a narrow slot canyon near Death Valley, distinguished by numerous rock carvings adorning towering canyon walls. Post-fieldwork analysis utilized principles from Peircean semiotics, ethnographic accounts of Shoshonean vision quest rituals, and Lewis-Williams's pan-geographic investigations of petroglyphs in forming altered states of perception. I argue that this art references not its depicted forms but rather a synesthetic experience invoked through its production. I hope this perspective encourages archaeologists to consider examining rock art not as referential to explicit objects, but instead to consider the role its production plays in crafting human experience.*

### **BACKGROUND**

Interpreting rock art has been and remains a controversial vein of Great Basin archaeology. Statistical modeling and broader regional comparative studies provide an archaeological context in which to build more localized understandings (Gilreath and Hildebrandt 2008). Conversely, ecological functionalism may be tempered and humanized through the application of ethnographic and cognitive psychology explanations (Whitley 1994). Diverging environmentally and stylistically from the Coso Range, a regionally neighboring slot canyon petroglyph site serves as an example study site, one which benefits from both the methodological rigor of statistics-oriented ecological approaches and the phenomenological considerations of ethnoarchaeology.

### **DATING**

The greatest age of the earliest Great Basin rock art is ambiguous by the nature of the medium. While a broader consensus has been achieved through more indirect and relativistic techniques, dissenting opinions have produced data suggesting far greater antiquity (Liu and Dorn 1996). Gilreath and Hildebrandt (2008:11-14) demonstrate the applicability of relativistic dating utilizing varnish rate and superimpositions. However, methods of absolute dating with more direct techniques using geophysical properties of bedrock substrates have also been developed (Dorn and Whitley 1984; Liu and Dorn 1996; Whitley 1994).

At stake in the ongoing debate surrounding petroglyphs is more than the applicability of different models for inferring social behaviors. Debate continues over the relative chronologic sequence of petroglyph production techniques. Both direct (e.g., Dorn and Whitley 1984; Liu and Dorn 1996) and indirect (e.g., Bettinger and Baumhoff 1982; Gilreath and Hildebrandt 2008; Wellman 1979) methods of estimating rock art ages have been developed. Absolute dates are produced through a variety of methods, including petrographic analysis of manganese-iron micro-laminations (VML) and chemical catio-ratio dating (CR). These yield the superlative of the oldest dated rock art in the region (Liu and Dorn 1996), although not without controversy (see Quinlan and Woody 2003; Whitley 2000). Relativistic correlations of visually discernible rates of re-varnishing coupled with superimpositions provide a more accessible and nondestructive means of establishing sequences (Gilreath and Hildebrandt 2008). This second common method, however, relies on indirect association between rock images and dated samples, resulting in more tenuous calendric dates.

Visual inspection of surface re-varnishing functions as a useful rough-and-ready index in providing an approximate sequence across a large data set (Gilreath and Hildebrandt 2008:12). Visual varnishing inspection provides good sequential information based on difference from the base rock color, but no true calendric information. Varnish rates as visual darkening vary greatly not just between panels but within the same designs, and thus cross-comparison among any particular design is more intuitive than metric (Dorn and Whitley 1984; Gilreath and Hildebrandt 2008; Liu and Dorn 1996). It is also not to be confused with VLM dating, which examines layers in cross-section, nor with cation ratios, which are based upon chemical changes to the rock.

## **GREAT BASIN CHRONO-TYOLOGY**

Much of the body of literature describing rock art of the eastern California deserts adheres to the Great Basin convention for stylistic and technical attribute typologies. While this system is broadly acknowledged to be more a systematized approximation rather than universally deterministic (Baumhoff 1980; Quinlan and Woody 2003; Schaafsma 1985), it remains a serialized stylistic sequence from which more site-specific chronologies are built. Heizer and Baumhoff (1962) outline distinctions between curvilinear abstract, rectilinear abstract, representational, pit-and-groove, and scratched types. Presumed the oldest technique, pecking was used in the production of representational and curvilinear and rectilinear abstract designs, while incising has been presumed to be later and used to produce shallow abstract scratches or in combination with grinding to produce the pit-and-groove style (Heizer and Baumhoff 1962:197, 200). Variants of this typology continue to be utilized (e.g., Bettinger and Baumhoff 1982; Gilreath and Hildebrandt 2008; Hildebrandt and McGuire 2002:245; Quinlan and Woody 2003:383)

## **DEMOGRAPHY**

Great Basin culture history faces a degree of ambiguity, which is exacerbated in rock art studies by the aforementioned difficulties surrounding absolute dating strategies. Ethnic or demographic affiliations are inferred in large part through relative sequence and production style. Particularly, non-figurative scratched techniques which incise shallow streaks are traditionally inferred to indicate Numic contributors and a relatively late date, while the bulk of rock art consists of pecked or percussion-produced images made by Archaic-period predecessors (Bettinger 1989; Bettinger and Baumhoff 1982; Quinlan and Woody 2003). However, evidence links Numic-period artists with pecked images in some instances (Keyser and Whitley 2006; Whitley 1994, 2000; Whitley and Whitley 2012). With the applicability of ethnography at issue, reconstructing cultural affiliation informs the validity of the middle-range theories that are deployed.

## **HUNTING MAGIC INTERPRETATION**

Prominent recurrence of horned quadruped motifs throughout Great Basin rock art sites has contributed substantially to the long-popular interpretive link between petroglyphs, magico-religious practices, and bighorn sheep hunting. These iconographic “kill scenes” are often interpreted as depicting hunting events, as supported by overall proximity to game trails and/or frequented hunting sites (Bettinger and Baumhoff 1982; Grant et al. 1968; Heizer and Baumhoff 1962; Hildebrandt and McGuire 2002:243-246). However, evidence indicates a greater variety of spatial contexts for rock art that cannot be adequately explained by hunting practice alone, such as habitation locations and bedrock grinding features (Gilreath and Hildebrandt 2008:8; Quinlan and Woody 2003; Wallace 1977:251). This discrepancy, while not defeating the hunting magic theory as a generalization, necessitates a model which is less essentialist in referencing such a specific subset of cultural practices.

Wellman (1979:549) reports that 30.9 percent of 778 elements between the Coso Range's Big and Little Petroglyph canyons (T22S-R40E; INY-7 and INY-8) are figurative depictions of bighorn sheep.

This pales compared to Grant and associates' (1968:120) catalog of 14,084 Coso petroglyph elements, of which 51.1 percent are reported to be variations on the bighorn sheep motif. Throughout the northern Mojave Desert, however, serious questions have been posed regarding these publications' applicability in describing regionally the ratio of sheep to other designs.

### **RAIN SHAMANISM INTERPRETATION**

An alternative explanation was proposed for Mojave Desert rock art, based on cross-comparisons of rock art by Lewis-Williams and Dowson (1988) and expanded upon by Whitley (1994). Distinguishing between iconic hallucinations and perceptual distortions, they isolate images created by inward experience from those experienced from outward stimuli. These entoptic images manifest as artifactual forms and phosphenes that are signals produced within the optic nerve-retina-visual cortex system (Lewis-Williams and Dowson 1988:202). Their occurrence on rock art is inferred to represent altered states of consciousness (ASCs), in which perception is subjectively changed.

Repeatedly pecking a rock surface – a common technique in the Mojave Desert – is particularly useful as an ASC catalyst (Whitley 1994:362-363). Done with cadence, the haptics and sounds of pecking parallel drumming in combination with dancing, the latter two of which have been demonstrated to have been used as tools for entering trance-like states (Goodman 1988). While each peck mark indicates one of the numerous percussive events, the redundant form of the design itself indicates a shift in the artist's perceptions during the process. Even iconic designs, when repeated in sequence, may function additionally as entoptic forms in indicating trance practices (Lewis-Williams and Dowson 1988; Whitley 1994:362). Proponents of this model rely heavily on ethnographic analogy, particularly mentions of shamanistic practice by Kelly (1939), Steward (1941), and more contemporary authors such as Hultkrantz (1986).

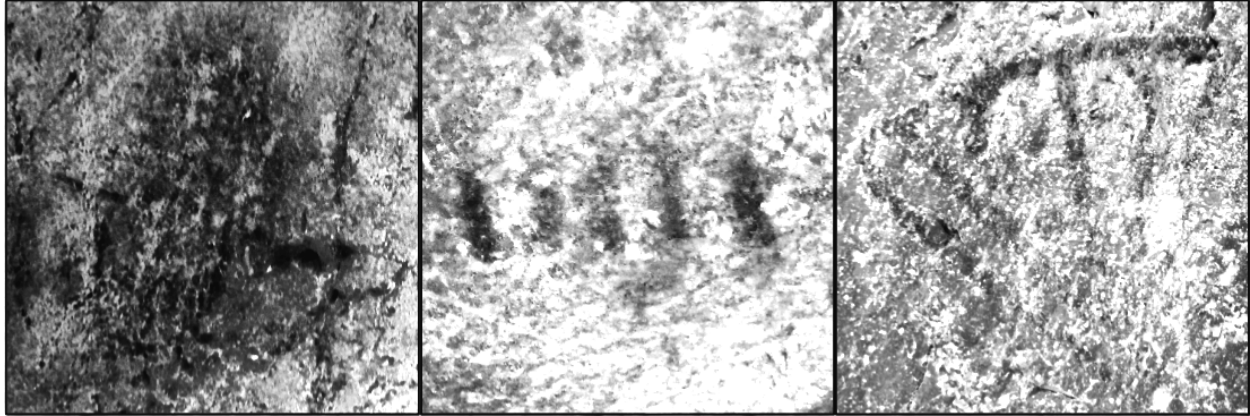
### **SLOT CANYON FIELD SITE**

The focus of this study is a relatively un-vandalized and difficult-to-access petroglyph site which extends along the rock walls of a Mojave Desert slot canyon. Approximately 1 km long, the canyon rises steeply in a stepped pattern of dry falls. Preservation and preventing defacement of petroglyph sites has become of increasing concern in the western Great Basin. Due to this concern, I am abiding by the request of the slot canyon site's landholders in withholding the site's name, location, and even trinomial.

### **METHODS**

Initial site documentation concentrated on collecting a comprehensive visual library of the art present at the slot canyon site. This targeted recording consisted of photographing petrographic panels, composing brief written descriptions of each, and mapping approximate spatial relationships between art occurrences. Following conventional field practice, “panels” were arbitrarily designated units of clustered carved images which shared a rock face. Due to technological limitations on GPS accuracy imposed by the slot canyon's narrowness and high stone walls, orientations and spacing were determined using compasses and measuring tapes only. As rock climbing and rappelling are necessary at several intervals to fully access the site, bringing in a transit system was determined impractical. Panels in the lower third of the site were mapped in conjunction with a 1987 site report, and features in this section were given designations that correspond with this earlier record.

Post-fieldwork analysis proved able to further insights beyond a visual design catalog. Starkly variable rates of weathering and re-varnishing imply substantial antiquity to the site. By assigning values on a scale from 1 to 3 for superimposition and varnishing, a relative chronology was elucidated. Visual inspections of re-varnishing were quantified on a range from negligible (value of 1) to fully re-varnished (value of 3). Palimpsests were similarly rated as surface level (1), single layer of superimposition (2), or multiple layers of superimposition (value of 3).



*Figure 1. All three documented pictographs; stylistically these all qualify under the proposed “redundant abstract” image class.*

Thematic qualities are sorted with consideration of semiotic quality, repetitive character, and similarity to previously published typological forms (i.e., Heizer and Baumhoff 1962:200). Noted during field investigation and later confirmed in subsequent photo-analysis, varnish contrasts between complex geometric forms and figurative forms are mirrored similarly between figurative and simple geometric forms. This provides the initial evidence that sorting abstract forms based on element complexity/redundancy (rather than dividing between rectilinear and curvilinear forms) yields more consistent data. However, this line of reasoning requires a departure from the Great Basin cultural chronology. While three pictographs are present (Figure 1), they are limited to a single overhand area, suggesting a weathering and preservation limitation. Consequently, this subset of designs was not used in chronological analysis.

Given a complete lack of incised images and the aforementioned observations regarding thematic clusters, I propose a new serial typology for application at this site. Redundant Abstract forms are geometric in nature with necessarily repeated components within the same element, exemplified in Figure 2. However, this category conflates both Great Basin Rectilinear and Curvilinear Abstract categories. Figurative designs are semiotically iconic in their formal resemblance to some referred external form; these correspond well with the Great Basin Representational category. Figurative designs observed include anthropomorphs, boat-bodied sheep, quadruped zoomorphs, avian zoomorphs, and dendromorphs (see Figure 3). Lastly, simple geometric forms are a specific suite consisting of variations on bars, boxes, ovals, and bars bisecting boxes and ovals (Figure 4). While this model is a site-specific cataloging system, it does suggest the need for reevaluation of region-wide assumptions in the Mojave Desert.

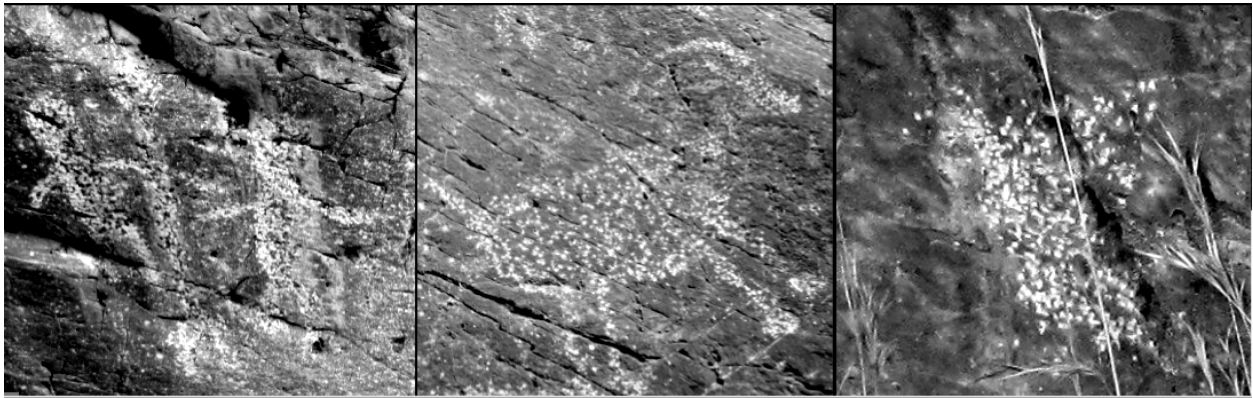
## **PRELIMINARY RESULTS**

Of the 64 rock art panels analyzed, all are composed of “glyphs” or individual elements – discretely bounded design units of varying size. In all, 346 discreet elements are distinguishable at the slot canyon site. Of these, all can be assigned a varnish value, and 341 can be visually sorted unambiguously as to layered superposition. In doing so, an unbroken temporal trend emerges in both variables among all three aforementioned categories.

Palimpsests occur with some regularity on more intensively carved panels but are not ubiquitous throughout the slot canyon. This leaves some ambiguity as to the sequences of carving between panels. All three motifs occur with greatest frequency as surface design with no superimposition (Figure 5). Simple geometric forms only occur as surface designs. Eighty-nine percent of the designs superimposed by one other level of designs are redundant abstract forms, which are also the only forms superimposed by two or more levels.



*Figure 2. Panel illustrating various redundant abstract or entoptic forms, including spiral and curvilinear forms.*



*Figure 3. Figurative/iconic/representational forms. From left to right: three anthropomorphs, a bighorn sheep, and an avian zoomorph.*

Despite a laundry list of warnings concerning the extent of this technique's usefulness, visual varnish inspection at the slot canyon site results in good preliminary sequential data. Full re-varnishing is indistinguishable from the substrate's color, negligible re-varnishing is an extremely "bright" engraving, and partial re-varnishing is used for all gradients in between. Only redundant abstractions are observable as fully re-varnished (see Figure 6). The majority (233) of elements exhibit partial re-varnishing. While most of these are the 141 partially re-varnished redundant abstract forms, the peak occurrence of figurative/iconic forms (52) falls under this value. Simple geometric forms peak as the dominant motif (45) among negligibly re-varnished designs, among which redundant are least present (14).

Both palimpsests and re-varnishing demonstrate an unbroken trend among design changes. When measured together, these provide the data in Figure 7. Only redundant abstract forms are preserved from the slot canyon site's earliest contributions. Later imagery in both partially and negligibly re-varnished stages is a mixture of all three motif categories. Rather than wholly replacing previous motifs, later designs are added to an ever-expanding visual lexicon at the site.

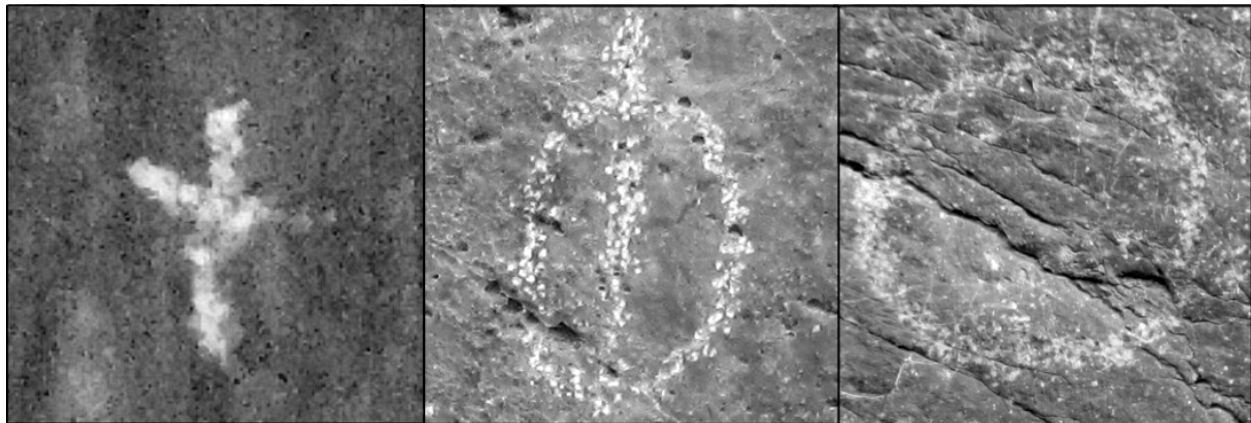


Figure 4. Simple geometric forms, all various combinations of bars and circles or boxes.

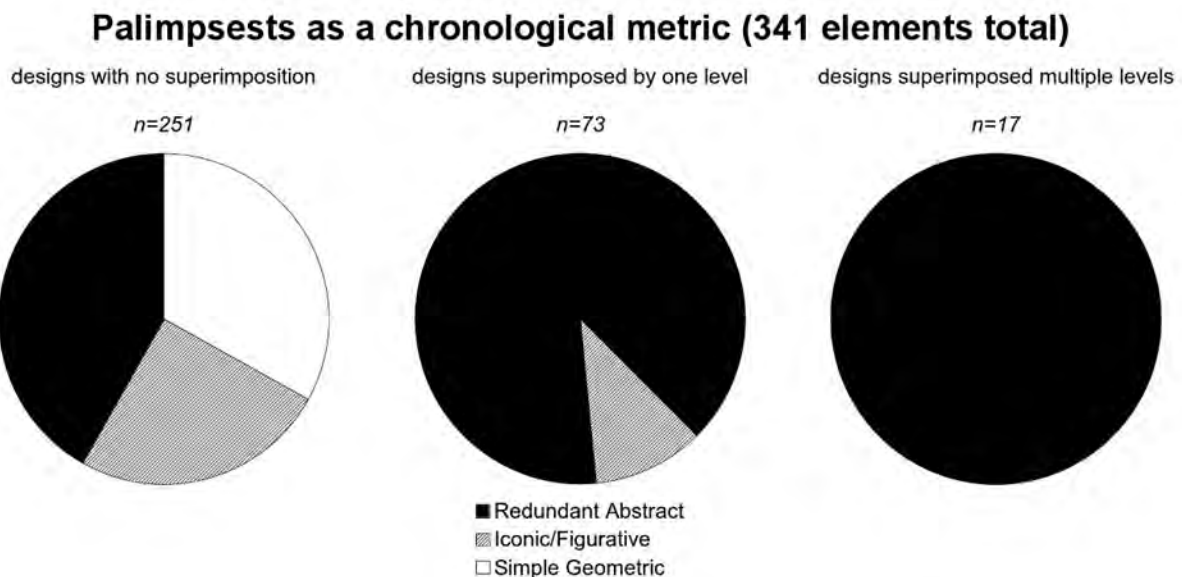


Figure 5. Palimpsests, not equally distributed between design classes.

## DISCUSSION

Building designs between redundant, figurative, and simple geometric forms is far from an intuitive measure. Each mobilizes a different aspect of Peirce's (2009 [1873]) semiotic triad as the primary means of establishing signification. Significance and meaning ought not to be confused. The former functions metaphorically as a package in which information is delivered, while the contents or “meaning” remains obscured (Keane 2003; Parmentier 1987). In Mojave Desert rock art, instances of iconic depictions of real-life events are at times demonstrable (Garfinkle 2006). Yet it would be a spurious claim to insist that all such icons necessarily indicate concepts unambiguously (Conkey 2009; Gell 1998; Whitley 1994). Repetition throughout varying contexts may intentionally entangle them with other potential meanings besides literal form (Lewis-Williams 2002). Figurative as well as abstract forms must therefore undergo the same scrutiny in building significance, and not be dismissed outright as the most apparent or intuitive reading.

## Relative rates of re-varnishing (346 elements total)

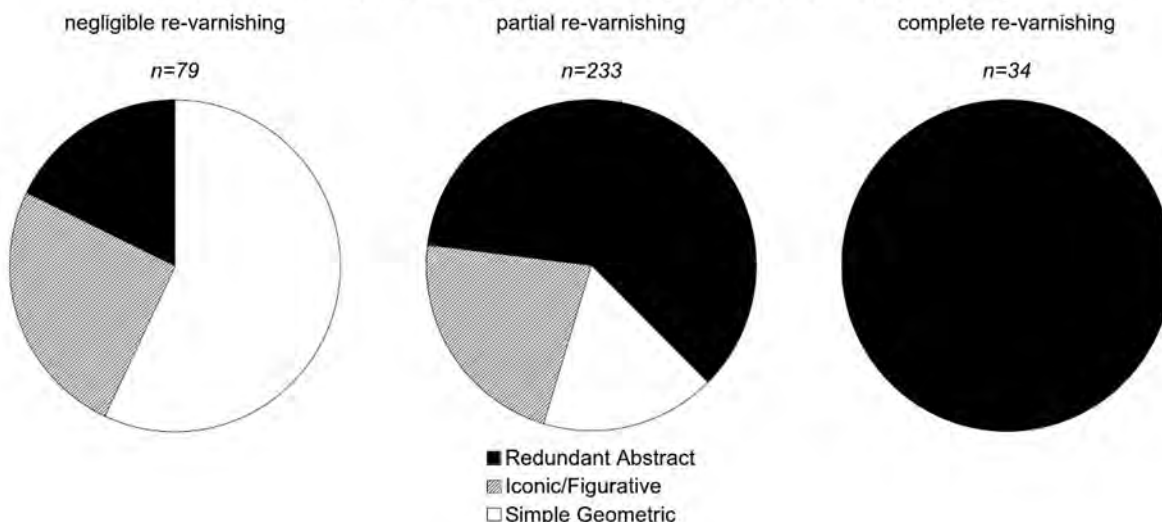


Figure 6. Relative rates of re-varnishing, indicating decreasing emphasis but not total replacement of redundant abstract forms through time.

## Design rate of occurrence, synchronically and diachronically

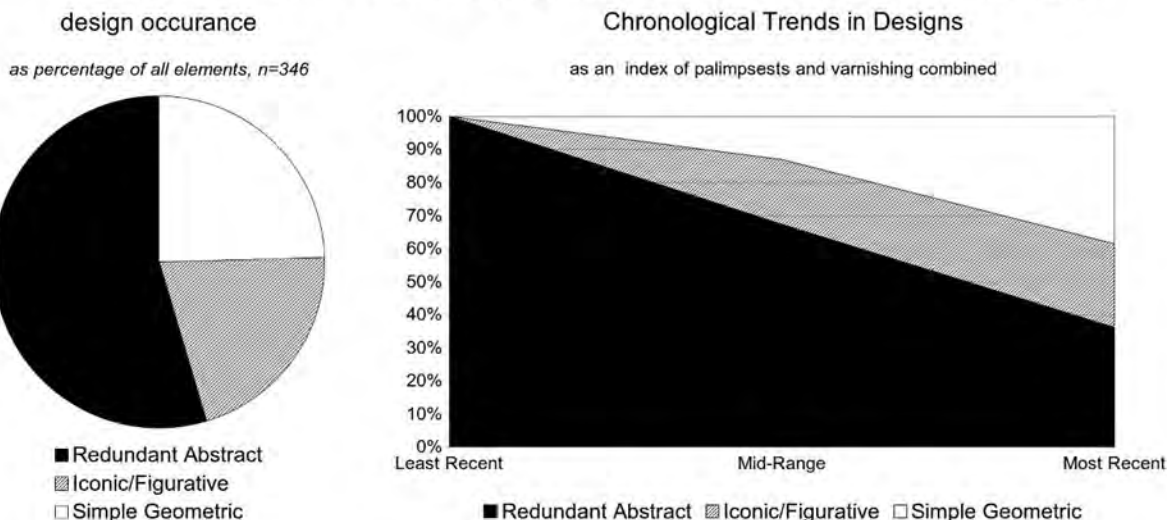


Figure 7. Design occurrences through time deviated from an expected distribution based on total proportion of elements.

The earliest images – redundant abstract forms – are potentially most debatable in significance because of their apparent ambiguity. Complex visual images are acquired through a process of layering simpler elements redundantly (Lewis-Williams 1995, 2002; Lewis-Williams and Dowson 1988:203; Whitley 1994:362). Patterns of neurological functions are manifested in the rock art: images index experiential aspects of ritual practices in which modes of perception may be altered (Lewis-Williams 1995). Such complex redundant imagery, or phosphenes, is representative of inward experience made materially manifest (Lewis-Williams 2002:210).

Middle-ranked aged figurative images, such as hotly contested bighorn motifs, semiotically qualify as icons in that they appropriate some formal attribute of bighorn sheep in the process of signification. However, the meaning they bear may no more be hunting than sheep hide, a person's name, or a visual punning, just to name a few examples. Of the iconic forms in the slot canyon, sheep represent only approximately one-third, with anthropomorphs appearing equally frequently. While these are certainly more frequent than other zoomorphs, they are still only a small portion of the images and not nearly the 51 percent reported elsewhere. Further, of the four panels in which anthropomorphs and bighorn appear together, in none of them are there weapons or killed sheep such as those illustrated by Hildebrandt and McGuire (2002:244). This indicates that hunting is a less likely explanation at the slot canyon site, without undermining the notion's potential at regionally proximal sites such as those in the Coso Range.

Simple geometric forms are a distinct class of variations on a basic theme. Only bars, boxes, circles, and bisections by bars (including "phi glyphs," equilateral cruciforms, and asterisks) are encapsulated in this category. These lack the redundancy of the earlier abstract category. Some (e.g., Hildebrandt and McGuire 2002) interpret a singularly bisected circle (or "phi glyph") as either an atlatl or a bow-and-arrow. Heizer and Baumhoff (1962:83) read the cruciforms as a potential "rain sign." The former reading is iconic, the latter symbolic in the semiotic sense. As a thematic suite, all such combinations better represent the increased abstraction of form of symbols more than they do icons. Additionally, this categorization links together imagery with greater similarity in their simple forms, rather than dividing them among more literal and abstract meanings.

All of the slot canyon's images are pecked, so the unvarnished images are all pecked as well. Negligible varnishing, though variable, necessitates formation during the last 1,000-1,500 years, during the Numic period (Whitley 1994:361; Whitley and Dorn 1987). There is an argument that the Fremont or Anasazi, not the Paiute and Shoshone, produced Mojave Desert rock art, because later Numic images are inferred to be scratched only (Hildebrandt and McGuire 2002; Quinlan and Woody 2003). It is ironic that this stand is made in some of the very same publications which show historic-period pecked images (see Quinlan and Woody 2003:378). Furthermore, if the Fremont argument is to be used, then the defining Fremont rock art characteristics of triangle-bodied anthropomorphs are lacking here. Moreover, there are no Fremont-style pithouse features remotely close to the site, negating an argument by association. Instead of replacing an Anasazi or Fremont design suite, the images expressed at this Mojave Desert site build on the formal signs of earlier expressions throughout time. While oldest designs are exclusively redundant abstract forms, these spirals and rectilinear or curvilinear motifs continue to occur among the negligibly re-varnished forms, and alongside and even on top of iconic bighorn and anthropomorphs. This indicates continuity of place, even as the means by which signs build meaning change. Such referring-back practices legitimize the present designs by reappropriating and transforming the meanings of the older forms through entangling them with a special place.

It is possible that "bows and arrows" and "rain signs" may actually be the objects of signification, but it bears emphasizing that reaching these meanings through simplified forms is an abstraction of different linguistic character than that of bighorn or anthropomorphic motifs to mean sheep and people. Similarly, bighorn images may be read through Whitley as indications of rain shamans' dreams, or via Hildebrandt and others as petitions for a good hunt. In fact, since semiotically these function similarly, there may be less incompatibility between these as explanations throughout the region. Undoubtedly, bighorn hunting occurred (Hildebrandt and McGuire 2002; Lewis-Williams 2002) and may have provided prestige (Gilreath and Hildebrandt 2008), yet its prevalence is likely overemphasized (Lewis-Williams and Dowson 1988; Whitley 1994:363). Certainly at the slot-canyon site, a myriad of expressions not directly involving bighorn images are also present. Since big game hunting was only a fraction of subsistence activities (Gilreath and Hildebrandt 2008:16; Kelly 1997), it should come as no surprise that other life experiences should be represented as well.

Among these other experiences would be vision questing, somewhat analogous to trances. While descriptive and useful, terms such as "trance" and "shamanism" are also misleadingly alienating through



their current cultural connotations as mysterious (Klein et al. 2002). To dispel this mystery, it should be emphasized that trances and ASCs are accessible through embodied experiences: rhythmic sound, drumming, dancing, light play, haptics, and particular substances (Goodman 1988; Lewis-Williams 2002; Lewis-Williams and Dowson 1988; Rick 2006; Till 2009; Whitley 1994). Such performed multisensory practices are readily accessible to people today (Till 2001). By express examination, the mystery is dispelled. Bednarik (1990) critiques the shamanism model in that the experience of phosphenes is not inherently indicative of a social role. However, viewing vision quests as performances in which ASCs are achieved circumvents the argument. Vision-questers of all social segments may, depending on circumstances such as coming-of-age rituals (Lewis-Williams 2002; Shaafsma 1985) or rain-summoning practices (e.g. Whitley 1994), embody practices describable as shamanistic that build on the experiences of multiple senses, without a requirement to retain these roles perpetually.

The slot canyon's red abstract pictographs at Panel #39 may remain from a girls' coming-of-age rite (see Shaafsma 1985); entoptic designs correlating with dry falls at Panels #9 and #10 may remain from a rain shaman's petition; while a cluster of bighorn images at Panel #49 may yet be linked to a sheep cult or prestige. Particularly at this site, sex and gender markers are expressly lacking or under-expressed. Anthropomorphs are simple stick figures lacking props, attire, and anatomical markers. While androgynous roles and anatomies are not rare, they do break from Mojave Desert and Great Basin trends (e.g., Heizer and Baumhoff 1962:162, 164, 187; Hildebrandt and McGuire 2002:244; Whitley 1994:363). The androgynous anthropomorphs at the slot canyon site may indicate a space in which gender constructs were expressly not a basis for restricting access to art consumption and production.

### **CLOSING REMARKS**

Much remains for future investigations. Analysis of the existing image database must now scour for obscured art. If the vision-quest model is to remain viable, its terms must be expanded beyond the art. Express decisions to continue pecking even when incision techniques were available regionally suggest the technique has significance, such as functioning as a cadence. This may be experimentally tested through acoustic studies such as those by Rick (2006) at Chavín de Huántar. The process of producing ASCs may be achieved through many means, but as an adjustment to consciousness or perception itself it is necessarily synesthetic. To further discussion, it will be necessary to explore not just the images of rock art but the means by which they are produced. This will undoubtedly illuminate new avenues of inquiring in which pictographs can be discussed as not just pictures but as tactile experiences, and pecked petroglyphs may be approached as musical expression. To what ends – aesthetic, magic-religious, or to socialize the landscape – remains under-determined.

### **ACKNOWLEDGMENTS**

I would like especially to thank Anastasia Hershey, Courtney Mackay, and Jay Snow for their exceptional assistance and dedication in difficult terrain while documenting this site.

### **DATA AVAILABILITY STATEMENT**

The site record and photographs may be requested from the California Office of Historic Preservation, Eastern Information Center. Currently, further identification information regarding the slot canyon site is strictly not-for-publication

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