
Reproductive Symbolism in Great Basin Rock Art: Bighorn Sheep Hunting, Fertility and Forager Ideology

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Coso Range rock drawings are a central subject and focus for debates positing alternative meanings and agents responsible for animal depictions in Great Basin prehistoric rock art. We present new evidence offering a middle ground between the divergent views of the 'hunting religion, increase rites, and overkill' and the 'shaman, visions and rain-making' models. We argue that rock-art images, in general, possess multivocality and manifest imbricated conceptual metaphors operating on a variety of scales simultaneously. We recognize that Coso pictures, in one sense, metaphorically represent increase and renewal, human and animal fertility, and game animal magnification. Evidence for that perspective is presented including Coso bighorn with up-raised tails, 'spirit arrows', animals giving birth, those that appear pregnant, and an abundance of animals evidencing vitality and movement. Ritual adept shamans also appear to have often been the religious specialists or agents responsible for Coso rock art and the sources for fashioning these images were frequently visionary experiences.

The visual remnants of prehistoric and historic human cultures can be found carved and painted on rock surfaces throughout the world. Rock art constitutes one of the more significant components of human artistic expression. It spans, at a minimum, 30,000 years of time and comprises millions of individual images. Rock art has significant scientific import; it is one of the principal means of interpreting and reconstructing the thoughts and beliefs of our human species across the millennia of prehistory (cf. Bahn 2010). It can be argued that rock-art sites are one of the most vital parts of the archaeological record. This symbolic chronicle provides tangible evidence of and invaluable insights into the grand scale and scope of the sometimes unfathomable history of humanity.

Introduction: Coso Range prehistory and rock-art production

The largest collection of figurative animal rock art in the Great Basin of North America is found in the Coso Range. The Coso Range is a group of small mountains in eastern California situated on the southwestern

edge of the Great Basin. The full corpus of Coso rock drawings have been conservatively estimated at 100,000 individual elements with about 50 per cent of the images depicting the desert bighorn sheep¹ (*Ovis canadensis nelsoni*). Importantly other less-realistic and dominantly abstract elements are also very frequent.

Coso rock art has played a leading role in explanatory models advocating shamanism. This model asserts that much, if not most, aboriginal rock art, found nearly everywhere, owes its source of origin to shamanism (*sensu* Lewis-Williams & Dowson 1988; Whitley 1998a; 2000; *contra* Bahn & Helvenston 2005). However, other students of rock art hold a different view (Bahn 2010, 49–50; Garfinkel *et al.* 2009; Gilreath 1999; 2007). They recognize Coso iconography as having much to do with hunting religion, animal ceremonialism, increase rites and oral traditions.

In this article we offer a middle ground between these divergent views, arguing that rock-art images, in general, possess multivocality (many meanings). Rock drawings exhibit imbricated conceptual metaphors operating on a variety of scales simultaneously. In essence, both perspectives on Coso rock art are par-

tially accurate. However, each interpretive framework is incomplete, the two perspectives together provide a clearer picture and complement each other.

Coso prehistory and Coso rock-art chronology

The Coso Range has seen decades of archaeological research (Garfinkel 2007; Gilreath & Hildebrandt 1997; 2008; Grant *et al.* 1968; Lanning 1963; and sources within). Coso prehistory is divided into Mojave (10,000–6500 BC), Little Lake (6500–1500 BC), Newberry (1500 BC–AD 300), Haiwee (AD 300–1300), and Marana (AD 1300–historic) periods. In brief, the Newberry Period saw intensive obsidian quarrying and extensive toolstone reduction (in large part intended for long-distance exchange), dominance of ungulate hunting and emphasis on rock art production. The Haiwee era is marked by the introduction of the bow and arrow (Yohe 1992; 1997). Also indicated for the Haiwee are a decline in large game hunting; an initial and growing emphasis on dryland hard seeds; the beginning of intensive green-cone pinyon pine-nut use; the introduction of specialized sites for mass harvest of easily procured and abundant small game; and the collapse of trading relations (Garfinkel 2007; Gilreath & Hildebrandt 1997; 2008). This mosaic of cultural changes appears to reflect a population disruption and distinctively different adaptations (Bettinger & Baumhoff 1982; Garfinkel 2007). The frequency distribution of obsidian-hydration measurements has been used as a proxy indicator for the timing and intensity of these changes (Gilreath & Hildebrandt 2008).

Coso petroglyphs have been the subject of large-scale chronometric analysis (Gilreath 1999; Gilreath & Hildebrandt 1997; 2008; Grant *et al.* 1968; Hildebrandt & Ruby 2006; Rogers 2009a). Repeated correlation of single-component archaeological sites in direct association with distinctive rock-art styles has provided researchers with a plausible and reasonably sound chronology (Robins & Hays-Gilpin 2000, 234). Research efforts support rock-art associations with distinctive time diagnostics (arrow and dart points dating to restricted time spans) (cf. Gilreath & Hildebrandt 2008; Grant *et al.* 1968; Hildebrandt & Ruby 2006; Rogers 2009a).

Additionally, Coso rock art has been evaluated with a host of rigorous temporal controls. Chronological placement is based on changes in rock-art subject matter. These changes include shifts in the depictions of darts and atlatls versus bows and arrows. Also, other time-sensitive forms manifest shifts including the introduction of depictions of dogs, medicine bags, and the time-restricted production of the distinctive ‘Coso Style’ bighorn sheep drawings (flat-backed,

boat-shaped bodies with horns to the front²). In other instances, certain styles of atlatl drawings and particular types of patterned-body anthropomorphs have been found to possess chronological significance. Finally, superimposition (abstract pecked — the oldest, representational pecked — intermediate, and scratched — recent and late dating), relative revarnishing, and experimental x-ray fluorescence dating are all useful in the temporal ordering of the Coso rock drawings. The most recent dating refinements rely on a large-scale inventory of 87 sites and an analysis of 19,202 petroglyph elements (Gilreath 1999; Gilreath & Hildebrandt 2008).

Most prehistorians, familiar with Coso rock-art diachronic production patterning, agree that petroglyphs were sporadically fashioned in the Mojave and Little Lake periods. More intensive, regular activity and peak rock-art production occurs in the Newberry (1500 BC–AD 600) and early Haiwee periods (AD 600–1000). An abrupt discontinuation of rock-art production occurs no later than AD 1300. This abrupt cessation is signalled by replacement of representational rock drawings with a simple scratched style believed indicative of the in-migration and disruption of the Coso tradition by an exotic population (Bettinger & Baumhoff 1982; Garfinkel 2007; Gilreath & Hildebrandt 2008; Hildebrandt & Ruby 2003 **NOT IN REFS 2006??**; Hildebrandt & McGuire 2002, 245; Quinlan & Woody 2003).

Coso petroglyphs and the meaning of rock art

Coso rock art is well known in anthropological and archaeological circles (Garfinkel 2006; 2007; Garfinkel *et al.* 2007; 2009; 2010; Gilreath 1999; Gilreath & Hildebrandt 1997; 2008; Grant *et al.* 1968; Hildebrandt & McGuire 2002; Keyser & Whitley 2006; McGuire & Hildebrandt 2005; Rogers 2009b; Whitley 1998a; 2005). There have been two major schools of thought representing what appear to be vastly different explanatory models for understanding the Coso rock-art corpus (*sensu* Bahn 2010; Rogers 2009b). The following discussion briefly outlines the chief elements of these two major schools of thought regarding the meaning of Coso rock drawings.

Shaman, visions and rain-making

Several researchers emphasize a shamanic basis for understanding Coso rock drawings (Lewis-Williams & Dowson 1988; Pearson 2002; Whitley 1998a; 2000). They contend that rock art in much of the American West has no direct connection with mythology and depicts neither myths nor their principal actors. This camp opines that rock-art imagery was the domain of

the ritually adept or shaman and can best be understood through the study of cognitive neuroscience and a three-stage model of trance imagery. Further, they argue that Coso rock art exclusively portrays shamanic trance, metaphoric death, magical flight and transformation. They claim that this perspective is supported by the ethnographic record of the Numic (Great Basin Shoshonean) peoples. In essence, shamanic vision quests are the origin and subject matter — the basis for the art. Bighorn sheep rock drawings depict the shaman's spirit helper. The killing of a bighorn sheep, as rendered in Coso rock drawings, is believed to be a metaphor for shamanic rain-making. The Coso rock-art area is recognized by these researchers as a ceremonial centre for the Western Shoshone and Numic peoples. Finally, it is argued that Coso sheep drawings are almost exclusively representations of bighorn rams and are, in most cases, intended to portray a death metaphor (Whitley 2000, 111).

Hunting religion, increase rites and overkill

Adherents of this perspective argue that ritual and mythology are the primary drivers of rock-art subject matter. They suggest that much of the Coso rock art directly relates to hunting ceremonialism, sympathetic and contagious magic, and increase rites that facilitated the successful hunting of large game. Further, they argue that the ethnographic record has been misread and non-hunting related explanations often ignore the archaeological context and specifically the Coso Region prehistoric record. They indicate that Coso rock art can best be seen as the ritual byproduct of the prehistoric hunting practices of the local indigenous people.

That perspective emphasizes the centrality of a hunting religion and increase rituals as a principal explanatory framework for understanding the imagery (Bahn 2010, 49–50; Garfinkel 2006; Garfinkel *et al.* 2009; Gilreath 1999; 2007). They further assert that much archaeological evidence supports the position that Coso Region bighorn sheep were extensively hunted and excessively harvested, during the period from 2000 BC to AD 600. The Coso sheep population dramatically dwindled after that time (AD 600–1000/1300) and the latest, largest and most numerous sheep depictions were attempts to increase the depleted sheep population through supernatural means (Garfinkel *et al.* 2009; Gilreath & Hildebrandt 1997; 2008). Rock art ceased at about AD 1000/1300 in association with the dramatic decline in the local bighorn population brought about by excessive aboriginal hunting that resulted in significant resource depression. Intensification in rock-art production was then an attempt to restore the local bighorn (increase rites tied to fertility and fecundity).

Typically foragers would react to the decline in large game by broadening their predation activities and incorporating smaller, more abundant game. The Coso case was different. Bighorn were intimately tied into the local culture as elements of prestige and were central to large-scale religious ceremonies. This prestige, religion and hunting interplay led to excesses that ended with extreme bighorn population reductions — perhaps even local extirpation of their herds (Garfinkel *et al.* 2010; Gilreath & Hildebrandt 2008). Hence, the Coso Range rock-art fluorescence was aimed at propagating bighorn. It was an attempt to ensure the return of game animals, human, plant and animal fecundity, and the health and well-being of the Coso people and their way of life (Garfinkel 2006; Garfinkel *et al.* 2010; Gilreath & Hildebrandt 2008).

Theoretical perspective

Previous contributions on the subject of Great Basin rock art have often focused on shamanism and its potential role in the production and meaning of rock art. However, shamanism and trance imagery have somewhat limited explanatory power when attempting to address a deeper level of meaning of the art to the people who produced it (Bahn 1998; 2010, 132; Bahn & Vertut 1997; Meighan 1982, 227). The human nervous system, mental experiences and trance visions are certainly a source of origin for aboriginal rock art as has been amply demonstrated. Still, we recognize that in the study of broad cultural patterns of prehistoric forager ecology it may also be informative to identify the character of underlying messages (cf. Bahn 2010).

This article might best be classified as a contribution under the rubric of 'cognitive archaeology' (Pearson 2002). However, we feel this may be a slightly incorrect notion that too narrowly pigeonholes our study into a specialized domain. Rather, this research is more generally relevant as it builds on prior studies including rock-art theory, forager ecology, linguistic prehistory, prehistoric population movement, hunting religion, animal ceremonialism and resource depression (Garfinkel 2006; 2007; Garfinkel *et al.* 2009; 2010; Yohe & Garfinkel in press).

If we can develop a persuasive argument that one of the central themes of Coso rock art is a focus on reproductive symbolism (human and animal fertility), this can help illuminate other aspects of the prehistoric record. Reconstructions of Coso region prehistory have posited that the peak period of Coso rock-art production and elaboration is correlated with a critical episode of resource depression involving the overharvest of local bighorn populations (Garfinkel *et*

al. 2010).³ Additionally, the Coso region may have seen intense landscape conflicts fueled by the in-migration of an exotic population — the Numic intrusion (Garfinkel 2007).

Also, in the near term, there were environmental consequences of epic droughts (the Medieval Climatic Anomaly) that affected Coso subsistence pursuits. The introduction of the bow and arrow (c. AD 300–600) also appears to have contributed to the collapse of Coso trans-Sierran obsidian exchange that affected the region’s economic picture at about this same general time. All of these factors are of interest to prehistorians in attempting to ferret out the complex interplay of multiple causes influencing the demise of the Coso culture. The character of Coso rock art can have an important role in illuminating the nature of these changes.

It is not our intent here to try and develop yet another set of arguments or continue to engage in the contentious literary battles of Coso rock-art scholars. Rather than erecting more fences and contributing to endless rounds of debate, our aim is to build bridges. It would appear reasonable that over the many millennia that the Coso rock-art record was produced, it had various functions and multiple meanings — especially considering a rock-art assemblage containing no less than 100,000 individual images. We feel that it may be possible to tease out certain trends or themes from this impressive rock-art collection and that a somewhat compatible synthesis and integration of the two dichotomous-appearing schools of thought on Coso rock art might yet help resolve some of this debate. We explore the perspective that rock-art images possess multivocality and integrate many levels of meanings simultaneously.

Article organization

To help us determine something of what the rock-art images meant to the people who crafted them and to understand them better we use mostly formal (study of the images themselves and their associations) but also informed (insider knowledge) methods of rock-art interpretation (*sensu* Taçon & Chippindale 1998). This study specifically focuses on various attributes of Coso animal images. The rock-art characteristics we identify, review and discuss include the position of an animal’s tail, animal torso posture, ‘spirit arrows’, game multiplication and game vitality. We also identify several other characteristic features of game-animal depictions including animals possibly giving birth (e.g. two-headed sheep) and those that appear pregnant (e.g. sheep carrying animals in their wombs — sheep inside of sheep, and sheep with



Figure 1. Hunter with bow and arrow aiming at hindquarters of a Coso bighorn sheep located in Sheep Canyon, Coso Range.

rotund, bulbous, boat-shaped, apparently pregnant bellies). Finally, we close by attempting a new synthesis that integrates the disparate views of Coso rock art.

Coso hunting images and the fertility theme

One facet of the Coso pattern of rock-art renderings pertains to a peculiar style of depicting bighorn hunters with arrows or spears aimed at or probing the posterior regions of the Coso sheep (Figs. 1 & 10). At first, this characteristic seemed rather odd and impractical. Big game hunters would hardly be tempted to shoot their missiles at the rearmost portions of an animal or target their genitalia. The Coso positioning of darts or arrows directed at the hindquarters of a big game animal would not be a very successful hunting technique. If pierced in this fashion, a large game animal might shake off an arrow or dart and continue without experiencing a mortal wound. Yet that particular posture is exactly the mode sometimes depicted as a characteristic pose in Coso hunting panels.

In contrast, aboriginal hunters in the western Great Basin informed anthropologists that the target for their arrows was an entirely different location. They told scientists that a place just under the chin of the bighorn was their definitive focus and would have been one of the most effective sites for slaying their quarry (cf. Gilmore 1953). This ‘sweet spot’ is also the position sometimes depicted in animal–hunter



Figure 2. *Coso representational bighorn sheep with a series of scratched ‘power’ lines emanating from the place that was apparently the precise target for the hunter’s arrows or darts when attempting to slay the animal.*

interaction in the Coso panels (Figs. 2 & 5). Nevertheless, in certain instances, the more enigmatic pattern is depicted — the hunter aiming their arrows or spears at the hindquarters of the bighorn. So, just what did the Coso artisans intend to communicate through the latter set of human–animal interactions?

The promotion of the generative powers of animal and human populations is a common concern of major religions, as well as for many small-scale societies, the world over. It would follow that the Coso Region rock art might include various themes linking hunting with game animal fertility and human sexuality.

Hunting, human/animal sexuality, reproductive symbolism and fertility

It has been asserted that the hunting of large game by men in indigenous contexts of the American Southwest was frequently understood as equivalent to a woman’s giving birth (cf. Hays-Gilpin 2000; Potter 2004). Bows, arrows, spears and atlatls are apparently included in a class of ‘male-gendered tools of fertility’ and are closely connected to the male role as successful hunters and key providers of an important subsistence resource (cf. Loftin 1991, 23–8).

In foraging cultures, human and animal sexuality are conceptually related and this association is further linked with game animal fertility. Since hunting, the

male gender, and masculine sexuality are so closely associated, it stands to reason that the bow and arrow would be recognized as key tools of ‘masculine fertility’ (cf. Hays-Gilpin 2000, 123; Robins & Hays-Gilpin 2000, 243). Testifying to this symbolic and metaphoric conflation of hunting with the male gender and masculine sexuality is that Great Basin Numic terms for both arrow and penis are the same — *pakan* (-a) (cf. Crapo 1976, 106; Lowie 1909).

Additionally, Native Great Basin hunters traditionally abstained from sex during the time of the hunt and women were prohibited from eating meat or animal grease during the time of their menses or when pregnant (Myers 1997, 38–40). Ethnohistoric sources further testify that indigenous people in the American Southwest recognized an implicit association between women and game animals. Men apply a hunting metaphor when talking about their extramarital sexual affairs and state that they were hunting ‘the two-legged deer’ (Schlegel 1977, 259).

In a deep analysis of historic Great Basin Numa origin and creation stories, Myers notes that women are repeatedly associated with meat (Myers 1997, 36–9). Myers identified distinctive and recurring relationships between hunting big game animals, bighorn sheep and human sexual reproduction. He argues that to reach maturity and marry, it was necessary for men to hunt and kill big game animals. Steward (1941, 256) identifies a puberty rite where Numic boys were

required to kill a mountain sheep, deer or pronghorn as a mark of their formalized entrance into adulthood (Steward 1941, 256). Numic oral traditions specifically associate men's reproductive organs (the penis (as referring to arrow) and testicles (as referring to eggs)) with hunting success (or failure) and the ability to attract a spouse and reproduce.

Bighorn, oral tradition and symbolism

David S. Whitley (1982) was one of the first researchers to address the possible symbolic meaning of bighorn in Great Basin mythology. Specifically Whitley contended that a dozen Western Shoshone myths uniformly exhibit implicit equivalencies. In these oral traditions, Coyote (*sinav*) comes to mature manhood by slaying a mountain sheep. Only through such a practice was Coyote then able to achieve adult status and to obtain a spouse. Hence, it seemed reasonable to Whitley that the bighorn was a symbol of male hunting success and adult sexual activity.

In a more general sense, the bighorn had a significant correlation with Great Basin Native rites of passage into adulthood and sexual maturity. Furthermore this male hunting success metaphor was also likely an important symbol representing both male strength and virility. Such a representation is testified by its recurrent place in other Numic myths (as above, see Myers 1997, 37). Perhaps such metaphors developed based on the behavioural patterns of bighorn mating. During the rutting season, mountain sheep rams perform dramatic dominance displays for access to females. Perhaps, these thundering headlong clashes are a source for the association of the bighorn ram with the qualities of male strength and fortitude.

Tail positioning

When viewing the bighorn sheep in the wild one of least impressive elements of their physiognomy is their tails. Yet Coso prehistoric rock art is often very explicit about including the animal's tail and displaying it in various patterned positions. A recent study of Coso rock art was conducted through the auspices of the Cotsen Research Institute, University of California, Los Angeles. At Little Lake Ranch, in the Coso Range, an intensive decade long survey identified 268 individual bighorn figures with most (74 per cent) having tails (Van Slyke & White in press). In the majority of cases, these sheep tails are depicted as raised, in a horizontal (parallel to the ground) or fully vertical position (turned upwards towards the sky). For the Coso Rock Art National Landmark, located within the confines of the China Lake Naval Weapons Station, the



Figure 3 (was Fig. 4). *Big Petroglyph Canyon rock-art panel described and depicted in Keyser & Whitley (2006). Dying bighorn has emphatically downward tail.*

Little Lake researchers estimated that 80 per cent of bighorn sheep figures are depicted with tails and that these are almost exclusively rendered on a horizontal plane or trending upwards towards verticality.

Keyser and Whitley (2006, 19, fig. 9) have argued that a Coso sheep depiction in Big Petroglyph Canyon is shown as dying and we concur with that assessment (Fig. 3). However, in the comments accompanying the figure, Keyser and Whitley also suggest that 'the straight line (presumably an arrow or spear), bleeding from the mouth, and *upraised tail* [is] (a *rigor mortis* posture for the bighorn)'.

Again, we would largely agree with the authors' assessments that this particular animal's tail is depicted in a slightly upraised position from its relaxed state (typically tucked neatly into the base of the animal's hindquarters). It is also unassailable — that the sheep is bleeding from its nose and/or that the breath (of life?) is being expelled from its nostrils or mouth. Yet, this specific bighorn figure, and only a very small number of other Coso bighorn representations (total number = 3), can be identified that have tails pointed, in what we would consider a decidedly *downward* rather than upraised posture. It appears to us that the tail position on bighorn petroglyph figures often has a more complex set of metaphoric meanings than might be initially apparent.

To evaluate the relationship of tail position, with respect to the vitality of the bighorn, we assessed the tail posture for a sample of Coso bighorn figures. We reviewed photographs of 112 individual petroglyph panels containing Coso sheep figures where their tails were clearly depicted. The sample was assembled from a photographic inventory crafted over the last five years that documents rock-art panels located within the three principal petroglyph galleries in the Coso Range (Big Petroglyph, Little Petroglyph, and Sheep Canyon) (see Table 1).

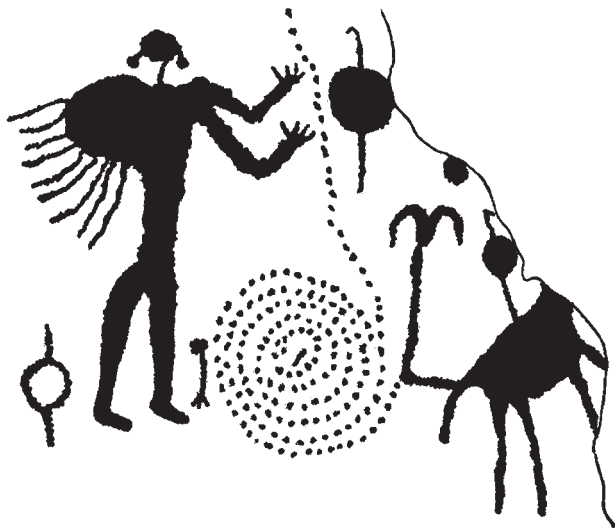


Figure 4 (was Fig. 5). Line drawing of Parrish Gorge rock-art panel in the Coso Range. Prostrate bighorn with embedded spear has tail in a downward posture.

Using the base of the bighorn's feet as establishing the ground plane, the angle of the tail on three dead or dying Coso sheep drawings can be estimated at about 45 degrees — a decidedly *downward* trending position (Figs. 3, 4 & 5). If the tails of the sheep were extended out following the line of their torso, paralleling the ground surface, the tail position on some sheep follows a horizontal plane and is in a roughly 90 degree position. Other more extreme sheep-tail depictions display postures approaching a vertical plane (180 degrees or where the sheep tail is pointed directly upwards towards the sky). Somewhere in the middle, there are tails with an orientation above the horizontal plane, but less than fully vertical, averaging about 135 degrees (see Fig. 6 for an explanation of sheep-tail orientation and associated metrics).

As noted above our inventory of sheep-tail orientation identify only three individual instances where sheep tails were oriented in a markedly downward pose, approximately 45 degree angle. These three bighorn drawings appear to be representations of dead or dying sheep. In two instances the animals are apparently dead. The one in Little Petroglyph Canyon is drawn upside-down, bloated and pierced through with a spear. The other, a Parrish Gorge image, is incomplete (due to the decomposition of the rock face through erosion). However, we see a sheep torso laying prostrate on the ground thrust through with a spear and this panel appears to depict a 'post-mortem mortuary ceremony'. The sheep's skull is shown on a pole and the skull is being venerated by a large, almost



Figure 5 (was Fig 6). Photograph??? of prominent Coso Range rock-art panel (triptych) located in Little Petroglyph Canyon. This upside-down bighorn is at the top of the three, stacked panels and appears to be in death pose with bloated belly and embedded spear. Tail is directed downward towards the ground.

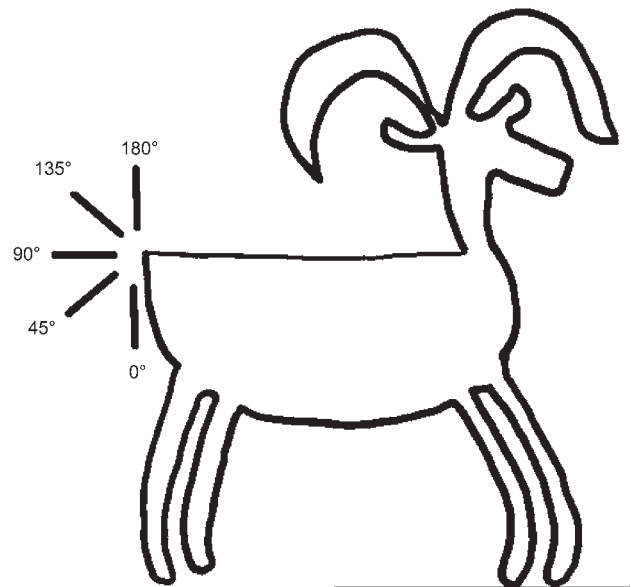


Figure 6 (was Fig. 7). Illustration of varying angles of sheep-tail positions and associated metric criteria for measuring tail angle.

Table 1. Coso rock-art sheep-tail orientations.

	No.	%
Sheep with downturned tails at about 45°	3	2.7
Sheep with upturned tails at about 90°	9	8.0
Sheep with upturned tails at about 135°	85	75.9
Sheep with upturned tails at about 180°	15	13.4
Sample size of bighorn images exhibiting tails	112	
Panels containing hunters or impaled sheep	49	43.8
Panels lacking depictions of hunters or weaponry	63	56.2

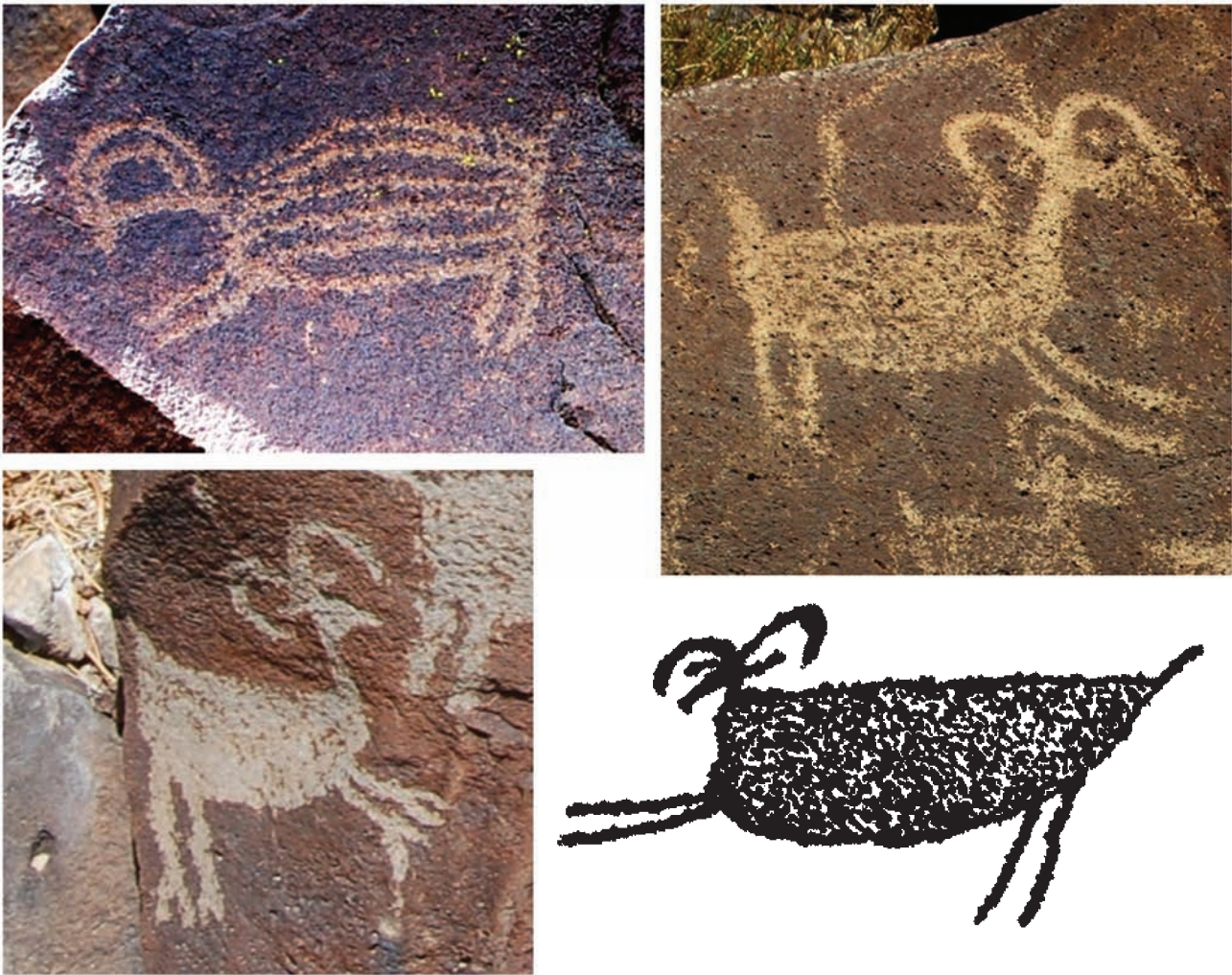


Figure 7 (was Fig 8). Several examples of Coso bighorn depictions where hindquarters of bighorn are distinctively elevated and appear to be in a sexually receptive posture.

life-size, male figure (Garfinkel 2006, 211–14; Fig. 4). The third, and last, image is a bighorn standing erect but with legs that are depicted as ‘wobbly’. This is the only image where the legs of a bighorn sheep are depicted with this undulating pattern. Also this is the only image where we see blood coming from the nose of a sheep. Neither of these attributes is replicated on any other bighorn sheep depiction that we have seen in the Coso Range.

Moving upwards in orientation and centring on a parallel plane to the ground surface, nine Coso bighorn sheep figures had tails in the horizontal position at about 90 degrees. Nevertheless, the vast majority of sheep in our sample ($n = 85$; 75.9 per cent) had tails facing upwards but at a slightly downward trend from a true vertical position — approximating a 135 degree

angle. Finally, there were 15 sheep renditions (13.4 per cent) with tails inclined in a strikingly upwards mode approaching a true vertical plane at about 180 degrees (Table 1).

Van Slyke and White (in press) reviewed nearly 1000 pictures of living bighorn sheep and noted that none of these photographs showed elevated tails. They asked wildlife biologists whether an upraised tail might be a *rigor mortis* posture for the bighorn, but the biologists indicated that was not the case. The biologists stated that the only time sheep would be seen with their tails up was when they were urinating or defecating. The wildlife specialists noted that they had actually viewed dead bighorn and never once noted a tail-raised posture as a correlate of their condition. Significantly, after investigating this matter further, a



Figure 8 (was Fig. 3). Middle Little Colorado River Valley petroglyph panel located in the Lacey Point area of Petrified Forest National Park in northeastern Arizona. Mother of Game Animals is identified as the large central anthropomorphic figure, phallic feet are on the upper left, hunting weapons (bows and arrows) frame the feet on the upper right and left, phallus figures are noted between each of the two paired feet, animal figures have prominently upraised tails at the 180 degree position and also have ‘spirit arrows’ intersecting their hindquarters, flute-playing anthropomorph is displayed between the two zoomorphs.

wildlife biologist currently studying bighorn-sheep reproduction has informed us that *bighorn-sheep females lift their tails only if they are sexually receptive and after copulation.*

Similarly, research on estrus in sheep ewe farm animals indicates that estrus is not as easily detected when a female has been separated from the ram for a period of time. When the ewe cannot hear, smell or see the ram, this causes diminished estrus behaviour. Ewes experiencing estrus behaviour will search out the ram and stand to be mounted by him. A characteristic behaviour for the ewe is *rapid tail movement or a raised tail* in the presence of the ram (Yager *et al.* 2003),

Van Slyke and White (in press) agree with Keyser and Whitley (2006) that sheep-tail positioning is a significant stylistic attribute. However, the Little Lake rock-art researchers did not advance an explanation for this curious attention and conventionalized depictions of tail posture. Nevertheless, the depictions of game animals in Great Basin and American Southwest petroglyphs with upraised tails in a 90 to 180 degree pattern have typically been identified by prehistorians as significant symbolic attributes signalling their sexual receptivity (cf. Hays-Gilpin 2000, 124, fig. 3.10; Potter 2004, 328, fig. 1). Our research seems to support this attribution.

Sexual receptive posing and reproduction

Coso rock-art panels sometimes depict sheep figures with decidedly upturned hindquarters (Fig. 7, lower two depictions). The rearmost parts of these sheep representations are more elevated than the proximal end of the beasts. In many instances the front legs extend outwards in front of the sheep and are splayed and angled away from their bodies — directed in front of the animal (Fig. 7, upper and lower depictions). Similar to other reproductive aspects enumerated here, this pattern may be another signal of their sexual receptivity as this is a typical female mating posture. Such posing is also seen in two Middle Lower Colorado River petroglyph panels from Arizona in the American Southwest (Fig. 8) where the uppermost animal has its front legs extended outward. The latter panel is recognized for its explicit emphasis on masculine fertility, animal fecundity, reproduction and increase (Hays-Gilpin 2000; McCreery & McCreery 1986, 4; McCreery & Malotki 1994, 67–74, 139–42, fig. 9.1; Potter 2004, 326–9, fig. 1)

‘Spirit arrows’

Coso animal images are sometimes associated with single missile-like bursts, akin to arrow foreshafts,



Figure 9. Several examples of 'spirit arrows' from the Coso Range rock-art assemblage.



Figure 10. Examples of armed Coso hunters aiming their arrows at the hindquarters or genitals of bighorn sheep.

depicted without the attached fletching or hafted tip. These apparent projectiles are aimed at, directed towards, and sometimes intersect with an animal's genitalia (see Grant *et al.* 1968, 63 - uppermost photograph, rightmost bighorn sheep, p. 69 - uppermost figure, central uppermost bighorn, p. 72 - lowermost photograph, right, uppermost sheep, and p. 82 - bottom figure, lowermost bighorn). Our attention was first drawn to this curious element when we noted these stick-like missiles directed at the hindquarters and genital areas of game animals in petroglyphs from the Southwest (Fig. 8). We have named these 'spirit arrows'.

Some of these missiles appear as tail-like appendages. Nevertheless these elements are decidedly not tails because that bighorn attribute was already rendered on the animal figures. The tails of the animals are typically in a vertical, upraised or horizontal posture at the point of intersection with the figure's abdomen and back (Fig. 9). Essentially, not one but two appendages were sometimes shown — one vertical, or nearly so, and the other horizontal and sometimes intersecting with the animals' genitals!

Besides these projectile-like bursts, we also recognized Coso bighorn depictions where hunters were aiming their bows and arrows or thrusting spears at the hindquarter region and directing their weapons towards the genital area of the bighorn (see Grant *et al.* 1968, 54, illustration j, hunter on the right; p. 73, uppermost photograph, also this relationship is shown in the present article in Figs. 1 & 10). We suggest that these spirit arrows and hunting weapon orientation act as metaphoric phalli. This is one means of communicating an implicit notion emphasizing confluences of human and animal reproduction and a conceptual link between human and animal sexuality.

Multiplication and agility: vitality, motion and increase

Based on a review of Coso petroglyph panels ($n = 122$; Table 2) there is a significant percentage of animated, healthy and lively sheep in contrast to those suffering attacks by Coso hunters or predators (typically moun-



Figure 11. Coso petroglyph panel with recurrent depictions of sheep. This panel has a minimum of 28 individual sheep represented and has one of the more concentrated assemblages of sheep documented in the Coso Range.

Table 2. Coso rock-art panels by subject and animal frequency.

Number of panels having singular versus recurrent depictions	
Solitary-sheep panels	29
Multiple-sheep panels	93
Total sample size	122
Mean number of sheep per panel = 4.9; Range 1–29	
Total number of individual bighorn sheep images inventoried = 599	
Number of sheep per panel	Total no. of panels
1–5	95
6–10	18
11–25	8
26–50	1
Total	122

tain lions). In our sample, a total of 599 individual sheep were illustrated. These depictions ranged from panels with only a single, solitary sheep to a panel illustrating no fewer than 27 (Fig. 11).

In fact, there is a clear trend: panels with many sheep are more abundant than those with a single depiction of a solitary sheep (Table 2). Singular occurrences of bighorn totalled only 29 individual



Figure 12. Two Coso panels showing evidence for the depiction of lively, vital, and energetic sheep. Sheep appear to be shown leaping, running, bounding and in notable motion.

representations. Still, 93 of the 122 panels exhibited repetitive depictions containing multiple bighorn figures. The mean number of sheep was just under five figures per panel.

This review also indicates that Coso sheep rock drawings sometimes lack a strong association with armed hunters, weaponry or indications of impaled bighorn (Table 1). Of the 112 panels reviewed 49 (43.75 per cent) had impaled sheep or armed hunters. Even so, some petroglyph panels, rather than depicting hunting scenes, show sheep in lively form — running, leaping and engaged in notable movement (Fig. 12).

We would argue that the renditions of animal groupings with multiple sheep images were crafted based on a desire for game abundance and an *increase* in game animals — to ensure a continuous food supply, and a plethora of game (Alexander Rogers pers.comm. 2008). Such illustrations are consistent with what one might anticipate if it were the purpose of the Coso artisans to increase game supernaturally and ensure an uninterrupted bounty of healthy and vigorous animals.

The Coso panels also include a number of graphics evidencing long arrays of sheep ascending rocks and moving upwards from cracks in the lava canyon walls. Many panels depict bighorn in groups or collections, sometimes showing other game animals (including deer, elk or antelope) in odd confections. The latter compositions also seem to suggest an emphasis on game multiplication, fertility and fecundity in a general fashion.

Birthing and pregnant sheep

Grant and his co-researchers state:

The odd two-headed sheep that often occur during the Late Period had completely puzzled us. A friend who had been raised on a farm has suggested it may symbolize a sheep birth. One head is always drawn smaller than the other and might represent the invariable head first appearance of animals at birth. This would tie in with the hope for an *increase* in the numbers of sheep. The pictures of sheep inside sheep would also fit this theory (Grant *et al.* 1968, 40) [emphasis in italics added].

A number of two-headed sheep images are rendered within the Coso Range (Fig. 13). Grant and his colleagues identified 54 two-headed or, as they termed them, ‘double-ended’, sheep figures within the Coso assemblage (several illustrations of this unusual style sheep are provided in Grant *et al.* 1968 including a drawing on p. 20, fig. j and the icon in the upper right corner of p. 119).

Grant and colleagues also described another type of sheep representation as alluded to in the concluding sentence of the quotation cited above. That figurative attribute has relevance to the present discussion.

Another rarer type is the sheep inside of the sheep, possibly representing pregnant animals (Grant *et al.* 1968, 22).

In their review of Coso images, Grant and his colleagues (1968, 120) were able to identify only six



Figure 13. Two-headed or 'double-ended' sheep in several different characterizations are exhibited in a number of locations throughout the Coso Range.



Figure 14. Sheep inside (in the bellies) of other sheep — most likely intended to communicate that these bighorn sheep are pregnant.

such figures that were renderings of sheep inside of sheep (Fig. 14). We have seen many more than that number of occurrences in our reconnaissance of the Coso region and strongly believe that closer scrutiny would undoubtedly increase that number significantly (Fig. 15).

Could the Coso canon of depicting bighorn with huge, ovate bellies (Fig. 16) actually be communicating that these bighorn sheep are pregnant? At first, this seemed a rather ridiculous interpretation. Are not those large, robust animals peppered about the Cosos, having those huge horns, all virile males? Perhaps. At the same time, how can these 'male sheep' also be shown as carrying infant sheep (sheep inside



Figure 15 (was Fig. 16). Sheep nested within other sheep. Images from the Little Lake area of the Coso Range. Larger sheep are considerable older and noticeably more patinated. The smaller sheep are fresher in appearance and lighter in colour. Images were rendered in two distinct episodes of time. (Photograph fashioned and enhanced by Krista Levy.)

a sheep), giving birth to sheep (two-headed sheep) and represented in sexually receptive attitudes with a decidedly female mating posture? Such a paradox was at once perplexing yet fascinating.



Figure 16 (was Fig. 15). Boat-bodied Coso bighorn sheep. It is a hallmark of the Coso canon to depict bighorn with flat backs, boat-shaped bellies, and full front-facing, bifurcated horns. Some sheep are exceptional in emphasizing the distended and decidedly convex nature of their abdomens. Also note that the rightmost sheep has a faint bighorn within its belly.

It is interesting to note that only a handful (fewer than five) of the Coso sheep depictions illustrate any form of genitalia at all. In discussing Ute ethnosemantics and its implications for Great Basin Numic religion, Goss states that ‘bighorn sheep in the real world are called by the supernaturally neutral (genderless) term /naka/ and are generally categorized as female (Goss 1972, 166).’ [parenthetical term added to the original quotation]

Perhaps the Coso artisans were portraying pregnant sheep — as this bulbous-bellied form is considered one of the hallmarks of Coso imagery and a relatively unique manifestation with this symbolic signature flourish. If it was the desire of the Coso people for increasing numbers of sheep, greater productivity and fertility of game animals, and continued fecundity of the earth and the Coso people, then such a characteristic representation of classic Coso sheep (pregnant) might make sense.

Summary, conclusion and synthesis

Various attributes of the Coso bighorn-sheep images support an interpretation that one function of the rock pictures was an intention to foster animal fertility. Among these rock-art characteristics are the positioning of ‘hunters’ in relation to their game, the

position of an animal’s tail, the posture of animal’s torso, the depiction of ‘spirit arrows’, animal vitality and herd contexts, and evidence of pregnant and birthing animals.

Yet other aspects (including their massive horns) of the Coso bighorn drawings suggest that the depicted animals were not females at all. This gender contradiction in Native thought has been considered at great length by Koerper and colleagues (2009, 67). They argue that food-supply concerns and food-stress anxiety is manifested in symbolic imagery directly associated with ‘life force thematics’ — merging and representing the concepts of fertility/fecundity and a male/female duality (Koerper *et al.* 2009, 67). They make an excellent case that reproduction is the universal symbolism for fertility. Furthermore, the obvious representations of those generative relationships are images of coitus, birth and pregnancy conveying the notion of fertility.

In addition, it is the relationship between death and killing that is intimately linked to life itself and sexual reproduction. Since a cultural group is only able to perpetuate itself and continue its existence through death (killing of game and passing of the elderly), death is cast as a ‘generator’ of life. This inter-fingering of life and death themes is also a key element in Native Californian religions as exemplified

in detailed descriptions of southern California indigenous cosmologies (White 1963, 141). Significantly, it has also been argued that Coso shamans and Native Californian belief systems, in general, were attuned to the principle that *life itself was fostered and fertility ensured through death*, and hunters were seen as principal *givers* rather than takers of life (Whitley 2000, 111).

Our discussion has highlighted the obvious differences in perspectives on the authorship, cultural context and meaning of Coso rock art. Some researchers favour a more individualistic, shamanistic origin and vision-quest experience while others emphasize a group ritual setting influenced by mythological and cosmological patterns (Table 3). Yet as different as these models appear, there are a number of areas where they converge and have common interpretive claims (Table 4). Both argue that the rock drawings are based in a magico-religious, ceremonial context. Both favour sheep depictions as more than simple renderings — meaning something greater than mere hunting rites with only a simple and direct subsistence focus.

Remarkably, even the central proponents of the Coso hunting magic model, Grant and his colleagues (1968, 34) claimed that it was the exclusive domain of the Coso shamans, the ritual middlemen between the natural human world and the world of the supernatural, who were the stewards of the Coso bighorn-sheep cult. Significantly, Grant and his co-authors assert that these were shamans that accessed that mystical world specifically through trance and dance.

In a broader sense, the indigenous Great Basin Numic view is that the world was ordered into an upper, middle and lower realm. These strata were venues where different Animal People or *Shamanistic Bosses* reigned. Native taxonomy categorizes these animal-person shamans according to their associated behaviours and environments (Vander 1997, 155). Having its habitat in the elevated crests of the high, rugged mountains, the bighorn sheep occupies an uppermost frame (cf. Goss 1972; Myers 1997, 44; Nissen 1995, 72 **NOT IN REFS 1982??**).

One way to depict this uppermost association relates to the bighorn sheep's role as a bringer of rain. Rain-making is recognized as a central fertility ritual in Numic religion. Rain-making religious rites are correlated with a cluster of varying landscape features including shamanic rituals and associations with springs, rock art and bighorn-sheep habitat (Kelly 1939; Steward 1941; Vander 1997).

Goss (1972) argues that the bighorn sheep is the shamanistic 'boss' of all the ungulates, and asserts that the term for bighorn in Great Basin languages is a referent for all large game animals (cf. Nissen 1995, 72 **NOT IN REFS 1982??**). Goss (1972, 126) emphasized

Table 3. *Contrasting models of Coso bighorn-sheep rock art.*

Dichotomous models	'Shaman, visions, and rain-making'	'Hunting religion, increase rites and overkill'
Artisan	Shamans	Commoners and hunters
Source of imagery	Visions	Mythology, oral tradition, and world view
Context	Individuals — altered states of consciousness	Groups: ceremonies, rituals, men's initiation
Element — bighorn sheep (meanings)	Rain, shamanic death and rebirth, tutelary spirit (shamanic spirit helper)	Hunting, reproduction, increase, fertility (animal and human), world renewal
Bighorn gender	Male	Female
Depiction, attributes, and state of bighorn rock pictures	Dead and spirit sheep, killed (impaled) or being killed	Coitus postures, pregnant and birthing, energetic, lively, and abundant

Table 4. *Coso bighorn-sheep rock art: common elements of both models.*

Context	Magico-religious and ceremonial
Bighorn sheep (meanings)	More than just simple sustenance or as a pure subsistence resource
Metaphors	Rain is an important element to the understanding of sheep representations in Great Basin and Southwestern imagery
Symbolism	Sexual and reproductive symbolism

the bighorn's metaphoric significance, noting that it is the most difficult large game animal to kill, lives on the tops of mountains, and importantly has a 'white rump'. The colour white is recognized by the Numa as having the most sacred and highest supernatural status.

White is also associated with the topmost animal — the Eagle, the shamanistic boss of the sky (Goss 1972, 126). White is prominent on the tail feathers and under the wings of juvenile eagles (1 to 2 years old) and has general ritual associations with healing, curing, hunting, *shamanism*, and *vision questing* (cf. Miller 1983, 70). Hence, the power and energy of the universe is often concentrated in these uppermost planes on mountains and high places. These high places are the sites of vision quests, homes of immortals and, significantly, the abode of the bighorn (Miller 1983, 70).

Hence, both rock-art models would agree that rain is a key metaphor for understanding the Coso images and that there is an undercurrent of shamanistic vision questing as an aspect of bighorn cosmology. It also appears that the artisans producing Coso

Table 5. *A synthetic model of Coso bighorn-sheep rock art*

Synthetic model	Multiple meanings, multivalent interpretive platforms, multivocality and polysemous attributions; operating on many levels at the same time
Artisans	Shamans, commoners and hunters
Sources of imagery	Visions, myths and cosmology
Contexts	Individual vision quests and group ceremonies (coming of age rites, 'hunting magic', increase rites, world renewal)
Element – bighorn sheep (meanings)	Rain, hunting magic, animal and human fertility, 'increase' (game multiplication and magnification), rebirth and world renewal
Bighorn gender	Male, female, dimorphic (double-sexed) and androgynous (non-gendered)
Depictions, attributes, and state of bighorn rock pictures	Dead sheep and spirit sheep; sheep being chased and killed; energetic, lively and, abundant animals; fat, pregnant and birthing sheep; human-animal coitus and reproductive symbolism

rock art were often ritual specialists recognized as medicine persons or shamans. These ritual adepts were the special mediators that negotiated and communicated with the world of the supernatural through visionary experiences. These communications with the supernatural were frequently directed at influencing divine personages in ways that would benefit Native communities (cf. Bahn 2010, 75, 130). Similarly, it is Laird (1976, 216) and Whitley (1998b, 19) who remind us it was Numic shamans that used a ritual staff (*poro*) to open cracks in the rock, seen as a metaphoric earthen wombs, helping restore life and fecundity to the world.

Hence, various levels of meaning apparently merged in Great Basin rock art, simultaneously signifying both the *agent* of supernatural power (the ritual adepts) and the visionary states that gave humans access to the world of the supernatural (Table 5). In fact, David Whitley has argued that Coso drawings merged these various levels of meaning and that Great Basin rock art, in general, symbolically represents both the source of supernatural power and the dream and trance world that gave access to it (Whitley 1988 a or b??, 36–40). In other words, what we need in order to reconcile the two perspectives is that rock-art metaphor is best understood to have a multi-layered structure of interpretation. To understand rock images we need to recognize that the symbolism is tailored to represent what a visionary experiences and describes. Simultaneously, the drawings are recognized and intended to mean what an individual has been social-

ized to expect, in terms of cosmology and mythology. World view and oral traditions are a tapestry providing the material elements critically important for understanding the experience.

Hence, it is plausible that Coso shaman artisans were engaged in rituals that served to communicate with supernaturals capable of restoring game animals and replenishing the world. Human and animal reproduction may have converged and are possibly symbolically arrayed in the conventionalized imagery fashioned by these Coso artisans.

Animal depictions in rock art often seem to have an important element relating to increase, renewal, rebirth, fertility, fecundity and game-animal multiplication and magnification (cf. Clottes 2008, 106; Garfinkel 2006). This theme appears to have cultural implications relating to the energetics of local biota and a kind of 'cosmic equilibrium' specifically tied to human-population dynamics. In this instance, we are dealing with issues and concerns of human fertility and the perpetuation of distinctive cultures. These themes relate directly to iconography with life-generating and life-affirming meanings.

One thread that permeates the Coso rock-art tradition is a means of affirming life and a prayer for the continuous, uninterrupted flow of divine bounty ensuring the longevity of the Coso way of life. However, a principal source of these visual prayers was the world of the supernatural accessed predominantly by shamans (ritual adepts) responsible for crafting messages. These were shamans who bridged the natural world and the supernatural universe through their visions.

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Notes

1. Coso drawings of bighorn sheep appear to have been most commonly rendered by men as it seems probable that the artisans were either male hunters or shamans. However, women could have and most likely did craft Coso rock-art drawings as well. Caroline Maddock's study (2011 **NOT IN REFS**) of Coso patterned-body anthropomorphs clearly contains images of women and other female-themed subjects (female figures adorned with Hopi-style butterfly hair styles, menstruation, basketry, seeds and costumed women ritualists or female supernaturals).
2. Grant and his colleagues (1968) in their preliminary inventory identify 704 Coso boat-shaped sheep (the ones that appear be pregnant) with front-facing horns and 1352 sheep with front-facing horns with less-formalized body shapes (some without flat backs). The total for all sheep forms listed is 6999. The classic Coso Style sheep with a boat-shaped body, flat back and fully bifurcated, front-facing horns is largely restricted to the Haiwee era (AD 600–1300). Time-adjusted calculations for the frequency of different styles of sheep representations exhibited in the Coso Range indicate that this hallmark 'Coso Style' sheep was produced at a four times greater rate than any other form of sheep representation fashioned throughout prehistory.
3. The Gilreath and Hildebrandt (2008) Coso rock-art study and our recent Coso bighorn-sheep resource depression computer simulation and archaeofaunal review (Garfinkel *et al.* 2010) provide ample evidence supporting a connection between the rate and character of Coso rock-art production and the rise and fall of human predation on bighorn.

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Author biographies

Alan Garfinkel received his PhD in prehistoric forager ecology from the University of California, Davis in 2005. That research was published by the Maturango Museum, Ridgecrest, California as *Archaeology and Rock Art of the Eastern Sierra and Great Basin Frontier*, 2007. Dr Garfinkel has attempted to integrate the study of rock art into the scientific study of prehistory. Most recently his work has been framed in close collaboration with Native peoples.

Donald Austin obtained a degree in electronics engineering in 1972 and began independent archaeological studies in 1988. Retired from industry 2001 he founded a petroglyph reproduction business (sandcarveddesigns.com) to promote appreciation of rock art. He operates an educational website petroglyphs.us and has co-authored several published papers on rock art. In 2010 he co-founded rockart101.com a rock-art training seminar and field trip business.

